NATIONAL WIND COORDINATING COMMITTEE

Wildlife Workgroup Meeting February 27-18, 2006 Washington, DC

Meeting Summary

DAY 1:

The National Wind Coordinating Committee (NWCC) Wildlife Workgroup began this two-day meeting with a workshop on Ecological Risk Assessment (ERA) and Adaptive Resource Management (ARM) and their potential applicability to assessment of wind energy facilities. Both ERA and ARM have been proposed as frameworks for assessing potential risk to wildlife and wildlife habitat from wind power development.

In 2005, the NWCC Wildlife Workgroup Risk Assessment Subgroup developed a draft white paper on using ERA for wildlife assessments at wind power sites. This workshop provided a review of that paper, as well as case studies illustrating the various stages of this approach. After presentation of this material, meeting attendees shared their reactions to the ERA approach. The workshop then shifted to the topic of adaptive resource management—what it is and how it does or does not fit into the ERA model. The day concluded with participant updates on wind power and wildlife activities.

Ecological Risk Assessment (ERA) Framework

Bill Warren-Hicks with EcoStat, Inc. led the presentation of the Risk Assessment Subgroup white paper on ERA, with the assistance of subgroup members Rebecca Efroymson, Oak Ridge National Laboratory; Jim Newman, Pandion Systems; and Dale Strickland, Western EcoSystems Technology. ERA is defined as, "A process that evaluates the *likelihood* that adverse effects may occur, or are occurring, as a result of exposure to one or more stressors." Because ERA is a framework underneath which methods exist, it can be adapted to a variety of situations.

Core characteristics of ERA are:

- Decision oriented
- Tiered approach
  - Lower tiers: fewer data, conservative assumptions
  - Higher tiers: probabilistic, refined assessment
- Focus on major concerns
- Feedback mechanism for decision making
- Effective communication of risk and uncertainty to managers and lay audiences
- Stakeholder input can be a part of ERA in the Problem Formulation step, if desired
- Unifying framework that follows accepted format, making use of existing body of knowledge.

Using more conservative assumptions in the lower tiers means risk is generally overestimated; however, a higher tier evaluation generally involves more data and therefore is more expensive.

Part of understanding the ERA framework is knowing the associated vocabulary. Some of the key terms are:

- Problem formulation—planning process to define the nature of the problem to be solved and specifying the risk assessment needed to solve the problem

- Exposure characterization—description of potential or actual contact or co-occurrence of stressors with wildlife or other assessment endpoint entities

- Assessment endpoints—explicit expressions of environmental values that are to be protected and that are the subject of the risk assessment

- Effects characterization—definition of exposure-response relationships that are related to assessment endpoints

- Risk characterization—integration of site-specific estimates of exposure with site-specific or generic exposure-response models, often using a weight-of-evidence approach

- Risk management—the process of deciding whether an action involving risk should proceed, whether mitigation actions should occur, or other relevant actions, supporting the decision, and implementing it.

More detailed definitions and other vocabulary terms are available in Table 1 of the draft white paper. White paper Tables 2 – 4 deal with potential wind facility-related stressors to wildlife.

The risk assessment process was outlined using case studies from the following proposed or constructed wind sites: Chautauqua, New York; Foote Creek Rim, Wyoming; and Mount Storm, West Virginia. See the presentation slides for case study details.

Potential drivers for using ERA include:

- Wind project development steps
- Environmental assessment drivers, e.g. NEPA
- Incidental take agreements or permits (Endangered Species Act).

The Risk Assessment Subgroup members offered the following clarifications based on participant questions:

- The Chautauqua project has not been built. The risk assessment was part of the New York State EIS process. There was no preliminary mortality data available for this site.
- Bats were not considered at Chautauqua, as they were not considered a concern at the time. No endangered bats have been reported at the site.
- Although Mount Storm is on private land, a permit was needed from the West Virginia Public Service Commission.
- Tier 1 studies are typically used to evaluate wind resources pre-development and Tier 2 studies once a site has been selected for development to determine how to minimize risk

to wildlife and to estimate actual impact resulting from the constructed and operated wind facility.

- The cost of ERA is in line with current assessment costs; a Tier 1 assessment can cost a few thousand dollars.
- It should not be assumed that all potential stressors are of equal importance.
- In some cases, it is possible to pick surrogate species that represent particular biological niche. This can be helpful if data is available on one species but not another.
- Whether risk is described qualitatively or quantitatively is usually a policy or regulatory issue. It can make little sense to quantify in some case; the decision boils down to how much is known about site and level of certainty desired.
- The risk assessment section of NWCC's "Methods and Metrics" document talks more about data needs for impact assessment, whereas the ERA paradigm provides a standard process for estimating the magnitude and probability of an impact. This section could be amended to lay out standard endpoints.
- One of the factors steering the type of model you use is the level of uncertainty that is acceptable.
- At least four states have environmental assessment guidelines where ERA might be used.

Meeting participants made the following comments:

- ERA ultimately has to figure in to business decision making.
- Unanticipated costs after a project is constructed can shut it down, so developers want to overestimate risk and budget accordingly.
- It remains unclear how to grapple with the larger problem of comparing risk of building wind farms in one location versus another or putting in one type of energy facility instead of another.
- The U.S. Fish and Wildlife Service Voluntary Guidelines mix recommendations from various methodologies for assessing risk.
- Brian Cooper did a study showing use of airspace by birds with turbines superimposed to estimate risk.
- Tier 1 studies in new geographic areas or ecological settings would likely face a large amount of uncertainty because there is no case history.
- Presence of a species does not connote risk.
- An exposure metric is needed for characterizing exposure because total fatalities or birds per megawatt are not measures of exposure.
- ERA is essentially being used at various sites in the country, and is not a new concept. Others noted reservations about whether the current assessment methods are the optimal approach.

<u>Group Discussion of ERA</u>

The group outlined the following next steps:

- Refine the white paper with case study examples
- Look at white paper Tables 1-4 and see if further expansion is needed
- Hold a workshop on risk assessment at the November NWCC Wind Power and Wildlife Research Meeting VI.

Adaptive Resource Management (ARM)

Bill Kendall with the USGS Patuxent Wildlife Research Center began this session by noting that while ARM is not equivalent to ERA, it is similar to Risk Management. There are numerous definitions of ARM but a simple one is, "Managing in the face of uncertainty, with an emphasis on its reduction" (B.K. Williams and F. A. Johnson, 1995). ARM is a scientific method which involves such steps as:

- Specify (management) objectives explicitly
- Identify alternative management actions
- Predict response of system to each action, which might involve competing hypotheses
- Choose and implement optimal decision
- Monitor system response with respect to objectives and predictions.

ARM is considered an iterative process. If just one decision is going to be made, e.g. to develop or not develop a wind farm, then ARM is not the right approach. Elements of the decision making process still apply, but the feedback loop aspect will not be in place. ARM could apply for mitigation of wind farm effects through post-construction management decisions, or where what is learned from the development of one wind farm can be applied directly to decisions about developing other wind farms.

The premise of ARM is that uncertainty exists and reduction of uncertainty could improve management. Further, decisions must be made in the face of uncertainty and periodically. For ARM, monitoring must be in place or capable of being implemented. Sources of uncertainty include:

- Ecological (structural) uncertainty—e.g. how birds move through an area, how they affected by turbines
- Environmental variation—e.g. noise in nature
- Partial controllability—management decisions applied to a system indirectly, e.g. permit to develop
- Partial observability—the state of nature is rarely seen perfectly.

ARM is not a new concept—it dates back to the 1970's, with its decision theory underpinnings dating back to the 1940s. Decision modeling of this type is most useful when:

- Stakeholders have conflicting objectives
- Scientists have conflicting views about how the system works
- The system being managed is complex and decision outcomes cannot be reliably predicted.

Informed ARM can only happen if the whole decision process is transparent. This requires that objectives be clearly stated by the parties involved and that predicted outcomes (including associated uncertainty) be explicitly spelled out. Management objectives will ideally:

- Meaningfully reflect values of stakeholders
- Effectively connect values with the ecology of the population, species, etc.
- Be expressed so that decision outcomes can be monitored.

For wind energy, ARM might factor into decisions on permitting a facility, wind farm management and effects mitigation, and turbine design. Once an action is taken, ARM requires that monitoring be done to:

- Evaluate the outcome with respect to management objectives
- Assess the current state of the system and determine what further action to take
- Increase understanding of the system and effects of actions taken
- Assist in future modeling.

In his concluding remarks, Mr. Kendall pointed out that ARM is not a panacea but it does bring scientific rigor to the decision making process. Monitoring efforts have a clear purpose under ARM. Mr. Kendall offered the following based on participant questions:

- A focus of ERA is to estimate the probability of something "bad" happening. However, the definition and gradation of what is "bad" is derived from management objectives. It is up to the stakeholders involved to decide what the threshold probability will be to build or not build turbines.
- It is important to outline conditions under which a change must be made
- Minimizing impact on birds can be a management objective under ARM, e.g. reaching a power output target with the minimum number of bird kills possible. The management goal need not specify a particular number of acceptable fatalities.

Meeting participants noted:

- It is a good idea to do monitor projects and see how well predictions bear out; the idea of doing post-construction adaptive management should be pursued.
- Wind developers might consider entering into an agreement that if bird mortality rose above a certain level, then they would look into making changes. With management tools like shutdowns, times should be chosen when the effect on profit is smallest but also helps with wildlife impacts. Changing cut-in wind speeds might be another option.
- There are other options besides cutting operation time to offset fatalities, such as habitat-based changes that may be lower cost and have a smaller effect on the bottom line.
- ARM works well under some conditions, especially where good information is available and managers have the ability to make decisions where results are seen quickly. If the results of a management decision cannot be quickly perceived, ARM may not be appropriate.
- Adaptive management is often very difficult because populations can fluctuate wildly, especially with big biological systems.
- Many management options for wind facilities are known and can be included in NWCC's mitigation toolbox; perhaps this could include level of confidence activities' effectiveness.

<u>Sector Updates</u>

Sam Enfield, PPM Atlantic Renewable
PPM hopes to participate in the collaborative process to review and possible revise the FWS voluntary guidelines, if that process resumes. PPM also has two research activities underway with BWEC in southwest Pennsylvania:

- Using acoustic devices to determine use laterally and vertically pre-construction, with all months surveyed at least once (to characterize use) and this study will continue post construction, including documentation of mortality. The goal is to assess the viability of this tool as predictor of risk. This is a 3 year project.
- Finding a way to deter bats from using a wind farm area, since not documented tool exists. A device has been constructed to put out an acoustic signature to the blade length and beyond, stronger than anything heretofore. The device is designed to interfere with bat echolocation so that they leave the area. Testing is occurring at a University of Maryland lab and will be moved to the field if it looks promising.

Chris Taylor, Horizon Wind Energy
Horizon is moving towards permanent, unguyed met towers and away from guyed met towers. This represents a significant cost increase, but the goal is to reduce bird collisions with guy wires. Bird diverters are also being used on guyed towers. Horizon also did a baseline study on mule deer use and a new big game study which will be publicly available

Jim Lindsay, FPL Energy
Most of FPL's wind power development is happening in Texas and North Dakota. FPL is doing a new study on effects of breeding waterfowl, as well as a whooping crane risk assessment in North Dakota. FPL is also involved with APLIC, co-signing the APLIC avian protection plan guidelines. APLIC is printing revisions to its 1996 suggested practices for raptor protection.

Al Manville, U.S. Fish and Wildlife Service
USFWS participated in recent meetings in the recent AWEA/Audubon meeting on how to move forward in California, including identification of data gaps and discussion of the need for California guidelines on wind power with respect to wildlife. Meeting proceedings and presentations are available online at http://www.ceert.org/pubs/awea.html. FWS also took part in the January 2005 Colorado Wind Power and Wildlife Symposium sponsored by Colorado Division of Wildlife. Conference presentations are being uploaded at http://wildlife.state.co.us/WildlifeSpecies/WindPowerWildlifeSymposium.htm.

During the comment period on the FWS Voluntary Guidelines, 25 public comments were received. The suggestion was made that the guidelines be rewritten with public input and a collaborative was being formed to that end. However, litigation was threatened under the Federal Advisory Committee Act (FACA) and the initial collaborative meeting was postponed until the Department of Interior solicitors make a recommendation to FWS. It is not clear yet whether a FACA process will be necessary.

FWS is planning a Great Lakes Wind Power Meeting for June 27-29 in Toledo, OH. Speakers have been invited and the agenda is being finalized. More details are available at http://www.fws.gov/midwest/greatlakes/. A meeting on applying radar to bird conservation and management is being planned for October 24-26 in Albuquerque, NM.

Steve Ugoretz, Wisconsin Department of Natural Resources
The International Association of Fish and Wildlife Agencies (IAFWA) is holding a Wind Energy Development and Wildlife Management Symposium on March 21, 2006 in Columbus, OH in

conjunction with the Wildlife Management Institute's North American Wildlife and Natural Resources Conference. For details, go to http://www.wildlifemanagementinstitute.org/pages/TOC.html?214,111. The target audience for the workshop is state wildlife management agency managers and staff. The goal is to introduce basic concepts and spread understanding, including balanced presentations from wind industry and wildlife management perspectives and a facilitated discussion at the end.

Wisconsin DNR is doing monitoring of wind power sites in the state, including one near a bat hybernaculum to better characterize bat activity. Wisconsin's first PUC-regulated project, near Horicon Marsh, is calling for follow-up evaluation on bat interaction.

Deb Hahn, IAFWA
IAFWA is kicking off a new committee on energy policy and wildlife, a working group of state representatives and others. Each state will nominate who they would like to see on the committee.

Tim Cullinan, Washington State Audubon
Julia Leaven was Audubon's representative at the January AWEA/Audubon meeting in California. Audubon also participated in efforts to form a collaborative on the FWS guidelines. There are Audubon state offices in about 25 states and about 12 of those are looking at wind power issues, so Audubon has set up its own wind working group in recent months to improve coordination between state offices. Preliminary reviews are now being done of how wind is addressed in each state and they hope to come out with a paper in the next few months on where they stand and what their guiding principles are. Efforts are also being made to get a full-time person working on wind turbine and other tall structure collision issues for Audubon.

Jeff Deyette, Union of Concerned Scientists
UCS is participating in a collaborative stakeholder process to arrive at common perspectives on wind power siting and permitting in New England. Groups involved include the Natural Resource Council of Maine, The Nature Conservancy, Appalachian Mountain Club, and others. A document from this group is under development and will be linked to NWCC's electronic table of wind/wildlife activities when it becomes available.

Michael Fry, American Bird Conservancy
ABC is updating the wind energy policy document on its website, www.abcbirds.org. Mr. Fry has been appointed to a MMS FACA offshore science committee.

Laura Miner-Nordstrom, U.S Department of Energy
On April 4, DOE is sponsoring an offshore technical workshop in Toledo, OH. Go to http://www.eere.energy.gov/windandhydro/windpoweringamerica/filter_detail.asp?itemid=1127 for more information.

Melanie Cousineau, Canadian Wildlife Service – Environment Canada
CWS has developed draft wind energy guidelines, which can be requested from Ms. Cousineau at Melanie.cousineau@ec.gc.ca or through the CWS website, http://www.cws-

scf.ec.gc.ca/index_e.cfm. Some provinces are making their own guidelines for pre- and post-construction monitoring of birds and bats.

DAY 2:

Report from Bats and Wind Energy Cooperative (BWEC) on Collaborative Work and Plans

Ed Arnett from Bat Conservation International (BCI) and program coordinator for the BWEC began by giving a brief history of the development of the collaborative. Bat fatalities have been reported at all wind farms investigated in the US across a wide range of habitats. Estimated mortality in the West appears to be relatively low (<2 bats/turbine/year), but much higher mortality numbers have been recorded in the East. It is estimated that between 1,400 and 4,000 bats were killed in 2003 at the Mountaineer Wind Energy Facility in West Virginia. This event and others spurred the creation of BWEC by the American Wind Energy Association, Bat Conservation International, NREL and the US Fish and Wildlife Service. BWEC Research has been funded by donors to BCI, the National Fish and Wildlife Foundation, Massachusetts Technology Collaborative, New York State, TRF Sustainable Fund, and numerous member companies of AWEA.

A research plan was designed and carried out in 2004 and the research goals were to:

- Evaluate carcass search protocols
- Assess how bats interact with turbines
- Employ and assess different methods and tools for understanding bat-turbine interactions and fatalities

The 2004 research was conducted at the Meyersdale and Mountaineer wind facilities. The findings from this research were published in a final report and posted on the BCI website (www.batcon.org) in June 2005. Future research needs recommended include studies to determine if "feathering" during low wind periods reduces bat fatalities and testing of bat deterrents.

In 2005, the BWEC initiated research to determine if indices of pre-construction bat activity can predict post-construction fatalities at turbine locations on proposed wind facilities.

Next steps for the collaborative related to the pre- and post-construction study are to:

- Complete data analysis and final report for 2005 by late March 2006.
- Begin a second year of pre-construction fieldwork in mid-April that will go through October 2006.
- First year of post-construction data collection will occur spring – fall 2007.
- Determine how indices of activity are influenced by weather, topography, etc.

BWEC began another study to try to understand whether bats have ultrasonic attractions to turbines. They measured ambient sounds and turbine sound at the base of turbines at sites in Golden, CO and a number of sites in Wyoming, Nebraska, and on the East Coast. Although the sample was small there was no indication that the turbines measured had any substantial ultrasound that might attract bats, but there is still a need to understand what sound is happening up at the nacelle height.

Next steps related to the ultrasonic attraction/deterrents study are to:

- Conduct lab experiments on bat response to acoustic sounds
- Design a field experiment and conduct field tests at bat congregation sites in May – July 2006
- Conduct field tests at wind turbines in August 2006.

Ed Arnett concluded the presentation by describing areas where more research is critically needed. They include:

- Data from a full season of bat movement and activity to understand how different facilities and landscapes may have an influence on kills and to help understand what really is a safe site.

- Data from California, Texas, the Southwest generally to understand the cause of the kills of Mexican freetail bats

- Opportunities to experimentally feather turbine blades to quantify reductions in bat fatalities relative to the economic costs of curtailment.

- Understanding the context of fatalities relative to the number of animals present in the airspace at the time of fatality – fatality could be proportional in the East relative to the Western US.

- Broad-scale post-construction monitoring to evaluate differences relative to landscape context
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- Further examining relationships between weather variables and patterns of fatality

Grassland/Shrub Steppe Species Subgroup: Activities Update

The GS3 Subgroup has contracted with the Ornithological Council to prepare a critical literature review on avian grassland/shrub steppe species and wind projects. A database developed to assist with the literature review is being reviewed by members of the GS3 Subgroup. The Ornithological Council research team will refine this tool based on feedback received.

Katie Kalinowski and Karin Sinclair, NREL, reported on research activities of the GS3 Subgroup. The Subgroup selected a proposal from Kansas State University (KSU) to study the relationship between wind development and the impacts it might have on prairie chickens. The research plans to look at questions of the physicality of turbines in relation to the breeding of prairie chickens. There will be three study sites, with work at one site beginning in March, and 3 reference sites with 3-5 leks per site. The aim is to catch or mark up to 50 chicks per lek using triangulation or monitoring movement. All 3 sites are on track for development; pre-construction research will be done to identify the prairie chickens on site and post construction research will look at collision impacts or mortality.

Funding for this project has been received from the wind industry; FPL Energy, Horizon Wind Energy, and PPM Energy; NREL; Kansas Department of Wildlife and Parks; and The Nature

Conservancy, Kansas and TNC, Oklahoma. In kind support has also come from Kansas Department of Wildlife and Parks, NREL, and the U.S. Fish and Wildlife Service. The amount of money raised so far is enough for KSU to carry out the research plan presented in the RFP. Additional funding of 75,000 from the National Wildlife Federation is still pending.
The money is being housed within KSU and Karin Sinclair, NREL, is serving as technical monitor to help guide the research process. Currently, Karin is working with the KSU research team to develop a research plan for the GS3 Oversight Committee to review. Oversight Committee membership includes representatives from the various interested sectors, however NWCC is still waiting for a U.S. FWS representative to step forward. Al Manville said he would follow up on the appropriate representative. Once details of the research plan are finalized, it will be brought to the Oversight Committee. Research is expected to begin in the next month.

Katie Kalinowski also reported that a songbird protocol has been prepared and requires approval from the Core Group before it can become an NWCC resource document. NWCC staff will make the protocol available to the Core Group for a comment period.

During the open discussion Core Group members mentioned the following activities and interests:

- FPL partnered with the USGS to fund songbird research beginning in 2002. The interim report from that research can be posted on the NWCC website once permission is obtained from Jill Shaffer, USGS.
- There is an interest in knowing research that has taken place on shrub steppe species and whether the research on prairie chickens can lend any information for shrub steppe species.
    - Frank Hall has been looking at the greater sage grouse for California, and Clait Braun and Dale Strickland have been doing similar research. It was suggested that there is not enough known about the activities of sage grouse and how they respond to turbines. The NWCC could take up research on shrub steppe species, but not until after the prairie chicken research has been completed and additional funding is found.
    - BLM is currently working on an EIS at Cotterel Mountain that has already collected 2-3 years of good lek data, so BLM may be a good partner for exploring research opportunities. Also, Rebecca Efroymson has been doing research in Northeastern Utah to determine locations for oil and gas exploration that will have a minimal impact on sage grouse.

Groundrules for the GS3 Subgroup have been drafted and theGS3 Oversight Committee is still working out its final membership and procedures for dealing with the press. Laura Miner-Nordstrom was nominated to represent NREL on the committee and any other agency that wishes to have representation may suggest someone. The Oversight Committee intends to ask Dr. Robel to be the committee spokesperson for any inquiries from the press.

Next steps proposed consist of:

- Karin Sinclair and KSU finalize research plan and present to GS3 Oversight Committee for approval
- NWCC will open the songbird protocol to the Core Group for a comment period

- Once permission is obtained from Jill Shaffer, USGS, FPL/USGS songbird research will be posted on the NWCC Event Table
- NWCC add U.S. FWS and NREL (Laura Miner-Nordstrom) membership to GS3 Oversight Committee

Nocturnal Subgroup: Activities Update

The Nocturnal Methods and Metrics Subgroup chose Dr. Tom Kunz, Boston University, and his team to develop a companion document to the NWCC publication *Studying Wind Energy/Bird Interactions: a Guidance Document* covering nocturnal activity of birds and bats. Dr. Kunz was available via conference call to discuss the Statement of Work (SOW) and answer member questions and also stated that he would add three methods to the SOW: harp trapping, stable isotopes and DNA, and voucher specimens.

In response to member questions, Dr. Kunz stated that:

- He will work with the research team to include diurnal assessment in the current SOW.

Next steps for the Nocturnal Subgroup will be to:

- Put forward a recommended review process for the companion document that the Core Group can evaluate.
- NWCC staff will work with Core Group members to determine the timeline and costs for publishing the document in a journal and then report back to the group.

Mitigation Toolbox

Kevin Rackstraw from Clipper Wind updated the group on revitalization of efforts to provide a comprehensive reference on the types of mitigation that can be used by the wind industry to compensate for adverse impacts to wildlife. The reference is intended to be a living document, updated as new information becomes available. Kevin presented a workplan drafted by Lynn Sharp, Tetra Tech, and with input from other Mitigation Toolbox Subgroup members, for the Core Group to review and comment on. Kevin also communicated to the group the Mitigation Toolbox Subgroup's desire to keep the scope of this project manageable and non-controversial in order to be successful.

Additional views participants mentioned were:

- Structure of avoidance, minimization and compensation was recommended.
- Include a preamble to the toolbox to discuss how some sites are better than others for mitigating impact. Give a context for where tools will fit into the standard mitigation process.
- Describe what restoration techniques have worked or have not worked in the past.
- For efficacy, look at toolbox closely by species, specific mitigation for one species would have nothing to do with fatalities for another species.
- Avoidance

Next steps for the Mitigation Toolbox Subgroup are to:

- Review what research has been done in the past on Toolbox.
- Obtain funding for a summer intern to collect information for the subgroup.

- Prepare a draft workplan for panel to review at the November 14-16, 2006 Wildlife Research Meeting VI.
- Rob Manes will join the Subgroup.

Anyone else who wishes to participate on the Mitigation Toolbox Subgroup should contact Madeleine West at 202-667-5339 or mwest@resolv.org.

Review draft revised NWCC Wildlife Workgroup Core Group Goundrules

The Core Group reviewed and approved the most recent draft of the Core Group Groundrules. The following edits were made:

- Make clear that the Technical Advisory Committee (TAC) is a voluntary group to which anyone is allowed to volunteer by changing the title to "List of Available Technical Advisors."
- As opposed to approaching a Public Utility Commission (PUC) for Core Group membership, expand search to state Siting Board staff.
- Clarify under confidentiality section that each member of the Core Group speaks to the press and others as a member of their own organization, not for the Core Group. Also, the Core Group Chair is not the official spokesperson for the group with relation to the press.
- NWCC will work with Steve Ugoretz to address whether "Chair" is the correct title for the position.
- The group will consider adding representatives from Minerals Management Service and U.S. Army Corps of Engineers as members to cover offshore issues.

See http://www.nationalwind.org/workgroups/wildlife/ for Adopted Core Group Groundrules.

Report on Research Planned for 2006

Al Manville, U.S. Fish and Wildlife Service

Michigan State Police Tower Lighting Study

The FWS (Manville) has been serving as the co-principal investigator for the past 2+-years on a communication tower lighting study in Michigan, assessing the impacts of lighting change-out (*i.e.,* all red strobe, all white strobe, all red incandescent, and mixed lighting) on State Police guyed and un-guyed towers in the Upper and Lower Peninsulas. In addition, 3 tall non-MSP towers have also been assessed for avian collision mortality. If the results of the study regarding lighting prove to be statistically valid, the Service will push for publication of the findings in a refereed scientific journal, while recommending modifications in tall structural lighting to both the FCC (for lit communication towers) and to the FAA (for all structures requiring pilot warning lighting, including wind turbines). The Service is pushing for 2 more seasons of tower research with the anticipation that the results of this study will have international ramifications in helping to significantly reduce avian mortality during inclement nighttime migrations.

FAA Pilot Warning Lighting Memo

On a related front, for nearly the past 2 years, the FAA has been circulating an internal policy memo encouraging all its regions to use minimum intensity, maximum "off" duration, white strobe lights where the FAA has that lighting option (*e.g.,* not precluded by local zoning

ordinances) on tall structures requiring pilot warning lighting. This internal policy recommendation coincides with the Service's September 2000 voluntary communication tower lighting guideline suggesting use of minimum intensity, maximum "off" phase, white strobe lights at night. The Service applauds FAA for issuing this important internal policy memorandum.

Recent Past Wind Meetings

Verbatim proceedings of the offshore wind-radar experts meetings with Cape Wind LLC and the Service held in Hadley, MA, on September 7, 2005, may be obtained from Alex Hoar (FWS Region 5 RO, Hadley).

The FWS (Al Manville) had the opportunity to chair a special offshore wind symposium on November 9, 2005, at the 2nd North American Sea Duck Conference in Annapolis, MD. Speakers invited to discuss their research and findings included Dr. Tony Fox (Denmark), Dr. Leif Nilsson (Sweden), Dr. Robert Day (Alaska), Mr. Doug Forsell (U.S. East Coast offshore surveys; USFWS), and Mr. Alex Hoar (offshore wind review; USFWS). A copy of the symposium introduction, contact information, complete presentations, and meeting summary will soon be posted on the US Geological Survey (USGS) website. FWS will provide NWCC the address once it is posted.

The Service had an opportunity to participate in a January 10-11, 2006, workshop in Los Angeles sponsored by California Audubon and PPM. Additional details about this meeting are available in Al Manville's Core Group PowerPoint presentation, available at http://www.nationalwind.org/events/wildlife/2006-1/default.htm.

A symposium and workshop sponsored by the Colorado Division of Wildlife were held January 23-25, 2006, in Fort Collins. Additional details regarding these very successful meetings are also available in Manville's Core Group presentation.

A special all-day symposium on "wind energy development and wildlife," sponsored by the International Association of Fish and Wildlife Agencies, was held March 21, 2006, in conjunction with the 71st North American Wildlife and Natural Resources Conference, Columbus, OH. The major purpose of this workshop was to coordinate with States developing wind energy, especially the State Directors of fish and wildlife agencies. A copy of the FWS's (Al Manville) PowerPoint is available on the NWCC website at http://www.nationalwind.org/events/wildlife/2006-1/default.htm.

Next Steps with Service's Guidance

In addition to the summary provided in Al Manville's PowerPoint, Service staff and management have been meeting with Interior Department's Solicitors and General Law specialists, DOI's dispute resolution specialist, and the Service's Directorate to decide how best to proceed regarding updating the Service's guidance, discussing scientifically valid monitoring and assessment protocols, and issues related to reducing impacts from wind power development on wildlife and their habitats. FWS will update the NWCC on those developments once a decision is finalized.

Upcoming Wind-Wildlife Meetings

At this writing, the agenda for the June 27-29 Toledo, OH, meeting, "Toward Wildlife Friendly Wind Power: A Focus on the Great Lakes Basin," is being finalized. The meeting will address both land-based and offshore Great Lakes wind development. The workshop is being sponsored by the US EPA Great Lakes National Program Office, USFWS, the Great Lakes Basin Ecosystem Team, the U.S. Geological Survey, and the Illinois Natural History Survey. Once finalized, NWCC will be notified of the specifics.

The New York State Energy Research and Development Authority is sponsoring a wind workshop on August 2-3 in Albany. The meeting will focus on State wind development. FWS has been invited to participate. Pennsylvania is planning a December 1-2 workshop to address wind development issues affecting birds and bats on ridge tops. FWS has also been invited to participate.

A meeting on October 24-26 at the Nativo Lodge, in Albuquerque, NM, entitled "Applying Radar to Migratory Bird Conservation and Management: a Workshop," is currently in the planning stage. The meeting is being organized by USGS-BRD and USFWS. The focus of the meeting will be on use and applications of NEXRAD, modified marine radars, and related technologies such as thermal imagery and acoustic monitoring. While open by invitation-only due to budget and space limitations (~75), the planning committee intends to invite representatives from each stakeholder sector. As the agenda is finalized, NWCC will be notified. In particular, principal investigators will be presenting research results (where applicable), scope and methodologies used for the nationwide studies, research applicability to tall structures (including turbines), and related applications such as the determination of bird migration stopover habitats, development of algorithms, ground-truthing, and related applications of use to various industries. Speakers likely will include 1) Drs. Janet Ruth and Robb Diehl documenting landbird migration patterns and important stopover sites in the Southwest; 2) Drs. Wylie Barrow and Diehl developing customized software and procedures for converting high resolution radar data for GIS application, and developing a "proof of concept" for estimating migrant densities; 3) Drs. Richard Sojda and Diehl building intelligent algorithms to identify radar echoes caused by "flying vertebrates"; 4) Ms. Deanna Dawson and Dr. Tim Jones using radars to assess nocturnal flying vertebrate migrations along and through Appalachian ridges; 5) Ms. Dawson, and Drs. Sarah Mabey, Bryan Watts, and Mr. Barry Truitt identifying fall stopover sites of migrating passerines in the Lower Chesapeake Bay; 6) Drs. Paul Cryan and Diehl studying migrating bats; and 7) Drs. Susan Skagen and Diehl using NEXRAD to assess shorebird use of prairie potholes.

Wildlife Research Meeting VI

Core Group members expressed an interest in learning about current offshore wind activities at the November 14-15, 2006 Research meeting. Recommendations were to:

- Organize a panel that can provide an overview of current offshore activities and the jurisdictions that these activities fall under. The panel could also react to plans for an NWCC offshore workshop in 2007.
- Work with Texas Public Citizen to coordinate the November meeting with their fall offshore conference.

- Organize a poster session around the November meeting as an informal way for attendees to gain information on current offshore activities.

There was a suggestion from members to use the November meeting as an opportunity to emphasize the existing research gaps related to how wind turbines impact avian species. In order to prioritize research gaps in preparation for the November meeting group members decided that:

- NWCC staff will work with Core Group members and technical advisors to prepare a list of research gaps.
- The Core Group will prioritize these gaps at a spring 2006 meeting, location TBD in preparation for the November meeting.

If you would like to volunteer to help prioritize research gaps and/or plan the next 2006 Core Group meeting please contact Madeleine West, 202-965-6216 or mwest@resolv.org.

Next Steps

Action items agreed to by meeting attendees include:

- The Grassland/Shrub Steppe Species Subgroup Oversight Committee will review a research plan from KSU on the prairie chicken project and U.S. FWS and NREL membership will be added to the Committee.
- NWCC staff will make the Songbird Protocol available to the Core Group for comment and approval as a resource document. NWCC staff will also post the USGS songbird research on the NWCC Electronic Event Table.
- The Nocturnal Subgroup will propose a review process for the Methods and Metrics companion document for the Core Group to approve, and NWCC staff will present to the group a timeline and costs for publishing the document in a journal.
- The Mitigation Toolbox Subgroup will prepare a draft workplan for an expert panel to review at the Wildlife Research Meeting VI, November 14-16, 2006.
- NWCC staff will revise the Core Group Groundrules based on changes made at the meeting and post them on the NWCC website.
- In preparation for the Wildlife Research Meeting VI, to be held in Austin, TX November 14 – 16, NWCC staff will work with Texas Public Citizen to coordinate with their fall offshore wind conference.
- A Spring 2006 Core Group meeting will be scheduled for the purpose of prioritizing research gaps in preparation for the Wildlife Research Meeting VI. NWCC staff will work with Core Group members and technical advisors to prepare a list of research gaps.