

## **2009 Midwest Bat Working Group Meeting Summary**

The newly formed Midwest Bat Working Group met for the first time on 7 and 8 May 2009 at the Indiana State University Bat Center in Terre Haute, Indiana. The meeting included State Report Sessions, speakers from other Bat Working Groups, white nose syndrome sessions, wind energy sessions, other topics of interest, and discussion on the structure of the Midwest Bat Working Group. Introductions on the first day were conducted by John Whitaker (Indiana State University) and Rob Mies (The Organization for Bat Conservation). The second day's proceedings were introduced by ISU President, Dan Bradley, who gave a short welcoming speech to the group.

Speakers during the state report sessions included representatives from universities and federal and state natural resource agencies. Presenters discussed various conservation programs and strategies in their respective jurisdictions, current status, distribution and abundance of different bat species populations, and winter hibernacula census counts. Discussions also included wind energy's impacts to bats and their habitat and the need for regulations and protocols. Studies are also needed to address stress to bat species and their habitats resulting from climate change. Concerns related to the spread of white nose syndrome were shared by all of the speakers. Discussions were held regarding mine and cave closures in some states and the need for more cave and mine regulation enforcement in others. The downturned economy and its impacts on funding resources for assorted purposes were also discussed. Presenters during these sessions included: Arkansas – Tom Risch, Illinois – Joe Kath, Indiana – John Whitaker, Iowa – Amy Halsall for Russell Benedict, Kentucky – Brooke Slack, Michigan – Al Kurta, Minnesota – Gerda Nordquist, Missouri – Sybill Amelon, Ohio – Angie Boyer, and Wisconsin – Dave Redell. Kansas and Nebraska did not have representatives present.

Bat working groups represented included the Southeastern Bat Diversity Network (SBDN), Northeast Bat Working Group (NEBWG), and Western Bat Working Group (WBWG). Presenters from each (Tim Carter, Al Hicks and Eric Britzke, and Michael Baker, respectively) discussed the origins of their associations, organizational structure, membership, events and meetings. The SBDN operates under a more formalized structure with dues, board members, officers, and committees. They offer a place to hold money and can disperse money for work for agencies (hosted NASBR, research projects, bat blitz, etc). Over \$350,000 has been circulated through the organization in the last 4 to 5 years. Members are also interested in influencing public policy. In NEBWG, there are no bylaws, no board members, and no mission statement. An individual comes up with a project/problem, finds resources, and everybody collaborates for region wide issues. There is no discussion of chairpersons, committees, or voting. The group defines themselves as more agency driven and SBDN as more academic driven. The WBWG holds elections, meets several times a year, and has a large membership (over 400). They do not charge membership dues but do charge for meetings. Their organization is more like SBDN than NEBWG. All of the groups agreed the objectives of each organization are collaboration and information exchange and all are focused on functioning as credible professional societies.

WNS issues were presented by several attendees. David Blehert (USGS National Wildlife Health Center) described the initial observation and confirmation of the fungus and its progression through the 2006-2009 hibernating seasons. He also addressed various tests and studies conducted by the Center. Joe Caudell (USFWS Wildlife Disease Biologist) spoke about a WNS contingency plan for USFWS Region 3 that is being developed in cooperation with USDA Animal and Plant Health Inspection Service (APHIS). The purpose of the plan is to provide a model that can be used by states to respond to WNS and their objective is to have the plan completed by December 2009. Lori Pruitt (USFWS Bloomington, Indiana) explained WNS surveillance and research including data collection, monitoring and genetic studies. She also briefly iterated on equipment restrictions, disinfection protocols, caving moratoriums and cave closures.

The keynote speaker at this meeting was Alan Hicks (New York State Department of Environmental Conservation). Al has been front and center in WNS research. He began by describing WNS in Aeolus Cave where 10,000 to 20,000 bats were observed lying dead on the cave floor. CBS, National Geographic, and Betsy Colbert from the New Yorker came to Aeolus and saw the devastation first hand. This sent the message home. He continued to describe other caves and more cases of WNS through 2009. He indicated European researchers see WNS but not often and that this is good evidence that WNS came over from Europe. WNS does not affect all species equally and varies in severity between sites for Indiana bats. This may be due to environmental conditions. Some people do not think that it's an infectious disease, but it is Al's opinion that it must be. The problem is not within watersheds, not within ecological communities, not within geological regions, not due to human disturbance, not global warming (cave temperatures are still the same). The only common factor is distance from epicenter. Al emphasized the need to take samples and specimens. We may have a lot of bats in areas now but these may be the last we ever see. Zoos are suggesting putting bats in captivity to make sure they don't go extinct. They are discussing this for the Virginia big eared bat.

Sessions were held to discuss bats and wind energy. The first speaker was Susan Schumacher (We Energies, Wisconsin) who provided the utility industry's perspective on wind farm development. She mentioned that 28 states currently have renewable electricity standards and a federal mandate is likely in the offing. She indicated a problem associated with wind development is that anybody who wants to build a wind farm can, resulting in random people with minimal financing looking for maximum output. She offered suggestions to bat researchers of how to communicate their concerns and data collected in order to influence wind companies to conduct more bat studies. She briefly discussed acoustic deterrents, curtailment, and helical turbines as potential means to reduce bat fatalities. She suggested biologists highlight the benefits provided by bats by talking with wind power developers. She indicated that the wind industry is not aware of WNS, the potential issues that may arise as it progresses west, and the larger impacts to bat populations incurring fatalities from both WNS and the wind industry.

Jenny Davenport (DeTect, Inc.) is a representative of a radar technology company and described several detection systems offered by the company. MERLIN Radar Systems uses both horizontal and vertical planes and provides continuous, clear tracking. MERLIN SCADA is a

mitigation system used to curtail turbines when it senses high strike risk conditions. She suggested researchers use pre-construction surveys to define high strike risk conditions.

Jeff Gruver (Western EcoSystems Technology, Inc.) presented issues related to pre- and post-construction bat studies. He indicated curtailment might be an effective way to reduce fatalities but that it comes at a cost to developers. He also discussed AnaBat monitoring and carcass removal trials. He expressed the need for researchers to be able to assess what is a significant amount of bat activity for pre-construction work in an effort to link pre-construction activity to post-construction fatality. He indicated bat activity potentially changes after wind turbines are constructed and that multi-year monitoring and hypothesis-based research is needed.

Dave Redell (Wisconsin DNR) spoke for Ed Arnett (Bats and Wind Energy Cooperative [BWEC]) on the subject of curtailment experiments. He discussed scenarios where the turbine was deliberately shut down, where the turbine was out of service, and where changing of speed was imposed. Results from the studies showed greater bat fatalities per turbine at fully operational turbines than curtailed turbines. He briefly described costs of curtailment and encouraged researchers to use the time turbines are down for maintenance as a test.

Eric Britzke (U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi) addressed studies that benefit from regional group involvement. He discussed using molecular genetics to determine if populations are stable, increasing, or decreasing; stable isotope analysis using hair samples; and acoustic transect surveys to detect population changes. He emphasized the need for regional research for wind energy projects and placing data collected in a regional database. Southeastern Bat Diversity Network has a database; however, only a few people have submitted data in 3 years.

Other topics of interest were presented beginning with John Whitaker (Indiana State University). He provided a brief background of the ISU Bat Center, whose goals include research, conservation, and outreach. Approved in 2005, the ISU Bat Center has held two bat festivals with a third scheduled for the fall of 2009. The center also published *Bats of Indiana* corresponding with the first festival, *Bats of Michigan* for the second festival, and this year will publish *Bats of Missouri*. The center has also been contacting rabies labs in the east to examine their data and determine whether increased numbers of *Myotis* are being submitted to the labs in later winter, as in New York. In 1966, ISU started getting rabies lab bats and collecting information on parasites, food habits, and distribution. The ISU Bat Center is also doing work on wintering bats at Copperhead Cave, a mine north of Terre Haute, Indiana. John encouraged researchers to collaborate on projects involving bat activity in winter.

Kathy Dannelly (Indiana State University) spoke about chitinase producing bacteria and explained that chitin in the digestive tract can serve as a carbon, energy, and nitrogen source for bats through winter. She described several studies investigating the lack of chitinase producing bacteria in WNS bats and whether this caused them to starve because they were not able to utilize an energy source that they normally do. A collection of bats killed by WNS in 2009 will be used to continue testing. The big question is: Does chitin provide

energy? Additional data are needed to determine how much energy can be extracted from chitin as chitinase producing bacteria break it down. Future study involves feeding radio labeled chitin to bats and determining uptake by measuring the carbon dioxide produced. John Whitaker requested researches send him bat pellets deposited in winter to determine if they are feed and if so what on. Researchers want to analyze bacteria that insects are carrying and the intestinal flora of bats that survived WNS. All fungi (like white nose fungus) are chitinase producers so it is uncertain whether this fungus is impacting the internal bacterial flora.

Justin Boyles (Indiana State University) will be implementing a study using warm spots as a temporary WNS cure. He discussed the pros and cons of chemical control, surveillance, contingency planning, cave closures, and control of human caused transmission as means of controlling the fungus or increasing survival of bats. He concluded that no solution is perfect but trying something is necessary. Using several models, he determined that WNS is changing arousal and torpor patterns of bats. He suggested providing warm spots for bats to go when they are euthermic to save energy. The process does not involve warming up the entire hibernacula, rather just providing warm spots for euthermic bats. The implications of putting the warming box in a WNS site is that scientists don't know if increasing survival is desirable if it increases the rate of spread. The boxes could also be an infection point (infected bat goes in and unaffected bat follows then gets infected).

Dave Redell (Wisconsin DNR) addressed the need for cataloguing and prioritizing hibernacula in the Midwest. Subjects he covered included monitoring Priority 1 hibernacula with beam break detectors to get population numbers with an error rate, preparing a tracking database, establishing Midwest coordination to determine all hibernacula locations, and looking at previously closed sites, reopening them and gating. He also described directional beam break technology to monitor unsafe or distant sites. This technology allows researchers to evaluate spring emergence, net movement of bats in vs. bats out to know how many bats actually left through infrared beam break detectors. In addition, a census can be conducted without disturbing bats. Dave has improved a number of system short comings and estimate the cost for a system at \$2,000.

Sybill Amelon (USDA Forest Service) discussed molecular genetics in relation to Indiana and red bats. She explained genetic diversity and its impacts on survival and adaptation of the species. She stressed the importance of not killing bats that may potentially survive, to reduce population size in order to stop the spread of WNS. She also requested wing punch and hair samples from summer research projects. A new procedure: "Barcode of Life Database" is being considered which could include fingerprints of mtDNA for all living creatures. An objective of the procedure is to compare contents of fecal samples of bats with the barcode for insects. Thus creating an automated system matching the genome of what was found in fecal samples to insects in the database. These data provide the relative composition of diet for different insect prey species.

The last item on the meeting agenda was a discussion of the Midwest Bat Working Group structure. Steering committee members compared the structures of the bat groups who had

presented earlier in the meeting, weighing the pros and cons of the organizational structuring of each. They agreed to create a mission statement and begin assembling membership based on states contained within USFWS Region 3 jurisdiction. The ISU Bat Center is the entity under which the group will initially operate. Annual meetings and the potential of tagging them to related meetings (eg. Midwest Association of Fish and Wildlife Agencies) was discussed along with the potential for web-based meetings to discuss any concerns arising between annual meetings. A listserv is to be set up via ISU and a website is to be created.