

Bat-Friendly Forestry Workshop
Discussion of Research Gaps and Needs
Aitkin County Land Department

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Applied Ecological Services, Inc.

In partnership with Dovetail Partners, Inc. and Aitkin County Land Department

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On October 30, 2014, in the Butler Building of downtown Aitkin, Minnesota, over one hundred people attended a workshop to learn about the Northern long-eared bat (NLEB, *Myotis septentrionalis*) and its interactions with forest management. Over several presentations, attendees learned about the life history and behavior of NLEB, efforts to understand its distribution and habitat in Minnesota, management practices for conserving and perpetuating the species, and policy issues related to the species' conservation and management. This information is at http://www.dovetailinc.org/programs/land_use/bat_friendly_forest_management.

Dovetail Partners and the Aitkin County Land Commission asked Applied Ecological Services to review what was known about NLEB, organize the information, evaluate the information and identify knowledge gaps, and suggest research activities to fill those gaps. That review document is presented separately.

At the workshop AES focused on several important research questions related to information gaps, engaging the audience in a conversation about research priorities. The notes below present comments and responses from workshop participants. At the end of the conversation, the audience voted on which research question they would like to see addressed first, second, and so on.

Research Question 1. What is the specific distribution of NLEB in northern Minnesota – can it be predicted with a model?

Attendee comment:

- What are the limiting factors to density and range of species? Is availability of hibernacula really the limiting factor? Is roosting habitat indeed a limiting factor?
- Maybe NLEB has a very broad distribution, but are there areas with high concentration of use? Can a model estimate where high levels of use are? We should test and validate a predictive model, then minimize impacts by focusing summer clearing in low use areas.

- Does the work being done by Enbridge and Aitkin County Lands Commission (by Tim Sechmiller) gather data to meet these needs? Intense acoustic sampling will answer the questions posed here.
- If NLEB is using mines a lot, what did they use before mines? Can mines be sealed to prevent the spread of white nose syndrome?

Research Question 2. Which summer locations are associated with which hibernacula?

Attendee comment:

- In Wisconsin, when a hibernaculum is identified on state or other public land, the government protects the area around it, especially during the spring and fall swarming periods.
- Available funds should be used to find unknown hibernacula.
- Isn't it more important to understand how white nose syndrome is spreading?

Research Question 3. What forest cover types does NLEB use for roosting and foraging?

Attendee comment:

- Acoustic surveys don't answer this question. We need to find and observe more roost sites. There's not enough of this type of data across different forest types.
- Most important is to know where there is reproductive success. There may be roost trees at one location but low survival. At another site, high survival. What is the difference between these sites?
- It is hard to survey snags for roosting activity—climbing decaying trees is dangerous.

Response:

- Survey instead for number of juveniles versus post-lactating females caught in mist nets.
- Young survival is a critical question.

Attendee comment:

- Perhaps just as important is proximity to water, wetlands, sun, etc. and not just the forest type.

Response:

- All factors should be assessed together, not just the adjacent habitat that complements the site?

Attendee comment:

- Assumption about foraging habitat is that it is limiting. Maybe it is. There is a Wisconsin study on the classes of insects [used by NLEB?]. We don't know what NLEB are eating. Does a denser understory really provide more of the right kinds of insects?
- White nose syndrome: it is important to have idea of actual population numbers of NLEB. Establish a baseline over time. Can get a good idea of overwintering numbers in large caves, as

is done in the northeast. But using only mist-netting—it is hard to tell if the species is declining and how many bats there are in total in any one year.

Research Question 4: What is the seasonal cycle of NLEB in northern Minnesota?

Attendee comment:

- Need a multi-year study to establish baseline. A key piece of information would be, for any given summer, to learn when 90% of young are mobile in late summer. Research is needed to narrow the dates. There is a two-stage season – early and late.

Research Question 5: What is a reasonable “special management area” around known or predicted roosts and hibernacula?

Attendee comment:

- Maybe there’s no real need for special management areas because so many bats are present in Minnesota and Wisconsin.
- With wildlife dispersal models, a lot of animals stay near roosts or hibernacula, with a long tail on the few that remain behind. We have a tendency to assume it is the same for bats. With Indiana bat (assuming similarities with NLEB), there is a lot of emphasis on management areas around hibernacula. We need to learn more about dispersal patterns and not assume a circular radius around roosts and hibernacula. Look instead at the habitat characteristics in the surrounding area.

Expert comment:

- The special management area can be customized by small-scale landscape differences. Define the specific habitats that produce the right type and amount of prey.

Research Question 6: What management practices create suitable roosting and foraging habitat?

Attendee comment:

- Put the money into getting baseline info on species rather than developing specific management practices.
- Can we assume current management practices are good for bats because the population is good? In other words, don’t spend the money on this.
- Emphasis should be on the cover types being used, *then* focus on how to manage them.

Response:

- Don’t rule out whether they are foraging over open water, rivers, large wetlands, etc. We’re not able to sample over a bog, for example, and therefore may be under-sampling some of these habitats.

Attendee comment:

- Even in well-studied species (e.g. eagles), there are unknowns on how to manage them. With bats, we don't have decades of data. We have to make management decisions without the data. Maybe it's not about the biology of NLEB, but how they respond to management activities in the short term.

Research Question 7: Implications of White-nosed Syndrome?

Attendee comment:

- White-nosed syndrome is the real threat. How do we manage the land in response – what are the seasonal cycles so we can manage correctly? Can we fix white-nosed syndrome, and expect the other challenges will be eased?
- White-nosed syndrome changes behavior; e.g. waking in winter and flying out, trying to forage during the day. This depletes fat reserves and they die. If NLEB becomes listed, the ESA forces us to address all impacts no matter how small (e.g. logging).

Chapman presented a scenario for the audience to consider. “You are given \$1.25 million to develop the dream NLEB project. Which of the seven research questions would spend your money on?” Each person was allowed to vote on two items.

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