



Nightwing News



The Newsletter of the Southeastern Bat Diversity Network

Volume 104, Number 1

Spring 2014

PRESIDENT'S ADDRESS

This promises to be a busy summer for bat biologists in the Southeast...I have never seen more ads for qualified Indiana bat biologists in one winter!

Be sure to check out the SBDN website to download the *Conservation Strategy for Rafinesque's Big-eared Bats and Southeastern Myotis*. This document, produced by Mike Lacki and Mylea Bayless, is the result of years of collaborative work between SBDN members and BCI. You'll find it under the Resources tab on the left side of our home page: www.sbdn.org.

At the end of the summer, SBDN will sponsor its first ever multi-state blitz. This idea has been kicked around for years, and Trina Morris (Blitz Committee Chair) is making it happen. During the period from 4-10 September 2014, participants are asked to plan a 2-3 night netting effort in their geographic area of interest. Contact Trina (katrina.morris@dnr.state.ga.us) if you are interested. We still hope to line up hosts for future blitzes – the Blitz FAQs on our website will give you an idea of what is involved in hosting. This summer, the Cherokee National Forest will host a 2-night Bat Blitz near Ducktown, TN (see article in this newsletter); if you need a blitz 'fix' in late July, contact Mary Miller for more details (mcmiller@fs.fed.us).

The long cold winter was hard enough to bear, but the news about white-nose syndrome only made it seem bleaker. The disease was confirmed in Arkansas, Michigan, and Wisconsin, plus in additional counties in Alabama, Georgia, Kentucky, Missouri, Tennessee, and South Carolina. I am still hearing reports about major declines in cave bat populations, but there are also tales of surviving bats in WNS-affected caves. As many of us will be working in WNS-affected areas this summer, I urge all to pay close attention to the decontamination protocols developed by the USFWS. It is also crucial to educate people in these areas about the significance of bats so they will be supportive of conservation efforts to protect bats and their habitats. You can find educational resources about WNS here: <http://www.whitenosesyndrome.org/resources/education>

Over 100 people made it to Nacogdoches, TX (and learned how to spell it correctly as they plugged the name into their GPS units) for the 19th Annual SBDN Meeting and 24th Colloquium on the Conservation of Mammals in the Southeastern U.S. The wintry weather tested the abilities of many travelers but, with technology on our side, snowbound presenters were still able to deliver their talks remotely. Important updates from the USFWS included a synopsis of the survey guidance for Indiana bats, information on consultations and the listing decision for northern long-eared bats, and status updates for eastern small-footed bats, little brown bats, and tri-

colored bats. Congratulations to all the student winners (Photo in the Meeting Section).

Looking ahead to 2015, the SBDN meeting and Mammal Colloquium will be melded into a larger Joint Bat Working Group Meeting that will also include the Western and Midwest Bat Working Groups. The meeting is planned for 3-6 March 2015 at the Crowne Plaza Hotel in downtown St. Louis, Missouri-ah (as pronounced by co-host Sybill Amelon). Stay tuned to our website for more details.

At the 2015 meeting, we plan to have working sessions to establish multi-scale priorities for bat conservation. Prior to this meeting, I encourage you to work with folks in your state to develop draft lists of priority species, habitats, and projects related to bats. In the meeting minutes in this newsletter, you'll find an example from the Mississippi Bat Working Group, who drafted such a list in January 2014. Pooling these priority lists, the North American Bat Conservation Alliance plans to develop regional, national, and international priorities to inform the a continent-wide strategy for bat conservation. NatureServe has taken on this task of developing of range-wide conservation assessments for bats across North America and they are requesting contributions of information pertaining to historical and current distributions, populations, long-term and recent trends, threats, and conservation, for any and all North American bat species, particularly gray literature and significant unpublished studies. Published papers are a low priority (unless the journal is really obscure or not archived electronically). All contributions will be acknowledged in any published or online project outputs. Send contributions to: (gammerson@natureserve.org). I hope you will find time to contribute to these important bat conservation endeavors.

Fingers crossed for a summer with few rainouts! Please report back in August about the craziest thing you caught in a net this summer!

Joy M. O'Keefe: joyokeefe@gmail.com

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Executive Committee Meeting

Southeastern Bat Diversity Network Executive Committee Minutes of the Annual Meeting February 13, 2014

Attendees

Executive Committee

Joy O'Keefe, President
Brian Carver, incoming President Elect
Tim Carter, Treasurer
Piper Roby, Secretary

Steve Samoray, Member at Large
Chris Comer, 2014 SBDN/Colloquium host, guest
Absent - Mike Lacki, Past President

Action Items

AI 1: Carter will work with Brooke Hines to complete the write-up from the 2011 joint annual meeting.

AI 2: SBDN website has all programs up except 2008. Samoray will put photos and logos on site.

AI 3: EC votes/decisions have been organized

into an Excel file, but O'Keefe will ask the Awards Committee to provide a list of who received awards and when, and will provide to Roby to complete the file.

AI 4: Lacki will send editorial comments on final draft of Nightwing Newsletter to both J.D. Wilhide and Vanessa Rojas.

AI 5: Carter to provide list of meeting attendees to Sybill Amelon as the 2015 SBDN meeting organizer.

AI 6: O'Keefe will set a date for when the student award applications will be due each year.

AI 7: O'Keefe and Lacki will discuss what information to present to the membership about the Federal Advisory Committee so the membership can decide whether the table to committee or if someone wants to chair it.

AI 8: O'Keefe will follow up and discuss conducting the audit electronically.

AI 9: O'Keefe will follow up to get wording for awards by Awards Committee.

AI 10: Roby to email membership list to Chris Comer when it has been updated with 2014 registrants.

AI 11: Comer will build on what Carter has done in terms of boosting membership, but will continue working on this.

AI 12: O'Keefe will talk to Sybill Amelon about getting a proposal from her about costs for the 2015 meeting and how SBDN can help offset costs.

AI 13: Lacki will create a narrative about the history of the CORA/MYAU Conservation Strategy document, who was involved, summary of what the document is, etc., and add it to the webpage when the .pdf version becomes available.

AI 14: O'Keefe will send out a notice to the listserv when the electronic copy of the CORA/MYAU Conservation Strategy document is available.

AI 15: Lacki will compile any documents the Federal Lands Committee has and ask the committee to get a list of federal contacts to send the published document to.

AI 16: O'Keefe will ask SBDN membership to send in unpublished bat data, NatureServe will compile it, and bat experts will be asked to peer review the information.

AI 17: Roby will contact Geoff Hammerson to determine how bat data submitted to NatureServe will be used so that researchers can inform clients when requesting the data be distributed.

Call to Order: 8:05 am CST, President O'Keefe

November 2013 Executive Committee meeting action items:

- Carter and Hines-2011 joint bat meeting write-up: still pending...still.
AI 1: Carter will work with Brooke Hines to complete the write-up from the 2011 joint annual meeting.
- **AI 2:** SBDN website has all programs up except 2008. Samoray will put photos and logos on site.
- **AI 3:** EC votes/decisions have been organized into an Excel file, but O'Keefe will ask the Awards Committee to provide a list of who received awards and when, and will provide to Roby to complete the file.
- Vanessa Rojas helped J.D. Wilhide some on the most recent Nightwing Newsletter (Dec. 2013). The editing process has not been solidified. **AI 4:** Lacki will send editorial comments on final draft of Nightwing Newsletter to both J.D. Wilhide and Vanessa

Rojas. Carter provide list of attendees to Membership Committee – done. Follow up – AI 5: Carter provide list of meeting attendees to Sybill Amelon as the 2015 SBDN meeting organizer. O’Keefe talked to Steve Burnett but there is no date set yet for announcement of student awards applications. Want award to coincide with NASBR so possibility of making applications due in July and possibly send out an announcement in April. AI 6: O’Keefe will set a date for when the student award applications will be due each year.

- AI 7: O’Keefe and Lacki will discuss what information to present to the membership about the Federal Advisory Committee so the membership can decide whether to table to committee or if someone wants to chair it.
- Treasurer’s report went into the last Nightwing Newsletter and template is now set – done
- Tom Risch is still doing the audit. AI 8: O’Keefe will follow up and discuss conducting the audit electronically.
- Awards Committee working on determining criteria for awards. AI 9: O’Keefe will follow up to get wording for awards by Awards Committee.
- Samoray and Trina Morris update bat blitz data – done
- O’Keefe create protocol for dealing with SBDN’s position on issues – done
- BCI help with Lacki’s travel to SBDN 2014 – done
- SBDN provide funding for printing Raf bat and SE Myotis publication – done
- Comer get list together for SBDN speakers – done
- O’Keefe discuss 2015 joint meeting with Sybill Amelon – done

February 2014 Executive Committee meeting action items:

- Committee Reports:

-Membership Committee: Steven Castleberry has drafted a questionnaire to go to members and non-members: 25 questions such as why do they come to the meeting, barriers to attending, do you know people who might be interested in coming. Carter did this many years ago and the #1 response was there are so many memberships to choose from and they didn’t choose this one. AI 10: Roby will email membership list to Chris Comer when it has been updated with 2014 registrants. Carver sent a list of university department heads; Comer contacted them, and got some good response. AI 11: Comer will build on what Carter has done in terms of boosting membership, but will continue working on this.

-Website Committee: Each committee is updating their own section and Samoray will do an overall check. Website is backed up in two locations. Samoray and Aleida are working together on the website.

-WNS Committee: Group was represented at the Boise meeting. Committee member Gabrielle Graeter is participating in monthly conference calls of WNS updates. If she is not available, she will tell Luke Dodd so at least someone from the committee can be present. The group is trying to get a poster together for the SEAFWA meeting in Destin, Florida, in October 2014, but there has not been much progress on determining if WNS protocols are effective by polling state agencies. Currently looking for additional people to provide data. Would like collaboration between BCI and SBDN to gather WNS info and Katie Gillies at BCI may be a good person to collaborate with.

-Database Committee: Dissolved since the database got handed over to USGS

-Bat Blitz Committee: Oklahoma blitz at the Ozark Plateau National Wildlife Refuge from 28 July – 1 Aug, 2013 was very successful.

- 100 participants from 18 states
- 28 sites were sampled during the blitz
- 735 bats of 9 different species were captured during the event, including federally endangered Ozark big-eared bats and gray bats

In 2014, SBDN is going to sponsor a multi-state blitz to be held for at least 2 nights from September 4 – 10. The committee has developed guidelines on how to conduct the blitz to be handed out to the state agencies. SBDN blitz funds are not being used to assist agencies hosting blitzes, but SBDN can help with logistics. In 2015, there are 3 potential hosts: Shenandoah National Park in VA, Palmetto Bluff Conservancy in SC, and USFS in Louisiana.

- Treasurer’s Report: There is a decent amount of money in the general account. Dues are a major source of our income. Taxes are a major withdraw. As of the Feb 2014 meeting, there were 125 paid members and 540 on mailing list. \$3500 came in for this meeting; \$3500 went out for bills, etc. Because the 2015 joint meeting will be more expensive, talk to Sybill about offsetting costs

for students. SBDN can provide some support from surplus meeting funds, plus perhaps other working groups can also contribute. Carter will give some advice to Sybill regarding running a large joint meeting. AI 12 – O’Keefe will talk to Sybill Amelon about getting a proposal from her about costs for the 2015 meeting and how SBDN can help offset costs.

Carter gave 2nd credit card to Chris Comer to make purchases for the 2014 meeting; process still needs to be refined, but worked ok.

Carter will not run for Treasurer again after fulfilling the remaining 3 years, so the EC needs to start thinking about who would be good and who would have the time. This position requires a lot of time and dedication.

Full financial report will be included in the Nightwing Newsletter.

- CORA/MYAU document: completed and available at meeting. A .pdf version will be available online at some point, but distribution of hard copies should be prioritized to land managers. AI 13 – Lacki will create a narrative about the history of the CORA/MYAU Conservation Strategy document, who was involved, summary of what the document is, etc., and add it to the webpage where the .pdf version will be available. AI 14 – O’Keefe will send out a notice to the listserv when the electronic copy of the CORA/MYAU Conservation Strategy document is available.
- Federal Lands Committee: the group was initiated by Lacki when land managers were concerned about clearing Raf bat roost trees. The CORA/MYAU document addresses this to some extent to help land managers. There is no current chair and no directive. Lacki will give an update to the committee before it is dissolved. AI 15 – Lacki will compile any documents the Federal Lands Committee has and ask the committee to get a list of federal contacts to send the published document to.

New Business

-2015 Joint Meeting in St. Louis, MO: 3 – 6 March 2015. Meeting will be in the Crown Plaza Hotel (\$100/room). People assisting Sybill Amelon include Angie McIntire, Rob Mies, Katie Gillies BCI, Brienne Walters at ISU, Joy O’Keefe, Clarissa Starbuck, and Katherine Womack. BCI has held big meetings before so Katie Gillies can likely help with hotel logistics, etc. The meeting will include individual working group meetings (instead of species talks, may have bat habitat specialist meetings like crevice bat meeting, cave obligate bat meetings, etc.), separate times for each region group’s business meetings, plus a plenary session for all. Concept of this meeting is to be an actual working group, not just presentations. From Rob Mies – motivation for pulling together all these groups: NABCA which is a federation of bat groups across North America, similar to RELCOM in South America. Rob and Mylea Bayless are getting a questionnaire together to find out how each working group functions to understand how groups will work with NABCA. Need to get conservation goals for each state or region. For example, MS has a priority list that could guide other states in developing their own lists:

Priority species and priority habitats:

- Rafinesque’s big-eared bats and southeastern myotis, bottomland hardwood forests and the preservation of roost trees
- Northern yellow bat in south Mississippi
- Indiana bats and northern long-eared bats – extent of distribution in the state
- Caves (southeastern myotis, tri-colored bats)
- Artificial roosts with significant use (i.e. maternal colonies, large winter roosts)

Priority projects:

- Determine the effects of winter burns in pine forests on bats
- Conduct surveys in the northern part of the state for Indiana bats and northern long-eared bats
- Consolidate existing population data
- Continued work on artificial roost and existing roost (Seismography building) on University of Mississippi property. (Current project measuring conditions inside both structures, among other things.)
- In general, what is the extent of bat use in the state outside of the breeding season and how does that fit into the overall conservation of the various species
 - We know many winter roosts for tri-colored bats, where are they the rest of the year? What percentage of our winter population is migratory?
 - Increase mist-netting effort during migration periods.
 - What does this mean in the face of WNS?

NatureServe is requesting bat data with regards to “historical and current distribution, populations, long-term and recent trends, threats, and conservation...particularly gray literature and significant unpublished studies...All contributions will be acknowledged in any published or online project outputs following standard professional protocols.” AI 16 – O’Keefe will ask SBDN membership to send in unpublished bat data, NatureServe will compile it, and bat experts will be asked to peer review the information. AI 17 – Roby will contact Geoff Hammerson to determine how bat data submitted to NatureServe will be used so that researchers can inform clients when requesting the data be distributed.

Motion to adjourn by Carver, seconded by Carter: passed unanimously
9:35am adjournment

Summary of Business Meeting (details on committees above)

1:00pm CST – call to order by O’Keefe

Welcome – Chris Comer

Membership Committee – Comer: Questionnaire will be sent out in a few weeks

Awards Committee – O’Keefe for Steve Burnett: Developed *ad hoc* wording for the achievement award last year. The Student Award will be given to a student for travel money to NASBR.

Blitz Committee – Trina Morris: Full report on OK blitz on the SBDN website. 2014 multi-state blitz. Of the 3 possible 2015 hosts, Shenandoah is out. SBDN can help with funding and the guidelines for how to run a blitz are solid and there are lots of people with experience to help. Please contact Trina at katrina.morris@dnr.state.ga.us if you might want to host a blitz.

Newsletter Committee – J. D. Wilhide: Apology for not getting newsletter out in June (came out in July). Vanessa Rojas is now helping. We are moving the publish date to April instead of June. Need to work out some logistics with O’Keefe. Vanessa helped immensely with Dec. issue. Some states are not submitting data. Some states always provide great data. Doesn’t have to be only bats, can submit other mammal data.

WNS Committee – Luke Dodd: 2nd year as chair. 6 members. Would like to get a couple of new people. Katie Gillies is going to join and Brian Carver is going to step off the committee so need to replace him. Membership at multiple nationwide meetings and participated in the monthly conference calls. Website updated (thanks Steve Samoray). In 2012, helped BCI get mortality estimates in hibernacula for a poster for the SEAFWA meeting. Want to go back to that approach so will be contacting states to get hibernacula counts for 2014 to compare to 2012 data. Various state agencies will be solicited for these data. Katie says singular effort so far and this will get a collaborative effort to form a cohesive picture of what’s going on. Want committee member to go to SEAFWA meeting to present poster.

Website Committee – Steve Samoray and the webmaster are the only members. Committee leaders should give Samoray updates for the website. If anyone wants to have something posted to the Facebook page, email one of the EC members and (s) he will add it. If anyone has theses or dissertations, email them to Samoray to add to the library page.

Federal Lands – Mike Lacki: Committee formed for SBDN to help Noxubee NWR regarding protection of Raf bat roost trees. Some of the original issues have died down, so now we need to decide to disband committee or re-evaluate to see if worth keeping. Committee will disseminate materials we have to southeast managers but then what? Plan as we move forward is to be more proactive in issues, which if true, shouldn’t disband committee. No chair as of now.

Treasurer report – Tim Carter: SBDN acts as a bank for activities, like annual meeting, blitzes, etc. Made \$61 in 7 years on \$10,000 CD, so not a very productive investment.

2016 meeting – Brian Carver: Need someone to volunteer to run a meeting, preferably in states we haven’t been to for a while (e.g., AL, GA). If you are interested in hosting or know someone who should, get in touch with Brian. The Treasurer (Tim Carter) can help the host with purchases, contracts, etc. Information about hosting a SBDN meeting and Mammal Colloquium is on our website under Resources tab on the left.

O’Keefe – Would like SBDN to act as a working group to determine priorities for bat conservation. This would support the initiative of the North American Bat Conservation Alliance (a NA model based on RELCOM in Central and South America). Other states should follow Mississippi’s lead in making a list of priority species, habitats, and projects (see example above in EC meeting notes). Bring priorities to next year’s joint meeting and then compare to what other groups come up with, i.e., West and Midwest.

NatureServe - O'Keefe: See description of request in EC meeting notes above. NatureServe is looking for unpublished bat data. Trina Morris suggests that folks don't bypass state heritage commissions; make sure you provide data to them and NatureServe.

Lifetime achievement award – O'Keefe: presented to Susan Loeb on 14 February 2014.

Other business: Chester Martin asked if we can supply an official statement to a paper company that says they don't harm animals in any way.

Meeting adjourned at 3pm



From Left to Right:

Mike Lacki – Past President
Brian Carver – incoming President Elect
Steve Samoray – Member at Large
Tim Carter – Treasurer (for Life)
Piper Roby – Secretary
Joy O'Keefe - President

Contact Information for Executive Committee

EXECUTIVE COMMITTEE

President:

Joy O'Keefe -
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Past President:

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Treasurer:

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Guest:

Chris Comer - 2014 SBDN/Colloquium Host
Associate Professor of Forest Wildlife Management
Arthur Temple College of Forestry and Agriculture
Stephen F. Austin State University
Box 6109 SFA Station
Nacogdoches, TX 75962
(936) 468-2317
comerce@sfasu.edu

COMMITTEE REPORTS

WHITE-NOSE COMMITTEE

Summary of the Standing WNS Committee's Activities from Feb 2013 – Feb 2014 Prepared by Luke Dodd, Committee Chair

- **Misc Representation**
 - At least one committee member (Evan Pankuk) attended the 2013 WNS Symposium in Boise, ID, September 3-6th, 2013.
 - Gabrielle Graeter has continued to participate in bi-weekly conference calls held across agencies that relates to WNS management. Joy O'Keefe participates in stakeholder conference calls as a rep with the Center for Bat Research, Outreach, and Conservation.

- **Discussion & Progress Since SBDN Meeting in 2013**
 - Evan Pankuk approached committee about the potential of having a poster presentation at the 2013 WNS Symposium. This poster would build upon the data collated (across southeastern states) and presented by BCI and SBDN at the last meeting of the Southeastern Association of Fish and Wildlife Agencies in 2012. Time constraints prohibited the preparation of this poster for the WNS Symposium. Even so, continued discussion between Dodd and Evan Pankuk suggests that a poster with updated data will be prepared. Dodd has followed up with Katie Gillies of BCI about this continued collaborative effort. See below for more details.
 - Luke Dodd and Evan Pankuk revised the materials provided on the WNS portion of the SBDN webpage. Materials include an indication of committee composition, as suggested by Joy O'Keefe. Materials were incorporated into the webpage by Samoray.

- **Future Directions (Presented to SBDN Body at 2014 Meeting; Ongoing Effort Since Then)**
 - Collaboration between SBDN & BCI.
 - Will continue to consolidate state-to-state mortality estimates for bat populations impacted by WNS. Gillies is unaware of any other such collaborative efforts.
 - Stepping stone towards a larger goal?
 - Luke Dodd & Gabrielle Gillies can/will spearhead data collation & poster development?
 - State involvement will be a necessity!
 - Framework for SEAFWA poster exists; anyone attending 2014 meeting in FL?

Contact Information for Committees

BAT BLITZ COMMITTEE

Member	Affiliation	E-Mail
Katrina Morris (Chair)	Georgia DNR	Katrina.morris@dnr.state.ga.us
Tim Carter	Ball State University	tccarter@bsu.edu
Dennis Krusac	US Forest Service	dkrusac@fs.fed.us
Bree McMurray	MO DOT	mobatgirl1@yahoo.com
Joy O'Keefe	Indiana State University	joyokeefe@gmail.com
Michael Whitby	USACOE	michael.whitby@gmail.com
Gary Libby	Skybox Ecological Services, LLC	garylibby@windstream.net
Jason Robinson	Biological Systems Consultants, Inc	jason@biologicalsystemsconsultants.com

AWARDS COMMITTEE

Member	Affiliation	E-Mail
Steven Burnett (Chair)	Clayton College & State University	StephenBurnett@mail.clayton.edu
Membership pending		1

MEMBERSHIP COMMITTEE

Member	Affiliation	E-Mail
Steven Castleberry (co-chair)	University of Georgia	scastle@warnell.uga.edu
Chris Corner (co-chair)	Stephen F. Austin State University	comerce@sfasu.edu
Steve Thomas		
Blake Sasse	Arkansas Game and Fish Commission	dbsasse@agfc.state.ar.us
Vanessa Rojas	Indiana State University	vanessaxrojas@gmail.com

BAT DATABASE

Member	Affiliation	E-Mail
Eric Britzke	U.S. Army Corps of Engineers	Eric.R.Britzke@usace.army.mil
Susan Loeb	Clemson University	sloeb@clemson.edu or sloeb@fs.fed.us

SOUTHEASTERN BAT COORDINATOR POSITION

Member	Affiliation	E-Mail
Bree McMurray (Chair)	Missouri Dept. of Transportation	bree.mcmurray@modot.mo.gov
Joy O'Keefe	Indiana State University	jokeefe@gmail.com

WHITE-NOSE SYNDROME COMMITTEE

Member	Affiliation	E-Mail
Luke Dodd (Chair)	University of Kentucky	luke.dodd@uky.edu
Katie Gillies	Bat Conservation International	kgillies@batcon.org
Gabrielle Graeter		gabrielle.graeter@wildlife.org
Tom Risch	Arkansas State University	trisch@astate.edu
Piper Roby	Copperhead Consulting	plroby@copperheadconsulting.com

BYLAWS COMMITTEE

Member	Affiliation	E-Mail
Nikki Castleberry	Georgia Dept. Natural Resources	Nikki.castleberry@dnr.state.ga.us
Tim Carter	Ball State University	tccarter@bsu.edu
Brian Carver		bcarver@fhu.edu

ANNUAL MEETING

The 19th Annual Meeting of the Southeastern Bat Diversity Network
and
The 24th Annual Meeting of the Colloquium on Conservation of Mammals in the Southeastern
United States



Stephen F. Austin State University
Nacogdoches, Texas
February 13-14, 2014

ART BY LORRAINE KETZLER



Local Committee: (LtoR):
Scott Bosworth, Chris Comer, Carla Weinkauff, Rain Ketzler, Warren Conway, Stephen McDowell



The Baker Patillo Student Center provided a wonderful location with spacious facilities.



SBDN Business Meeting
Regent's Suite A

Poster Session in the
Twilight Ballroom.

Really a great space.



Valentine's Day lunch in the
Twilight Ballroom

AWARDS AND RECOGNITION



Chad R. Williamson (Left) (Best Overall Student Paper), Ball State University
Survival and cause-specific mortality of white-tailed deer (*Odocoileus virginianus*) fawns in urban and rural areas. with Timothy C. Carter and Chad M. Stewart.

Vanessa Rojas (Center) (Best Student Poster), Indiana State University
Taking attendance for bats: Who's out there?
with Joy M. O'Keefe

Scott M. Bergeson (Right) (Best Student Bat Paper), Indiana State University
Male Indiana bat roost selection in a managed forest.
with Joy M. O'Keefe



Dr. Susan Loeb
2014 Lifetime Achievement Award Winner

Dr. Loeb's nomination letter:

Dear SBDN Awards Committee,

We are writing to nominate Dr. Susan C. Loeb for the Southeastern Bat Diversity Network's Lifetime Achievement Award. We all know Dr. Loeb as a dependable and steadfast scientist who might be overlooked at times because she works outside of the spotlight. However, we feel that her outstanding accomplishments to date merit recognition by SBDN.

Dr. Loeb has been working in the Southeast since 1988, when she first took a research position with the U.S. Forest Service, Southern Research Station (SRS) at Clemson University in South Carolina. Dr. Loeb's first 11 years with the Forest Service were focused on non-volant small mammals other than bats, though she did quite a bit of work on southern flying squirrels. In 1999, responding to a directive from SRS, Dr. Loeb began to develop a research program on bats so SRS could provide sound scientific information to resource managers and policy makers. Being a diligent researcher, Dr. Loeb approached this directive by first conducting a thorough literature review to find the gaps in our knowledge for bats in the South. Having found some significant gaps, Dr. Loeb then devoted the next 14 years of her life to answering questions about bat ecology and conservation, as well as identifying best practices for the study of bats. In this time, Dr. Loeb has made many important contributions through deliberate research on several topics.

Since 1999, Dr. Loeb has been involved in several projects on the Indiana bat, ranging from understanding the species' roost ecology to assessing the effects of climate change on the future distribution of the species. She

has co-authored 2 refereed publications on Indiana bats. Dr. Loeb also procured funding from the Joint Fire Science Program to fund a study on the effects of prescribed burning on Indiana bat roost habitat in the southern Appalachians and will co-author several more publications on this topic with Dr. Joy O'Keefe.

Early on, Dr. Loeb developed an interest in studying Rafinesque's big-eared bats in South Carolina, where there had been virtually no work on the species. Dr. Loeb led several studies on the ecology and distribution of the species across the state, but has also made more broad contributions to the conservation of these bats. With Dr. Steven Castleberry, Dr. Loeb planned a symposium on the ecology and conservation of big-eared bats, and then served as an editor for the symposium proceedings. Dr. Loeb has co-authored 3 refereed publications on Rafinesque's big-eared bats.

Dr. Loeb has made studying the effects of forest management on bat habitat use and populations a central focus of her research. She has investigated this topic with specific projects in South Carolina and North Carolina; she has also served on the committees of graduate students studying bats in forests in Kentucky and Indiana. Dr. Loeb has studied harvest and fire effects on roosting and foraging habitat; some of this work has been experimental, which is a complex endeavor due to the scale at which forest management is conducted. Dr. Loeb has co-authored four refereed publications on this topic, plus she has co-authored two influential book chapters that synthesize our knowledge about the effects of forest management on bats.

Dr. Loeb quickly figured out what every bat researcher knows – bats are difficult to study! Thus, Dr. Loeb has made techniques a central focus of her research. This has included studying best practices for detecting Rafinesque's big-eared bats over large areas and for weatherproofing acoustic detectors, as well as using stable isotopes to understand bat movements. Dr. Loeb has co-authored 2 refereed publications on techniques for the study of bats. When driving transects became a popular survey method, Dr. Loeb conducted workshops to teach resource managers how to use Anabats. Dr. Loeb also realized we needed to do a better job of collecting and storing data on bats. To this end, she is leading the development of a North American Bat Monitoring Program, where data will be collected with sufficient statistical rigor such that we will be able to detect changes in bat populations in response to major stressors like WNS, wind energy development, and climate change.

Since the early 2000s, Dr. Loeb has consistently made contributions to SBDN as a volunteer and committee member. From 2003-2007, she served on the Board of Directors. She also chaired the Awards Committee and has co-chaired the Database Committee since 2005. In 2002, she hosted the SBDN meeting at Clemson and, in 2004, she was on the planning committee for the 2nd Bats and Forests Symposium in Arkansas. She also co-hosted the 2006 SBDN Bat Blitz in the upstate of South Carolina.

We hope that Dr. Loeb's achievements with respect to bats are not quite finished, but we feel that the contributions she has made thus far are sufficient to merit recognition with SBDN's Lifetime Achievement Award. We thank you for your consideration and hope you will agree.

Respectfully,

Joy O'Keefe, former PhD student of Susan Loeb
Mary Kay Clark, longtime collaborator of Susan Loeb

SBDN SERVICE AWARD

Purpose: To recognize outstanding service and contributions to the Southeastern Bat Diversity Network.

Nomination Procedure: The SBDN awards committee will call for nominations in September or October of each year through the SBDN mailing list. Nominations will be submitted to the committee by December 1. Nominations can be submitted by any SBDN member, including members of the Board and the Awards Committee. Nominations will consist of a letter that describes the nominee's service to SBDN. The committee will review the nominations and evaluate them based on significance of the contributions to SBDN. One name will be forwarded to the SBDN Board of Directors for final approval by January 1. If no worthy nominees have been submitted for consideration, no name will be forwarded to the Board.

Award Process: The awardee will be announced at the SBDN annual meeting, usually held in February. A plaque will be presented to the awardee by the previous recipient or the SBDN president. The Awards committee will be responsible for obtaining the plaque and funds will be provided by SBDN. A copy of the nomination letter and pictures of the award presentation will be deposited in the SBDN archive.

SBDN LIFETIME ACHIEVEMENT AWARD

Purpose: To recognize individuals who have made significant contributions to the conservation of southeastern bats through research, education, or management efforts. The intent of this award is to recognize more senior individuals who have amassed a variety of accomplishments throughout their careers. The award is SBDN's highest honor. The award may not be given every year.

Nomination Procedure: The SBDN awards committee will call for nominations in September or October of each year through the SBDN mailing list. Nominations can be submitted by any SBDN member, including members of the Board and the Awards Committee. Nominations will be submitted to the committee by December 1. Nominations will consist of: 1) a letter that describes the nominee's accomplishments and how they have impacted bat conservation in the southeast, 2) the nominee's Curriculum Vitae. The committee will review the nominations and evaluate them based on the totality of the accomplishments and their impact on bat conservation and/or our understanding of bat ecology. The committee will forward one name to the SBDN Board of Directors for final approval by January 1. If no worthy nominees have been submitted for consideration, no name will be forwarded to the Board.

Award Process: The awardee will be announced at the SBDN annual meeting, usually held in February. A plaque will be presented to the awardee by the previous recipient or the SBDN president. The Awards committee will be responsible for obtaining the plaque and funds will be provided by SBDN. A copy of the nomination letter, the awardees' CV, and pictures of the award presentation will be deposited in the SBDN archive.

MEETING ABSTRACTS

(in alphabetical order by last name of first author)

ASSESSMENT OF THERMOREGULATION DURING TORPOR IN THREE SYMPATRIC SPECIES OF *MYOTIS*

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DUSTIN A.S. OWEN, Center of Excellence for Field Biology, Department of Biology, Austin Peay University, Clarksville, TN

TIMOTHY C. CARTER, Department of Biology, Ball State University, Muncie, IN

TIMOTHY J. SICHMELLER, Wildlife Biologist, West Inc., Laramie, WY

H. HOHMANN, Engineering Research Development Center-Construction Engineering Research Laboratory, Army Corps of Engineers, Champaign, IL

Abstract: Torpor is an important behavior that allows bats to conserve energy when they are not feeding. During torpor bats slow their metabolisms and allow their body temperatures to drop to near ambient temperatures. This study examined the differences in various aspects of torpor among three sympatric species of *Myotis* bats: *Myotis lucifugus* (MYLU), *Myotis septentrionalis* (MYSE), and *Myotis sodalis* (MYSO). Body temperatures of roosting bats in Kentucky, Indiana, and Illinois were collected via temperature-sensitive radio transmitters and analyzed to quantify various aspects of torpor behavior and physiology. Kruskal-Wallis Tests revealed that MYLU tend to enter torpor an hour earlier than MYSE or MYSO. MYSE and MYSO enter torpor around sunrise and MYLU tend to enter torpor around 75 minutes before sunrise. However, overall the amount of time each species spends in torpor is identical. There are also differences in body temperature rate of change among the three species, as MYLU body temperature decreases at a faster rate than MYSE or MYSO. It is unknown what exactly causes this higher rate of decrease, but it could be caused by a variety of factors, such as ambient temperature differences, roosting behavior, or physiological differences.

HABITAT SELECTION OF NORTHERN LONG-EARED BATS (*MYOTIS SEPTENTRIONALIS*) IN AN EXPERIMENTAL HARDWOOD FOREST SYSTEM

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TIMOTHY C. CARTER, Department of Biology, Ball State University, Muncie, IN

Abstract: Populations of northern long-eared bats (*Myotis septentrionalis*) have been declining because of White-nose syndrome and its effects on hibernating bats, leading to the anticipation that *M. septentrionalis* will be added to the federally endangered species list in autumn of 2014. Because of this and other issues, the relationship between forest management practices and bats has become increasingly important, especially the conservation of summer maternity sites. However, *M. septentrionalis* roosting preferences are poorly understood and yet are now of increasingly higher conservation value. We attempt to identify the environmental factors important in roost selection for *M. septentrionalis*. We examined how those differed between undisturbed and disturbed forests in the Hardwood Ecosystem Experiment in Morgan-Monroe and Yellowwood state forests of southern Indiana. This large scale project consists of nine management units of different forest harvest regimes: three even-aged, three uneven-aged, and three control units. Bats were captured by mist-nets in two designated areas per management unit as well as three additional ponds. Female *M. septentrionalis* were fitted with radio-transmitters and tracked via radiotelemetry to their roost trees. Microhabitat characteristics were measured at each roost tree, and at randomly chosen trees within the same harvest type. Typically this species is a generalist in regards to roosting, but may prefer specific tree characteristics that promote a more cluttered roosting environment.

BAT ACTIVITY INCREASES WITH INCREASED BAROMETRIC PRESSURE AND TEMPERATURE DURING AUTUMN IN GEORGIA

MICHAEL J. BENDER*, Gordon State College, Barnesville, GA.

GREGORY D. HARTMAN, Gordon State College, Barnesville, GA.

Abstract: Activity patterns of bats are known to vary substantially among nights, seasons, years, and geographic regions but the underlying reasons for those patterns are poorly understood. Our objectives were to assess the temporal variability of acoustically-determined bat activity during autumn in central Georgia and to evaluate the influence of barometric pressure and nighttime temperature on nightly activity using AIC_c and regression models. We recorded 134,392 bat calls and 13,753 sequences using an ANABAT SD2 detector during 87 sample nights (11 August – 11 November 2011) at a residence in Barnesville, Georgia. The number of sequences recorded nightly ranged from 3 to 763. On average, activity was consistent throughout the night with a slight peak just before sunrise, but within-night activity patterns varied among nights. Modeling results indicate that nightly bat activity was positively related to average nightly temperature and average nightly barometric pressure. In contrast to our expectations, measures of pressure change prior to or during sample nights were not plausibly related to bat activity. The positive relationship between autumn bat activity, temperature, and barometric pressure likely was related to the energetic costs and benefits associated with flight and prey availability during this season in central Georgia

MALE INDIANA BAT ROOST SELECTION IN A MANAGED FOREST

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JOY M. O'KEEFE, Indiana State University Center for Bat Research, Outreach, and Conservation, 600 Chestnut St., Terre Haute, IN

Abstract: Far more research has been conducted on the summer roosting ecology of female Indiana bats (*Myotis sodalis*) vs. males, though we know both genders rely on trees as roosts and are often found together in forested landscapes in summer. Additionally, there is a growing interest in the effects of timber harvest on bat species. Therefore, our goal was to determine how male Indiana bats select roosts in a managed forest. In summers 2012-2013, we tracked 4 adult male Indiana bats to 18 roosts in south-central Indiana, and we measured the characteristics of roost and random trees. Bats roosted within hickories ($n_{\text{hickories}} = 6$; *Carya spp.*) more than would be expected based on random tree species ($n_{\text{hickories}} = 0$). Bat roosts were taller ($25.2 \text{ m} \pm 2.7$) and larger in diameter ($36.4 \text{ cm} \pm 4.2$) than random trees ($14.5 \text{ m} \pm 2.6$ and $22.6 \text{ cm} \pm 2.6$; respectively). However, both canopy closure and bark remaining were similar between roost and random trees. Finally, both roost and random trees were approximately 300 m from recently harvested areas. Preliminary analyses suggest that male Indiana bats use more hickories and slightly larger trees than would be expected based on their availability in the landscape.

UNCLE SODALIS WANTS YOU!!

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Abstract: The federally endangered Indiana bat (*Myotis sodalis*) uses roosts with different characteristics throughout its range. To determine the extent of this variation, and if there are underlying common trait(s) across the species' distribution, we will conduct a distribution-wide study using standardized methods of data collection. We will enlist the help of researchers like you to collect data on Indiana bat roost characteristics over the species' range from May – August, 2013-2016. After tracking Indiana bats of either sex back to their roosts, we ask that you follow a provided standardized protocol to collect data on variables such as roost height, roost type, canopy closure, tree species, tree height, tree DBH, tree condition, tree decay status, and emergence counts. These data will be compiled and analyzed to determine if there are patterns in roost characteristics across the species' range. Results from this study will provide us a better understanding of the overall roosting ecology of this endangered species and could potentially allow for more adaptive Indiana bat management practices across the species' distribution. We have already collected data on 159 roosts from 5 states. However, we need much more data to be collected throughout the Indiana bat's range. Therefore, your help is essential!

TORPOR PATTERNS OF HIBERNATING GRAY BATS: IMPLICATIONS FOR WNS

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BRAD HADLEY, Missouri Department of Conservation, Shannon County, MO

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Abstract: White nose syndrome (WNS) has resulted in the death of over 5 million hibernating bats across 7 species since it was first discovered in 2006. While the exact cause of mortality is unknown, WNS infected little brown bats (*Myotis lucifugus*) arouse more frequently than uninfected bats. While gray bats (*M. grisescens*) have been shown to be infected with WNS, extreme mortality events have not yet been observed. Factors such as hibernation behavior are being proposed as possible explanations. For example, if gray-bats naturally arouse more frequently than other species, they may have enough energy reserves to survive WNS. We attached temperature sensitive radio transmitters to 58 bats across 4 hibernacula and recorded body temperature at approximately 15 minute intervals for over 90 days. We manually identified peaks in body temperature and recorded torpor bout lengths. Torpor bout length did not differ between caves. Average torpor bout length for all bats was 11.5 ± 4.09 day. Our data show that Gray bats torpor bout length is consistent with the limited studies of other species (10-20 days for *M. lucifugus*, *Eptesicus fuscus*, and *Perimyotis subflavus*). WNS has had devastating effects on these species, therefore torpor bout length is likely not an explanation for the limited mortality in gray bats.

BAT ACTIVITY ALONG THE FOREST-HARVEST INTERFACE IN AN EXPERIMENTAL LANDSCAPE

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Abstract: Silvicultural practices alter forest structure that bats contend with for flight and foraging, creating hard edges at the harvest-forest interface. Increased bat species abundance and richness along harvested edges have been documented, but use of the forested side of the edge has been scarcely investigated. Better understanding of forest management influence on forest-dwelling bats is crucial to conservation and management efforts. We examined bat activity along both sides of the harvest-forest interface using high-frequency acoustic detectors in Morgan-Monroe and Yellowwood State Forests, Indiana from mid May to late July, 2013. We used Wildlife Acoustics Song Meter SM2BAT+ to sample 36 edge locations: 18 sites on the harvest side of the harvest-forest interface and 18 sites on the forest side of the harvest-forest interface. Species abundance and diversity was significantly greater on the harvest side of the interface. Additionally, call abundance was significantly greater on the harvest side of the interface for four species: *Eptesicus fuscus*, *Lasiurus borealis*, *L. cinereus*, and *Perimyotis subflavus*. *Myotis* spp. did not show significant difference between the two edge locations. This information suggests both sides of the edge are useful to bats of differing species, thus forest management that creates a mosaic of small harvests can be beneficial to many bat species.

THE STATE OF NATURAL HISTORY COLLECTIONS: A CASE STUDY USING THE GEORGIA MUSEUM OF NATURAL HISTORY

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Abstract: Natural History collections across the United States are facing budget shortfalls, staffing shortages, and losing space to house collections. According to the NSF Scientific Collections Survey in 2009, almost half (49%) of surveyed collections will experience erosion or funding decreases by 2014. Additionally, 40% of those collections have received collections that were deaccessioned by other organizations. While funding and staffing are down for many collections, acquisition of new collections is up. The Georgia Museum of Natural History has experienced many of the same challenges, while acquiring several large collections over the past 10 years. Most recently, we received approximately 30,000 mammal, 1,500 bird, and 30,000 fish specimens from Northeastern University. This acquisition places the Georgia Museum of Natural History in the top 11 marine mammal collections in the world, in the top 6 marine mammal collection in the United States and among the top University associated Natural History collections in the United States. While this acquisition has helped secure the Georgia Museum of Natural History among the top University natural history collections, it still faces many of the above challenges such as adequate space to house the collections and funding for additional staff to help accession these materials into the permanent collections.

COMPARING BAT DETECTOR DEPLOYMENTS AT DIFFERENT HEIGHTS, IN DIFFERENT ORIENTATIONS, AND USING DIFFERENT MICROPHONE TYPES

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Abstract: Protocols have been developed for conducting acoustic inventories that contain recommendations for effectively deploying detectors and microphones to intercept free-flying bats during Endangered Species and other species-of-interest surveys. These protocols have been based partly on actual field trials with bat detectors, combined with assumptions for how bats travel through their habitats. But today, most acoustic monitoring efforts are conducted using detectors and microphones that were not included in the original field trials, and did not even exist when recommendations for deploying acoustic equipment were adopted. This seven-season, seven-site project tests eleven combinations of modern ultrasonic microphones and acoustic detectors for monitoring bats. Trials were conducted side-by-side, to evaluate the relative effectiveness of different deployment heights, orientations, and microphone types under typical field conditions, in various habitats throughout the United States. Though the scope of this effort is exceptionally broad, several consistent results have emerged, indicating that using a high-quality microphone combined with the highest possible elevation above ground, or at least a 45-degree from horizontal orientation of the microphone, all play important parts in documenting species occupancy, especially for short-term monitoring efforts when rare or uncommon species are being targeted. Because acoustic monitoring efforts for bats will likely only increase in the near future, researchers should be encouraged to deploy equipment to maximize inventory efficiency.

COMPARING FOUR ACOUSTIC ANALYSIS SOFTWARE PACKAGES AND THE ACCURACIES OF THEIR AUTO-CLASSIFICATION RESULTS FOR DETERMINING BAT OCCUPANCY IN A HABITAT

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Abstract: Much effort has been expended to develop automated bat species classification software programs that are designed to make echolocation call analysis more efficient and more quantitative. Software designers have purported everything up to 99^{44/100ths} % pure accuracy against their own training data. But, what happens when these programs are used on (1) voucher calls, which were collected by 3rd party bat-workers and *not* used in the development of any software programs, and (2) on large data-sets of passively collected recordings, from in the wild, under conditions likely to be faced during actual acoustic surveys for bats? We answer these questions by using popular North American bat classification programs; BCID, EchoClass, KaleidoscopePro and SonoBat, to process both voucher call collections and passively collected field recordings. Field recordings were manually vetted by the authors, who have over 60-years of combined experience with collecting and analyzing bat echolocation calls. Automated classifier outputs were compared on a file-by-file basis with the manually vetted results to determine accuracy. The results support our recommendation that biologists should *limit* the use of automated classification to an *assistive* technology for evaluating bat species occurrence, done in conjunction with knowledgeable oversight of bat species call characteristics and bat echolocation behavior.

WEATHER PROTECTION FOR ANABAT DETECTORS

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KIM LIVENGOOD*, Titley Scientific, Columbia, MO

Abstract: There are many schemes which can be used to protect bat detector microphones from adverse weather. Most involve reflecting the incoming signal into a microphone which is physically hidden from the elements. For example, a microphone could be safely pointed downwards while having an axis of greatest sensitivity which points upwards into the weather. Some such schemes have been the subject of studies purporting to compare their effectiveness, but such comparisons have been complicated or invalidated by misunderstandings about the physics of sound and just what was being measured. We have conducted a number of comparisons of various weather-protection devices suitable for Anabat microphones, and present our findings here. A key result is that the directionality of a tube used for weather protection may not be at all obvious from the physical features of the tube. In particular, the direction of the axis of greatest sensitivity can be a long way off the main axis of the front of the tube.

LUNAR PHOBIA IN TEMPERATE VESPERTILIONID BATS: MODELING MOONLIGHT'S IMPACT ON BAT ACTIVITY

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Abstract: Lunar cycles have long been associated with changes in animal behavior. Previous studies concerning bat behavior in response to lunar cycle have described lunar phobia tendencies. We examined how lunar cycle influences three bat species within the *Myotis* genus and assessed if lunar phobia explains their behavior. Study sites included three sites in Indiana; two in Illinois; and one in Kentucky. Within the five study sites, a total of fifty bats were captured and fitted with transmitters. Receivers were placed within the roosting sites and recorded data on bat activity during nighttime hours. Moon phase, (moon) percent illumination, moonrise / moonset times, and cloud cover data were converted into numerical forms and factored into a model to estimate the relative amount of moonlight received each night. Results suggest that bat foraging time was significantly influenced by moonlight level, while number of bats captured each night showed no such relationship. North American *Myotis* bats may have a preference for foraging during nights where the moon is brighter and has more of a presence. Instances of lunar phobia in bats are likely the result of regional differences in preferred prey and influential predator species.

ASSESSING WINTER ACTIVITY OF HIBERNATING BATS: LESSONS LEARNED

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LACI S. COLEMAN, Department of Fish and Wildlife Conservation, Virginia Tech, Blacksburg, VA

Abstract: White-nose Syndrome (WNS) has caused the deaths of millions of hibernating bats in North America. Although WNS-positive bats appear to exhibit increased overwinter arousal and shorter hibernation, little is known about these patterns and whether

within-cave arousal is correlated with exodus from hibernacula. To assess how WNS influences these patterns and whether activity is related to cave and site climate, we conducted a pilot study monitoring bat activity and associated environmental conditions in 3 hibernacula in North Carolina with differing WNS histories. We placed continuously active acoustic detectors and temperature loggers inside and outside of caves to record bat activity and climate data from December 2012 through April 2013. Despite equipment malfunction and vandalism, we were able to record some acoustic data from all three study sites. Notably, timing of activity outside of caves differed among our sites. We offer suggestions for future acoustical monitoring of hibernacula, discuss importance, report additional findings, and provide cave temperature and humidity profiles.

DEVELOPING PREDICTIVE MODELS OF BAT ACTIVITY USING REMOTELY-SENSED FOREST CANOPY DATA

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Abstract: Bats are an imperiled, yet ecologically-important group of vertebrate predators. Our ongoing research focuses on testing hypotheses about the effects of fire on canopy structure and insect prey availability, and how these factors relate to use of foraging space by bats during the pre- and post-hibernation periods at Kentucky's Mammoth Cave National Park. LiDAR-derived data (Fall 2010) were intersected with spatially explicit acoustic surveys of bats (2010-2011) in order to characterize relationships between canopy structure and bat activity. Multiple linear regression models were then developed for our zero-crossing acoustic data (high- and low-frequency groups). Suites of models were developed *a priori* and incorporated LiDAR-derived predictor variables for targeted portions of the forest canopy (understory, midstory, overstory, and total clutter throughout the canopy). Models within this suite were then ranked using Akaike's Information Criterion. The models with the strongest support were considered further, with significant predictor variables interpreted in the context of bat foraging strategies and prescribed fire management in oak-hickory forests.

MODELING ENDANGERED CAROLINA NORTHERN FLYING SQUIRREL OCCUPANCY

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Abstract. In the southern Appalachian Mountains of North Carolina, Tennessee and Virginia, transects of artificial nest-boxes were used to survey for the presence of the endangered Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*), a disjunct northern flying squirrel subspecies associated with high elevation (> 1,300 m) montane boreal and northern hardwood forest habitats. Using Program Presence, we created 35 *a priori* variants of the $\psi(\cdot), \gamma(\cdot), \epsilon(\cdot), \rho(\cdot)$ model from 1,001 boxes surveyed from 1996-2011 in western North Carolina examining various environmental and physical parameters thought to be associated with squirrel presence. Our best approximating model, "Odom #2", showed that squirrel occupancy on the landscape relative to denning was associated with sheltered landforms and the proximity to montane conifer, i.e., primarily red spruce (*Picea rubens*). As sheltering decreased, proximity to conifer increased in importance. Because squirrels preferentially forage in montane conifer patches and surveys underrepresented areas above 1,700 m, we combined predicted probability of occupancy models with red spruce-Fraser fir (*Abies fraseri*) distributions derived from satellite imagery. Above 1,300 m, we determined that 23, 232 ha of 90,133 ha in North Carolina, 7,913 ha of 14,273 ha in Tennessee and 650 ha of 4,602 ha in Virginia were highly probable habitat. Occupied patch sizes ranged from 35 ha in the Long Hope Valley area to approximately 20,000 ha in the Great Smoky Mountains National Park. These findings will allow managers to better define, protect and enhance existing squirrel habitat as well as provide a basis for future survey efforts in the region.

DIET OF RAFINESQUE'S BIG-EARED BAT (*CORYNORHINUS RAFINESQUII*) IN WEST-CENTRAL LOUISIANA

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JOHN O. WHITAKER, JR., Department of Biology, Indiana State University, Terre Haute, IN
GREGORY D. HARTMAN*, Department of Biology, Gordon State College, Barnesville, GA

Abstract: We investigated diet of Rafinesque's big-eared bats, *Corynorhinus rafinesquii*, in west-central Louisiana by examining fecal pellets collected from beneath three bridges that were used as day roosts. Fresh fecal material was found under the bridges during every month of the year. Five insect orders, including five families, were detected in fecal pellets collected from 25 August 2005 to 5 January 2007. Lepidoptera represented 93.8% of the total volume and was the only order observed in 100% of our samples.

Coleopterans, mostly Scarabaeidae, were the next most abundant food item and represented 5.8% of the total volume. Hemiptera, Diptera, and Hymenoptera together represented 0.4 % of the total volume. Diptera, Hemiptera, Hymenoptera, and scarabaeid Coleoptera were observed in fecal pellets collected under some, but not all three of the bridges. No insect orders were observed that previously had not been reported as prey of Rafinesque's big-eared bats. Our results were similar to those reported in studies conducted in Kentucky, North Carolina, and Florida, and we concluded that Rafinesque's big-eared bats primarily prey upon lepidopterans, and do so throughout the year in west-central Louisiana.

NEW HOST AND LOCATION RECORD FOR THE BAT BUG *CIMEX ADJUNCTUS* BARBER 1939 WITH A SUMMARY OF PREVIOUS RECORDS

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Abstract: As part of a larger study, we collected 10 individuals of Rafinesque's big-eared bats (*Corynorhinus rafinesqueii*) from a maternity colony in Drew County in southeastern Arkansas. Four of the bats were harboring bat bugs which were collected and subsequently identified as *Cimex adjunctus* Barber 1939. This is the first record of this bat bug from Arkansas, and the first record from this host species. A summary of previous records of the insect are provided, as is a summary of ectoparasite records from *C. rafinesqueii*.

NEW RECORDS OF BATS FROM WEST-CENTRAL GEORGIA

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MICHAEL J. BENDER, Department of Biology, Gordon State College, Barnesville, GA

Abstract: A lack of data on the presence or absence of species hampers the ability of biologists and wildlife professionals to assess the status of many mammal populations in Georgia, including bats. Prior to 2011, there were published records of the occurrence of only two species of bat, *Lasiorycteris noctivagans* and *Nycticeius humeralis*, from within an area encompassing 18 contiguous counties and more than 5,745 square miles in west-central Georgia; both records were for Lamar County. Using roosting-site surveys, mist-netting, and salvage, we are conducting an ongoing study to document bat species richness in west-central Georgia. Thus far, we have documented the occurrence of the following within the 18-county region: *Tadarida brasiliensis*, *Eptesicus fuscus*, *Lasiurus borealis*, *Lasiurus seminolus*, *Myotis austroriparius*, *Nycticeius humeralis*, and *Perimyotis subflavus*.

Poster Session

THE EFFECT OF SHORE HABITAT AND LOCATION ON BAT ACTIVITY AND SPECIES RICHNESS MONITORED VIA ACOUSTIC SURVEY AT REELFOOT LAKE IN NORTHWEST TENNESSEE.

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NANCY BUSCHHAUS*, Department of Biological Sciences and Reelfoot Lake Environmental Field Station, University of Tennessee at Martin, Martin, TN

Abstract: Northwest Tennessee falls outside of the karst region that predominates the rest of Tennessee and the surrounding areas. However, even with the lack of caves, the region is home to a unique lake and wetland area, known as Reelfoot Lake, which attracts many bats to the area. The goal of this study was to determine the effect of shore habitat type and location on bat activity and species richness at Reelfoot Lake. We collected acoustic samples of bats at four shore locations, representing two habitat types (open shore versus channelized shore) at Reelfoot Lake, June – August 2012. We used a Wildlife Acoustics EM3 detector to record full-spectrum bat calls and the SonoBat automated classifier for the Kentucky-Tennessee region v3.1.4 to analyze species and activity. We found that location had a significant effect on both bat activity and species richness, with the east side of the lake having both higher activity and higher species richness. We concluded that the slower, more protected water that harbors dense emergent aquatic vegetation on the east side may have higher concentrations of aquatic insect emergences, thus increasing the activity of insect foraging bats.

WNS SURVEILLANCE AND MONITORING POPULATION TRENDS IN KENTUCKY: RESULTS OVER TWELVE YEARS

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LARISA J. BISHOP-BOROS*, Kentucky Department of Fish and Wildlife Resources, Frankfort, KY

Abstract: Over the past 14 years we have monitored population trends and movements of 15 Kentucky bat species, using the bat banding program, acoustic monitoring, and hibernacula surveys. This has given us an opportunity to examine trends in population, both pre and post white-nose syndrome (WNS). WNS is a devastating emergent, epizootic disease responsible for mass mortalities in hibernating North American bats. First detected in Kentucky within a Trigg County cave in April 2011, 51 caves in 17 counties are

now confirmed with the syndrome or the causative fungus *Pseudogymnoascus destructans* (*P.d.*). Using preliminary 2014 hibernacula count data at seven WNS(+) caves, the largest declines occurred in little brown bats and tri-colored bats, whereas Indiana bats showed a smaller decline (<20%), two years after *P.d.* was confirmed at a site. Big-eared bat counts have continued to increase since 2002. We currently have 13,891 bands from 15 species in our database. To date we have recovered approximately 1,681 bands from 13 species, recording movements up to 296 km and across six state lines. We also present trends of winter and spring passive acoustic monitoring data (2010–2013) at the entrance of five hibernacula, four of which are *P.d.* positive. Winter bat activity occurred during every surveyed year at all five sites, but activity indices were highest during the winter of 2013, regardless of the year of first *P.d.* detection at those sites. These patterns indicate activity during mild winters may be normal for some species.

EVALUATING SEX-SPECIFIC FORAGING HABITS OF *NYCTICEIUS HUMERALIS* IN AN INTENSELY MANAGED FOREST

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VIRGINIE ROLLAND, Department of Biological Sciences, Arkansas State University, Jonesboro, AR
THOMAS RISCH, Department of Biological Sciences, Arkansas State University, Jonesboro, AR

Abstract: Knowledge of species-specific requirements is essential to the development of adequate conservation initiatives, especially in landscapes intensely managed for forest resources. But, in general, there is a paucity of knowledge on the spatial habitat requirements of bats. So, our objective was to evaluate sex-specific foraging habits of the evening bat (*Nycticeius humeralis*), an abundant species in north-central Arkansas. We radio-tracked 39 evening bats (25 males & 14 females) from June 1 to August 14, 2013 at five different sites (i.e., Casteel Cemetery, Optimus, Big Spring Hollow, Lone Rock and Roasting Ear Creek) in the Sylamore Ranger District, Ozark National Forest. *N. humeralis* tends to exploit multiple, diurnal roosts and uses multiple core foraging areas. Although more female-specific data are needed, our 2013 observations suggest that males and females exploit different foraging areas during early summer. This evaluation of *N. humeralis* foraging habits will help determine if management regimes (established for *Myotis sodalis*) provide adequate foraging habitat for other species like *N. humeralis*, and more specifically for spatially, sexually segregated species.

DIGITAL APPLICATION FOR BAT FIELD DATA COLLECTION

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KAT A. CUNNINGHAM*, Jackson Group, 3945 Simpson Lane, Richmond, KY

Abstract: Data management is a major component of bat research and is a very time consuming aspect of bat work that cannot be avoided. While very important, a lot of energy is wasted when you enter data for writing reports and permitting and problems can arise if there are any illegible data sheets. To alleviate this issue and to allow us to focus more on bat work, we have created a digital application to enter bat field data. Instead of writing out data on field sheets, you can enter it straight into your tablet and at the push of a button export a spreadsheet or a pdf straight to your computer. One feature added to help with bat identification is that the application will use your location to determine what species you are likely to find and provide you with their taxonomic characteristics. All of this is designed to get us back to what we are really in the field to do, catching bats.

BAT MORTALITY RELATED TO SINGLE-UNIT TURBINES

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THOMAS RISCH, Department of Biological Science, Arkansas State University, Jonesboro, AR

Abstract: It is estimated between 666,000 and 888,000 bats are killed annually due to wind turbines. While these estimates are based on large wind facilities, little is known about the contribution of single-unit turbines to bat mortality. The objective of this study was to collect baseline data on bat mortality due to single-unit turbines in two Arkansas ecoregions. To address this objective, six single-unit turbines were surveyed using passive-acoustic monitoring, mist netting, and fatality searches during the summers of 2012 and 2013. Acoustic monitoring logged over 160,000 files for both seasons, of these files BCID East identified 17,978 (12 species) as bat pulses. Landscape characteristics, such as, local-water source, agricultural lands, and high wood density showed a positive association with bat activity. Mist netting resulted in the capture of 100 bats representing 10 species. Mortality was only observed at a single turbine during the course of the survey. Twenty bats (three species) were found fatally wounded at Diaz, AR. Based on observations of this preliminary study we suggest assessment of bat activity using the above methods prior to installation of single-unit turbines.

BAT OCCURRENCE IN BOTTOMLAND HARDWOOD FORESTS TREATED FOR DESIRED FOREST CONDITIONS IN THE MISSISSIPPI ALLUVIAL VALLEY

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CHRISTOPHER E. COMER, Arthur Temple College of Forestry and Agriculture, Stephen F. Austin State University, Nacogdoches,
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Abstract: Desired Forest Conditions (DFCs) are a set of recommendations proposed by the Lower Mississippi Valley Joint Venture for managing bottomland hardwood forests for priority wildlife species. DFC treatments may be achieved through even and uneven-aged timber harvests and thinnings. Although DFC treatments have been shown to benefit songbirds, the effect on bats has not been previously studied. To examine bat community response to DFC treatments, we surveyed 14 federal- and state-managed lands in the Mississippi Alluvial Valley. From 15 April 2013 to 9 August 2013, for each area we conducted acoustic sampling using 2 paired Peterson D500X acoustic recording devices in each of 3 treatment and 3 control units for 6 consecutive nights. We identified echolocation calls to species using a combination of SonoBat™ version 3.1 Northeast software and manual verification of call sonographs. Eight species were identified, with Seminole and eastern red bats (*Lasiurus sp.*), evening bats (*Nycticeius humeralis*), and tri-colored bats (*Perimyotis subflavus*) the most common species. Detection probability and occupancy by species were calculated using program PRESENCE, and will be related to forest stand characteristics to achieve DFCs.

A CONSERVATION STRATEGY FOR RAFINESQUE’S BIG-EARED BAT AND SOUTHEASTERN MYOTIS

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MYLEA L. BAYLESS, Bat Conservation International, Austin, TX

Abstract: Disjunct distributions, limited data on population status and an incomplete understanding of the life history requirements of Rafinesque’s big eared bat (*Corynorhinus rafinesquii*) and southeastern myotis (*Myotis austroriparius*) have served as impediments to long-term conservation of these two bats. Both species are syntopic in their affinity for bottomland hardwood forests of southeastern United States, and both roost in hollows of large-diameter live and dead black gum (*Nyssa sylvatica*), water tupelo (*N. aquatica*), and baldcypress (*Taxodium distichum*) trees, sometimes roosting temporally or spatially in the same trees. This commonality in habitat use, coupled with evidence for declines in mature bottomland hardwood forests across the southeast, has led to concern over the long-term survival of these bat species. These concerns precipitated efforts on behalf of Bat Conservation International, Inc., and the Southeastern Bat Diversity Network to form a Technical Advisory Group, spearheaded by the Rafinesque’s Big-eared Bat Working Group, to hold a series of meetings in 2008 and 2009 which brought together bat experts across the southeast region to formulate an approach to development of a conservation strategy for these two species that could be used to facilitate their management and conservation in the absence of protected status at the federal level. This presentation covers an overview of the content, approach, and short- and long-range goals of this conservation strategy.

NABat – THE NORTH AMERICAN BAT MONITORING PROGRAM

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JEREMY COLEMAN, US Fish & Wildlife Service, Hadley MA

LAURA ELLISON, USGS, Fort Collins, CO

THOMAS RODHOUSE, National Park Service, Bend, OR

THOMAS INGERSOLL, Department of Defense, Aberdeen, MD

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CORI LAUSEN, Wildlife Conservation Society Canada, Kaslo, BC

Abstract: Bats in North America are facing unprecedented threats including White-Nose Syndrome, wind energy development, habitat loss and fragmentation, and climate change. Until now there has been no coordinated monitoring program to track changes in their populations in response to these threats. The North American Bat Monitoring Program (NABat) has been under development since 2012 and will be operational in 2014. NABat will provide the statistical, biological and administrative architecture for coordinated bat population monitoring that will promote effective decision-making and long-term viability of bat populations across the continent by providing robust data on changes in bat distributions and abundance. The sampling framework is comprised of 10 x 10 km grids. A spatially balanced design will be used to select grid cells within each state. The primary data sources for the monitoring program are maternity and hibernacula counts, and acoustic data collected along driving transects or at stationary points across the landscape. Data will be housed and managed in the Bat Population Database (BPD) at the USGS Fort Collins Science Center and once sufficient data are available, NABat will produce periodic “State of North America’s Bats” reports.

POPULATION DENSITY, ABUNDANCE AND DETECTION PROBABILITY OF URBAN MESOPREDATORS

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DANIEL G. SCOGNAMILLO, Arthur Temple College of Forestry and Agriculture, Stephen F. Austin State University, Nacogdoches, TX 75965

Abstract: The coyote (*Canis latrans*), red fox (*Vulpes vulpes*), and bobcat (*Lynx rufus*) Grey Fox (*Urocyon cinereoargenteus*) are medium-sized carnivores that have become more common in and around urban areas. From November 2013 to January 2014, we conducted an 8-week camera mark-recapture study to estimate abundance, population density and detection probability of coyotes, red

fox, bobcats, and grey fox in the city of Nacogdoches and immediate surrounding area. We set two Cuddeback Cameras at 120 sites (rotating 30 sites every two weeks) across a 123.67 km² within the study area. After 3360 trap nights, we identified 61 coyotes, 25 red foxes, and 16 bobcats, and 10 grey foxes. We used spatially explicit capture-recapture models using Maximum Likelihood (ML) estimators in Program DENSITY to estimate density and abundance. Estimated population densities, were 1.6 coyotes per km², 0.93 red fox per km², 0.48 bobcats per km², and 0.18 grey fox per km². We report one of the highest urban coyote densities in the literature, while bobcat and red fox densities were consistent with previous urban studies. These data represent the first density estimates for urban grey foxes.

THE SOUTHEASTERN BAT IN MISSISSIPPI: A PRELIMINARY ASSESSMENT

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BECKY ROSAMOND*, North Mississippi Refuges Complex, U.S. Fish and Wildlife Service, Grenada, MS

Abstract: The southeastern bat (*Myotis austroriparius*) is listed as an S1/S2 species (critically imperiled and vulnerable to extinction) by the Mississippi Natural Heritage Program. However, few studies had been conducted on the species in Mississippi prior to the early-2000s and little information was available on its distribution, population status, and habitat use. Historic records documented southeastern bats from only six Mississippi counties. Recent surveys have verified occurrence in additional localities and indicate that the species is more common than previously thought. Large populations (2,000 – 6,500 individuals) have been reported from elongated culverts in east-central Mississippi and abandoned cisterns in the southwestern part of the state. Additionally, populations have been found in three caves in eastern Mississippi and at bridges and culverts in several regions. Maternity colonies have been reported from cavity trees in bottomland forests or artificial roosts associated with water. Additional surveys are needed to better understand population structure and habitat use. Although the status of southeastern bats appears to be less critical than previously thought, removal of potential roost sites and habitat destruction along riparian feeding corridors continue to pose a threat to local populations.

BAT SURVEYS IN THE KENTUCKY PURCHASE: WHAT DOES ACOUSTICS AND NETTING BUY PRE-WNS?

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MIKE ARMSTRONG, U.S. Fish and Wildlife Service, Frankfort, KY

W. MARK FORD, U.S. Geological Survey, Virginia Cooperative Fish and Wildlife Research Unit, Blacksburg, VA

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Abstract. July- August 2013, we examined data from mist-netting, permanent acoustic stations, and 5 transects of multiple acoustic stations in and around Ballard County WMA in western Kentucky. Netting and acoustics documented *Lasiurus borealis*, *Myotis austroriparius*, *Myotis grisescens*, *Myotis septentrionalis*, *Myotis sodalis*, *Nycticeius humeralis*, and *Perimyotis subflavus*. Presence of *Lasiurus cinereus*, *Myotis leibii* and *Myotis lucifugus* were only determined acoustically, whereas *Corynorhinus rafinesquii* was only documented by netting. In this pre-WNS environment, mist-netting had higher detection probabilities for the three species of primary interest, *Myotis grisescens*, *Myotis septentrionalis* and *Myotis sodalis*. However, detection probabilities from acoustics were sufficiently high and levels of effort needed to determine site absence or presence were still more efficacious than netting. Analysis of permanent acoustic stations suggest that detection probabilities for *Myotis grisescens* and *Myotis sodalis* peaked in late July, indicating that acoustic surveys later in the summer will need to incorporate expanded effort. Acoustic detection probability for *Myotis septentrionalis* was constant through August. Impacts from WNS on detection probabilities are untested locally, however, data from the Northeast and Appalachians suggest that mist-netting detection probability will decline proportionally more than will acoustics.

SUMMER BAT DEMOGRAPHICS IN KENTUCKY REMAIN STABLE THROUGH THE EARLY YEARS OF WHITE-NOSE SYNDROME.

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Abstract: White-nose syndrome (WNS) has spread throughout most of the eastern United States causing high mortality in cave-dwelling bats in northeastern states; however, impacts in more southern states are unclear. White-nose syndrome was first observed in Kentucky in April 2011 and no signs of high mortality were observed through 2013. The purpose of our research was to determine if capture rates differed pre- and post-WNS in Kentucky. We used statewide bat capture records from Indiana bat surveys, conducted from 2004-2013 in Kentucky. We pooled data into three disease periods: pre-WNS (2008–2009), WNS detection (2010–2011), and post-WNS (2012-2013). We tested the effect of disease period on capture rates using separate negative binomial models for each of three categories of bats: congregating cave-dwelling, non-congregating cave-dwelling, and non-cave dwelling species. There were no significant differences in capture rates between the disease periods within any category of bat species. Furthermore, capture rates did

not differ pre- and post-WNS for the most commonly captured species. The results suggest that WNS has not had a measurable impact on summer bat populations during the first two years of its documented appearance in the state.

INDIANA BAT ROOST HABITAT SELECTION IN THE SOUTHERN APPALACHIAN MOUNTAINS

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Abstract: The federally endangered Indiana bat (*Myotis sodalis*) is being impacted by white-nose syndrome and habitat loss across much of its range, and climate change may pose additional threats. A better understanding of summer roost ecology of the species may facilitate conservation of healthy populations and the overall survival of the species. Our goal was to identify the multi-scale characteristics of maternity roost habitat for Indiana bats in the southern Appalachian Mountains. From May–August 2008–2012, we attached 0.32–0.42 g radio transmitters to adult females and juveniles, and measured characteristics of trees, 0.1 ha plots, and landscape attributes for 69 day roosts and associated random trees. We used an AIC approach to compare 15 candidate conditional logistic regression models. The best model, which carried 95% of total model weights, had 3 important terms. Indiana bats showed strong selection for yellow pine snags that were significantly taller than random trees and in areas with a greater number of snags within 0.1 ha. In our study area, Indiana bats are responding to a pulsed resource, dead yellow pines. Further, tree structure and switching opportunities appear to be more important for roost selection than larger scale factors. Management practices that create or preserve large pine snags should aid in the management and recovery of the Indiana bat.

FOREST MANAGEMENT AND NORTHERN LONG-EARED BATS

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Abstract: The northern long-eared bat (*Myotis septentrionalis*) is a candidate endangered species. In light of its potential listing, forest managers are increasingly interested in the effects of forest-stand management on northern long-eared bats. Here, I discuss effects of forest management practices on summer roosting and foraging ecology. During summer, maternal females tend to roost mostly in large snags found in open-forest conditions brought about by thinning, midstory reduction, and burning. Females select roost locations with fewer midstory trees than males, and these open-forest conditions have less clutter and greater solar exposure than sites with abundant midstory trees. Males often roost in small midstory trees, which are more abundant in unmanaged forests and streamside zones. Not much information is available on foraging habitats used by this species. Studies have found they avoid large open areas such as clearcuts for foraging and typically forage under forest canopies. Studies of other species found bats forage more in small openings associated with group-selection management than in surrounding forest. Activities such as thinning and burning that reduce structural forest clutter tend to increase bat use for foraging. Consequently, thinning, midstory reduction, and burning likely improves habitat for female roosting and foraging by both sexes. Because males often roost in small midstory trees, maintaining a mix of mature forest habitats, including stands with abundant midstories or unharvested streamside zones would likely maintain habitat for northern long-eared bats.

DESCRIBING INDIANA BAT ROOSTS USING DENDROCHRONOLOGY

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JAMES H. SPEER, Department of Earth and Environmental Systems, Indiana State University, Terre Haute, IN

Abstract: Indiana bats often use snags as roosts but we are limited in our knowledge of snag ages and time between death and use as a roost. Height and girth are typical measures of roost trees, but these measures do not yield data on roost age or decay time. Our objective was to report age at death of Indiana bat roost trees and the time a snag is dead before housing bats. We used dendrochronological methods to sample Indiana bat roosts, 35 in central Indiana and 31 from Tennessee and North Carolina. The median age of roosts in Indiana is 102 years. Primary roosts ranged in age from 58–231 years; four of seven primary roosts were early successional trees. We show that younger, early successional species of trees are used as primary roosts, which has implications for how we manage forests for Indiana bats. In the future, we plan to determine stand age from dendrochronological methods, plus gain information on gap dynamics and, thus, gap infilling, which may relate to roost use by bats. Tree ring data may also help us to understand the influence of nutrient inputs from bat guano on gap dynamics.

TEXAS MOUSE: JUNIPER OBLIGATE OR HABITAT GENERALIST?

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Abstract: The Texas mouse (*Peromyscus attwateri*) is reportedly a rocky habitat specialist that has been poorly studied in the Ozark Mountains. Other researchers in Missouri, Texas, and Oklahoma found Texas mice primarily in juniper glades associated with rocky cliff habitats. The white-footed mouse (*P. leucopus*) is associated with juniper glades outside of the Texas mouse's range and in captivity the two species competitively displace one another. We tested whether Texas mice are responding to the juniper or the

substrate as well as whether Texas mice are sympatric with white-footed mice in the field. We used Sherman and Tomahawk live traps to sample small mammals along 22 transects in 6 habitats over the course of a year at Pea Ridge National Military Park in northwestern Arkansas. Most Texas mice (85.5%) were caught in areas with juniper forest that was not glade-like or along rocky bluffs in oak stands. No Texas mice were captured in open grasslands or, strangely, juniper habitat along rocky bluffs. Texas mice were infrequently caught in the same locations as white-footed mice (20% of locations trapped). Additional research is needed to test the degree of competitive exclusion between Texas and white-footed mice as well as why Texas mice were not found along the juniper-dominated bluffs.

TRACKING SPRING MIGRATING FEMALE INDIANA BATS TO PREVIOUSLY UNKNOWN MATERNITY COLONIES

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MARK GUMBERT, Copperhead Consulting, Paint Lick, KY

Abstract: Little is known about bat migration, but a few studies on Indiana bats (MYSO) throughout the range have begun to shed light on the mystery. Thirty-eight of 49 female MYSO collected from Rose Cave in White County, TN were radio-tagged in April 2013. Mean weight of all female MYSO was 6.9 ± 0.1 g ($\bar{x} \pm SE$). Sixteen radio-tagged bats were detected after release (42%) and 2 were actively tracked as they migrated. Six new summer colonies were confirmed from this effort ($\bar{x} = 169.4$ km from hibernaculum) and 1 summer colony documented in 2012 in Cleburne County, AL was confirmed as a maternity colony. The six new summer colonies identified and the distance from Rose Cave were: 1 in Holly Springs National Forest, Benton County, MS (368 km SW); 1 housing at least 2 radio-tagged bats in McNairy County, TN (300 km SW); and 4 colonies housing at least 7 radio-tagged bats in Wilson County, TN (range: 75 – 92 km NW). Average migrating speed was 20.7 ± 0.6 km/hr over 5 nights and 18.2 ± 0.7 km/hr over 1.5 nights for the MS and McNairy Co. bats, respectively. Twenty-three roosts of 11 tree species were identified. Mean DBH was 43.6 ± 2.9 cm, mean height was 16.5 ± 1.1 m. Emergence counts were conducted and bats were tracked through 15 May in Tennessee and Alabama to confirm the presence of maternity colonies.

TAKING ATTENDANCE FOR BATS: WHO'S OUT THERE?

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JOY M. O'KEEFE, Indiana State University, Terre Haute, IN

Abstract: It is crucial that we understand the capabilities and limitations of survey methods for bats. For example, some species may travel at different heights and some may emit calls more often or louder than others. These differences, what we don't know about bat behavior, plus the challenges of working in a forest where bats may be not be conspicuous, are important to consider when surveying bat populations. Our goal was to determine if probability of detection varies by bat phonic groups (Low, Mid, Myotis) when employing two different sampling methods, acoustic and mistnet surveys. We sampled one night/site, 21:00-02:00 EDT, at 18 sites using simultaneous mistnet and acoustic surveys from 19 May - 29 July 2013. We used Anabat SD2s; 2m high microphones were directed 35° across the road corridors we mistnetted. Acoustic data were analyzed using Bat Call ID v2.6a. Preliminary analyses show that probability of detection for each group varies by method. Myotis bats represented 73.8% of acoustic files, but only 16.2% of captures. Only 3.4% of acoustic files were identified as Mid frequency bats, which comprised 41.5% of captures. Low frequency bats were 22.8% of the calls identified and 42.3% of captures. We plan to use occupancy models to test the effects of temperature, humidity, vegetation and other factors that may explain differences in detection probabilities for the two sampling methods.

A PHENOLOGICAL STUDY OF BAT COMMUNITIES IN SOUTHERN MISSISSIPPI CAVES

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Abstract: Mississippi is generally not known for its caves and consequently its cave flora and fauna remain largely unstudied. From fall 2010 to winter 2013 we studied the bat populations in the three largest caves in Mississippi. The most common (and only) species found in these caves were *Myotis austroriparius* and *Perimyotis subflavus*. I collected monthly data on the number of bats per species, behaviors and locations of the bats within the caves as well as atmospheric data at selected positions within each cave. All three caves were found to have significant temperature differences between seasons (winter<fall=summer). Two of the caves also showed temperature differences between some internal locations. *Perimyotis subflavus* was found in significantly higher numbers during winter and individuals were usually in torpor. However, an experiment in winter with "marked" (by nearby strings) *P. subflavus* revealed that the majority of these bats did not remain in their original positions for more than two days. In contrast, *M. austroriparius* was found in significantly higher numbers in the summer than winters. Two of the caves were used as maternity roosts by *M. austroriparius*. The largest cave in Mississippi, which unfortunately is highly vandalized, usually contained ~8,000 *Myotis austroriparius* during the summer months.

EFFECTS OF HIERARCHICAL ROOST REMOVAL ON NORTHERN BAT ROOSTING ECOLOGY

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Abstract: Conservation of summer maternity habitat is considered critical for forest-roosting bats, yet how roost loss affects bats is poorly understood. We examined this issue by identifying and monitoring 3 northern bat maternity colonies on the Fort Knox Military Reservation, Kentucky, before and after targeted roost removal. We designated two treatment groups; a primary roost removal colony wherein we mechanically removed a single primary roost and a secondary roost removal colony wherein we removed 23% of known secondary roosts. Pre-removal, we tracked 54 female northern bats to 108 roosts. Post-removal, we tracked 67 female northern bats and identified 113 new roosts. We found that colony location and space use was highly similar between years but patterns of roost use within these areas differed. Roost use patterns of our secondary roost removal treatment colony were dissimilar as a result of treatment impacts, but roost use by our control and primary removal colonies appeared to be most related to bat reproductive condition. Roost species selection patterns were consistent between years and roosts did not differ substantially between years. Our results suggest that northern bats may be tolerant of maternity site disturbance.

FOREST HABITAT RELATIONSHIPS OF THE NORTHERN BAT DERIVED FROM LONG-TERM RESEARCH ON THE FERNOW EXPERIMENTAL FOREST, WV

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W. MARK FORD, U.S. Geological Survey, Virginia Cooperative Fish and Wildlife Research Unit, Department of Fish and Wildlife Conservation, Blacksburg, VA

Abstract: Because of its poorly defined, generalist forest habitat relationships, proposed listing of the northern bat (*Myotis septentrionalis*) will present considerable challenges in the upcoming years to natural resource managers. Research on the foraging and roosting ecology of the northern bat has been conducted on the Fernow Experimental Forest, West Virginia for the past 15 years, providing one of the few comprehensive high quality data sets available for this species. We used these data to develop models of the forest-landscape relationship of the northern bat using two presence-only modeling approaches, maximum entropy and maximum likelihood. Both approaches produced outputs that were biologically relevant or easily caveated by known data limitations and biases, but maximum likelihood methodology produced superior output. Our models highlight the importance of landform index and forest type in roosting habitat selection and the difficulties associated with modeling probability of presence using presence only data derived from acoustic sampling.

BAT USE OF ABANDONED MINES IN SOUTHERN ILLINOIS, WITH AN EMPHASIS ON THE ENDANGERED INDIANA BAT AND THE PROPOSED ENDANGERED NORTHERN LONG-EARED BAT.

BRADLEY J. STEFFEN, TRC Companies, Inc., Cincinnati, OH

TIMOTHY C. CARTER, Ball State University, Muncie IN

Abstract: With the proposed listing of the northern long-eared bat as endangered, it is increasingly important to gather baseline data regarding species occurrence and habitat preferences. From 2003-2007, a total of 110 surveys of 45 abandoned microcrystalline silica mines in southern Illinois were systematically conducted for the presence of hibernating bats. This mining complex provides suitable hibernation habitat for six species of bats, including the federally endangered Indiana bat as well as the proposed endangered northern long-eared bat. Over the course of the study, a total of 75,067 bats representing six species were observed hibernating in 43 of the 45 mines surveyed, including 68,325 Indiana bats and 2,980 northern long-eared bats. While Indiana bats were observed in a total of 12 mines, a majority (87%, n=59,501) were observed in Magazine Mine. Conversely, northern long-eared bats were observed in 36 mines with only 32% (n = 944) of the observed individuals located in Magazine Mine. This mining complex has been, and continues to be, an important resource for hibernating bats. Most mines, regardless of size experienced significant population growth over the course of this study. The observed population growth is occurring in all five species of bats that regularly hibernate in southern Illinois.

BAT COMMUNITY COMPOSITION AND ITS RELATIONSHIP TO STAND STRUCTURE IN A BOTTOMLAND HARDWOOD FOREST OF EAST TEXAS

CARLA J. WEINKAUF*, Arthur Temple College of Forestry and Agriculture, Stephen F. Austin State University, Nacogdoches TX

CHRISTOPHER E. COMER, Arthur Temple College of Forestry and Agriculture, Stephen F. Austin State University, Nacogdoches TX

WARREN C. CONWAY, Arthur Temple College of Forestry and Agriculture, Stephen F. Austin State University, Nacogdoches TX

SCOTT BOSWORTH, Texas Parks and Wildlife, Old Sabine Bottom Wildlife Management Area, Lindale TX

Abstract: Although forest stand structure and composition affect chiropteran communities by affecting roosting and foraging habitat, these relationships are poorly understood for most species. We characterized the bat community and related it to key stand structural characteristics at the Old Sabine Bottom Wildlife Management Area (OSBWMA) in Smith County, TX. We conducted acoustic sampling using Peterson D500X monitors from April 19, 2013 to August 26, 2013. We sampled 27 points for 6-10 consecutive nights during each of two separate calendar time frames (early and late season). We recorded 8,293 bat calls and identified 5,380 (65%) to species using a combination of SonoBat™ software and manual examination of call sonographs. This included calls of 10 bat species. The most common species included Seminole and eastern red bats (*Lasiurus* sp.), evening bats (*Nycticeius humeralis*), hoary bats (*Lasiurus cinereus*), tricolored bats (*Perimyotis subflavus*), and southeastern myotis (*Myotis austroriparius*). We compared bat occurrence to key forest stand structural characteristics to determine how fine scale habitat features influence bat activity.

SURVIVAL AND CAUSE-SPECIFIC MORTALITY OF WHITE-TAILED DEER (*ODOCOILEUS VIRGINIANUS*) FAWNS IN URBAN AND RURAL AREAS

CHAD R. WILLIAMSON, Department of Biology, Ball State University, Muncie, IN
TIMOTHY C. CARTER, Department of Biology, Ball State University, Muncie, IN
CHAD M. STEWART, Indiana Department of Natural Resources, Bloomington, IN

Abstract: Urban populations of white-tailed deer (*Odocoileus virginianus*) are increasing in many areas throughout their range. Expansion of urban development and residential suburbs provides white-tailed deer with suitable habitat that is conducive to rapid increases in population growth along with increased risk of deer-vehicle collisions, personal property damage, and elevated incidences of zoonotic diseases. Assessment of fawn survival and cause-specific mortality is important for understanding the population dynamics in these areas. Comparisons between urban and rural populations may provide additional insight about the factors that affect these populations. We captured and radio-collared 47 fawns (29 in urban areas and 18 in rural areas) from 22 May to 15 June 2013. Fawn survival was monitored a minimum of twice weekly using radio-telemetry through 2013. Primary cause of mortality was vehicle collision in urban areas, and hunting in rural areas. Other causes included abandonment and predation events. This information may help explain the population density differences in urban and rural areas, and help determine which management strategies may work the most effectively.

USING PUBLIC AWARENESS TO ASSIST IN LOCATING WHITE-TAILED DEER FAWNS FOR RESEARCH

CHAD R. WILLIAMSON, Department of Biology, Ball State University, Muncie, IN
TIMOTHY C. CARTER*, Department of Biology, Ball State University, Muncie, IN
CHAD M. STEWART, Indiana Department of Natural Resources, Bloomington, IN

Abstract: Radio-collaring of white-tailed deer (*Odocoileus virginianus*) fawns helps managers and biologists to understand the population dynamics in deer herds. Methods for locating and capturing newborn white-tailed deer fawns are well documented. Conducting ground searches in efforts to locate neonates requires considerable resources in terms of time and personnel. Urban areas can have additional difficulties such as land access and public awareness. Involving community citizens in scientific research can be beneficial to both citizens and researchers. In efforts to collar urban fawns, we implemented a public involvement strategy to promote support for the project and to aid researchers in locating fawns. This strategy used two main modes of directly communicating with the public including website/email and a phone hotline. We raised public awareness of the project through local newspaper articles, radio interviews, mail fliers, community events, and via word of mouth. During this study we captured and radio-collared 47 fawns in 2013. Of those, 32 were captured as a result of public reports. Time spent on urban fawn capture was minimal when compared to time spent on rural fawn capture. Involving communities in research-based science not only promotes learning and education but can also reduce efforts and costs for conducting urban wildlife research.

History of Mammal Colloquium and SBDN Meetings

Colloquium	SBDN	Year	Location	Host
24 th	19 th	2014	Nacogdoches, TX	Chris Comer
23 rd	18 th	2013	Fall Creek Falls, TN	Brian Carver
22 nd	17 th	2012	Louisville, MS	Darren Miller
21 st	16 th	2011	Louisville, KY	Tim Carter & Brooke Hines
20 th	15 th	2010	Asheville, NC	Mary Kay Clark
19 th	14 th	2009	Jonesboro, AR	Tom Risch & Blake Sasse
18 th	13 th	2008	Blacksburg, VA	Michael St. Germain
17 th	12 th	2007	Destin, FL	Jeff Gore
16 th	11 th	2006	Chattanooga, TN	Tim Carter & Troy Best
15 th	10 th	2005	Paris Landing, TN	John Nelson
14 th	9 th	2004	Helen, GA	Steven Castleberry
13 th	8 th	2003	Mississippi State, MS	Darren Miller
12 th	7 th	2002	Clemson, SC	Susan Loeb
11 th	6 th	2001	Memphis, TN	Michael Kennedy
10	5 th	2000	Guntersville, AL	Troy Best
9 th	4 th	1999	Wytheville, VA	Rick Reynolds
8 th	3 rd	1998	Hot Springs, AR	David Saugey
7 th	2 nd	1997	Black Mountain, NC	Mary Kay Clark
6 th	1 st	1996	Somerset, KY	Mike Lacki
5 th		1995	Cookeville, TN	Michael Harvey
4 th		1994	Athens, GA	Joshua Laerm
3 rd		1993	Mountain View, AR	Gary Heidt & Rick McDaniel
2 nd		1992	Guntersville, AL	Troy Best
1 st		1991	Memphis, TN	Mike Kennedy

BAT BLITZ

2014 Multi-State Bat Blitz Sept. 4th – 10th, 2014

Requirements for 2014 Multistate Bat Blitz

- In 2014 there is no centralized bat blitz
- We are coordinating a series of mini blitzes across the Eastern US
- We ask that all netting be conducted within a narrow window of dates (Sept. 4th – 10th, 2014)
- While netting can serve multiple purposes (e.g., endangered species surveys), to be counted toward the 2014 Bat Blitz, the data collected must be shared with SBDN and entered into the National Bat Database
- Netting should start at dusk and continue for at least 4 or 5 hours, weather permitting
- Ideally netting should be conducted for one night at each site and at least two sites should be surveyed.
- Standard SBDN datasheets should be used and will be provided to participants
- You can participate in the 2014 Bat Blitz in at any level you would like.
- Surveys can be conducted by individuals or small crews or you can coordinate a large level of effort (e.g., state blitz).
- The only requirement is that for each net site there must be at least one experienced person (i.e. team leader) that has all required state and federal permits (and others if applicable).

Guidelines for Hosting a Small SBDN Sponsored Bat Blitz

- For a small (one or two teams) Bat Blitz, team leaders assume all responsibility for coordinating activities for netting.
- In this scenario, housing and meals are the responsibility of each individual team member.
- Team leaders will be responsible for all of the following:
 - Communication with SBDN bat blitz committee about all proposed netting work
 - Preregister all work with the blitz
 - Selecting and scouting all netting sites
 - Coordinating all equipment to be used
 - Responsible for all legal permit requirements including all WNS decontamination procedures.
 - Responsible for safe handling of bats and supervision of all other people present
 - Collection and reporting of all data with SBDN and in accordance with any permit requirements.
 - Submit all data to SBDN blitz committee after completion of blitz.

The SBDN blitz committee will be sending out more information to states soon and setting up a conference call to answer questions.

Trina Morris
SBDN Blitz Committee Chair
katrina.morris@dnr.state.ga.us

2014 Ocoee Ranger District Cherokee National Forest Mini Bat Blitz

July 22-23, 2014 with netting on Tuesday July 22 and Wednesday July 23.

Place: Headquarters and camping will be provided at Thunder Rock Campground in Polk County Tennessee. The campground is located just north of the 1996 Olympic Site, behind TVA Powerhouse Number 3 along the banks of the Ocoee River.

Basic Information: A maximum 50 participants will be accepted for participation in the event. Participants should be at the campground by 1 PM on Tuesday July 22nd. One meal will be provided on Tuesday. You will be responsible for your meals otherwise. Registration is \$10. Some netting equipment may be available; however, you should plan to bring your own. Bands will be provided. In addition, participants who would like to raft the Ocoee River will get a discounted rate on Thursday July 24. Registration forms will be available soon.

Permits: At a minimum at least one person that will be present at a net set will need to have a State of Tennessee Permit and a Federal Permit. We plan to include all team leaders under one Federal permit. Team leaders should contact Mary Miller by May 15th for inclusion on the Federal permit. Contact Brian Flock for information about a state permit Brian.Flock@tn.gov 615-781-6569.

General Blitz contact information: Mary Miller mcmiller@fs.fed.us 423-476-9756

<http://www.fs.usda.gov/recarea/cherokee/recreation/camping-cabins/recarea/?recid=35106&actid=29>

WHITE-NOSE SYNDROME

Hi everyone,

We sadly welcome Wisconsin and Michigan to the map, and reports from other areas have also arrived.

Michigan

Alpena, Dickinson, and Mackinac were confirmed through histopathology.

Wisconsin

J. Paul White reports:

"Unfortunately, Wisconsin has documented the first cases of WNS in one mine in far southwestern WI (Grant County). Fungus was observed on 1 MYSE and 10 MYLU, two of which were taken for testing. Histopathology confirmed the presence of the disease. It is a very sad day for Wisconsin's bats."

Georgia

Trina Morris reports:

Rabun County can now be listed as Confirmed. Results came back from SCWDS today. Also, Pete Pattavina collected a dead PESU from under a bridge in Pickens County earlier this year. That bat also was confirmed positive by SCWDS.

Ontario

Lenny Shirose reports:

*"Wawa District has newly discovered endangered bats diagnosed with WNS near the community of Dubreuilville. On March 11, 2014 Steve Lebel (MNR) submitted 4 male Northern Long-Eared Bats (*Myotis septentrionalis*) found dead at the entrance of a mine adit near Dubreuilville in the Algoma District Census Division as part of an OMNR active surveillance initiative. All 4 bats were in very poor body condition, tested positive for *Pseudogymnoascus destructans* by PCR and were confirmed positive by histopathology. This is Wawa District's second documented case of WNS with the first case being documented in April 2011 when dead bats (Little Brown Bats and Northern Long-Eared Bats) were submitted for testing found at a hibernacula from an old abandoned mine site on Hwy101 east of the municipality of Wawa."*

Kentucky

Brooke Hines reports:

*"Two caves in Lee County, KY, one a significant Virginia big-eared bat hibernacula, were found with signs of WNS last week. Swabs were taken from 10 Virginia big-eared bats and sent to the lab for analysis." *Note, Lee County was already mapped as Suspect, this is an update only.*

Arkansas

Blake Sasse reports:

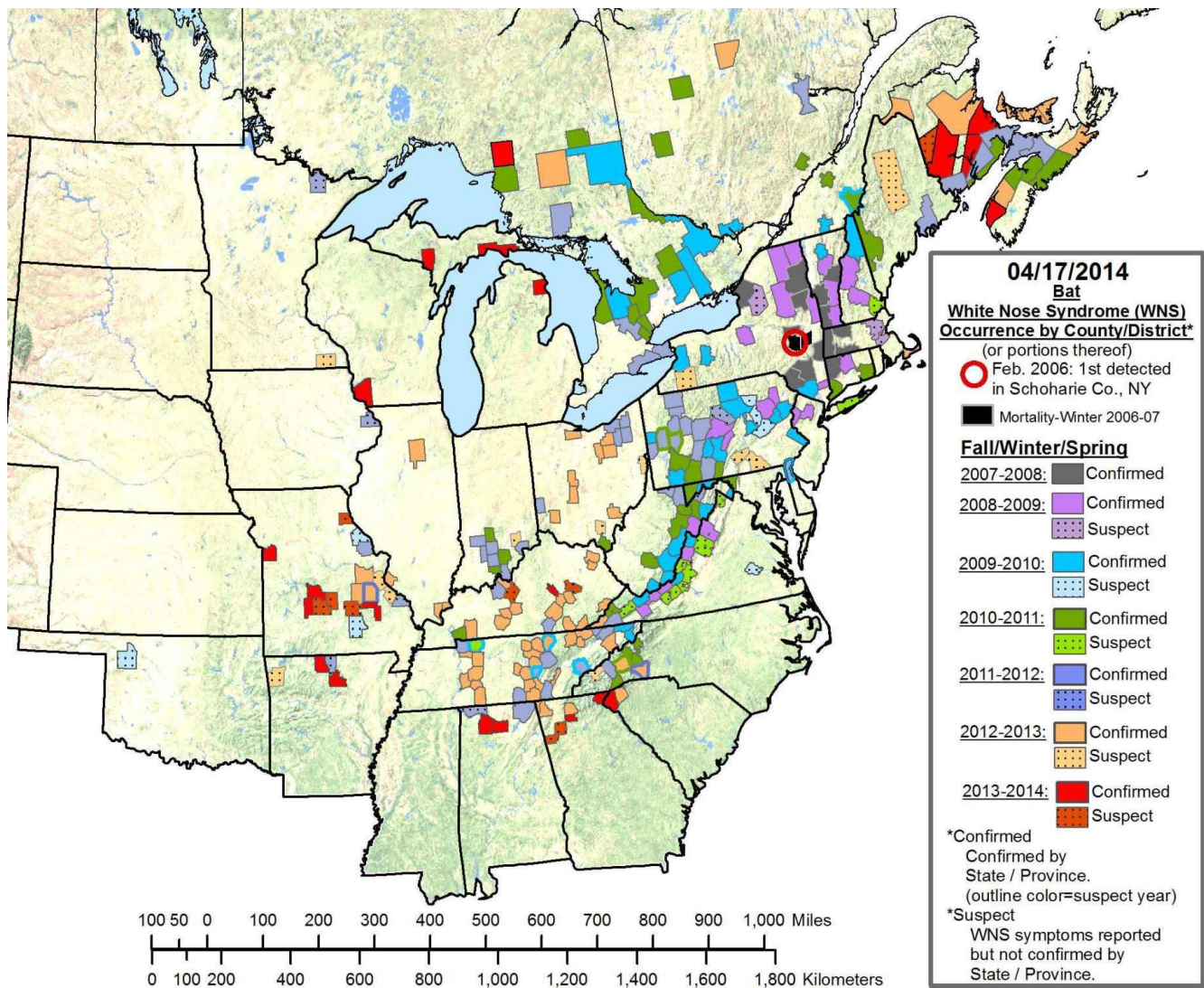
On January 11th surveyors found 5 dead northern long-eared bats in a cave in Marion County, Arkansas. Two of these bats were submitted to the National Wildlife Health Center which confirmed that P.d. was present and that the bats had suffered tissue damage consistent with WNS. This is the first confirmation of WNS in the state though two other counties were identified as suspect in 2013 based on swab sampling.

After finding the dead bats the surveyors left the cave, but returned later for a full survey and found 116 Ozark big-eared bats, 15 northern long-eared bats, and 30 tricolored bats in the cave, none of which had any visible fungus. Although northern long-eared bats are commonly found in the Ozarks in the summer, we've never seen them while doing surveys in this cave. In fact we rarely see them in any caves in Arkansas, so I suspect that the relatively large numbers on this survey represents the "move to the front" seen in other caves with WNS. The Ozark big-eared bat count is larger than we've seen since 2009 (140). In recent years it has been 75 (2010), 76 (2011), 12 (2012), and 76 (2013). Tricolored numbers were also consistent with recent surveys.

Marion County Arkansas mapped as **Confirmed** for WNS.

Regretfully, we welcome Arkansas to the raggedy, ripped, and riddled WNS raft.

Cal Butchkoski
PA Game Commission



Map by: Lindsey Heffernan, PA Game Commission

Items of Interest



Mary Frazer sent in this picture.
Here are a couple of hoaries enjoying themselves in early Spring (March) in Moore Co, NC.
Looks like they found a spot on the sidewalk.
Photo submitted Mary Frazer, courtesy of Richard Hancock.



After 35 years of service, Keith Hudson retired from the Alabama Division of Wildlife and Freshwater Fisheries. Many of the SBDN membership probably knew Keith, as he was an active and avid bat biologist. Keith will be sorely missed for his extensive knowledge of Alabama bats. Nick Sharp has been selected as the new Nongame Biologist for north Alabama and assumes the mighty challenge of trying to fill Keith's role. We also have a new federal lead for bats in the state with the Fish & Wildlife Service. Karen Marlowe has been in her post for just about a year now. We invite SBDN members to contact Nick or Karen regarding bats in Alabama or to communicate with the Alabama Bat Working Group.

ATTENTION STUDENTS

The Southeastern Bat Diversity Network (SBDN) established an annual Student Travel Award in 2006 to financially assist one student attending the North American Symposium on Bat Research (NASBR). If you are a student enrolled in a university in the Southeastern US and are planning to give an oral or poster presentation at NASBR in 2014 (www.nasbr.org), you are qualified to apply for a student travel award from SBDN. Information on the award and the application process are available at: http://www.sbdn.org/files/SBDN_Student_Award.pdf. **DEADLINE for 2014 applications will be in July 7, 2014.** Send applications to Stephen Burnett via email (sburnett@clayton.edu) or snail mail (Stephen Burnett, Department of Natural Sciences, Clayton State University, 2000 Clayton State Blvd, Morrow GA 30260). E-mail submissions are preferred. Contact Stephen Burnett (sburnett@clayton.edu) if you have questions.

FUTURE MEETINGS

Joint Meeting

**25th Mammal Colloquium
and
20th SBDN Meeting**

Mid-Western Bat Working Group

Western Bat Working Group

Crown Plaza Hotel
St. Louis, Missouri
3 – 6 March 2015

Wildlife Society 21th Annual Conference

The Wildlife Society 21th Annual Conference is taking place in Pittsburg, PA, October 25-30, 2014.

44th North American Symposium of Bat Research

Annual meeting
October 22-225, 2014
Hilton Albany
Albany, New York

94th Annual Meeting of the American Society of Mammalogists

June 6 - 10, 2014

Renaissance Convention Center Hotel and Spa
Oklahoma City, Oklahoma

13TH GREAT LAKES BAT FESTIVAL

Ann Arbor Hands-On Museum
Washtenaw Community Collage
Ann Arbor, Michigan

27 September 2014

10th Annual Austin Bat Fest

Austin, Texas
23 August 2014

8th Annual Indiana Bat Festival & Bat Science Night

Indiana University – Purdue University
Indianapolis, Indiana

13 September 2014

Wisconsin Bat Festival

Urban Ecology Center
Milwaukee, Wisconsin

4 October 2014

FROM THE EDITOR:

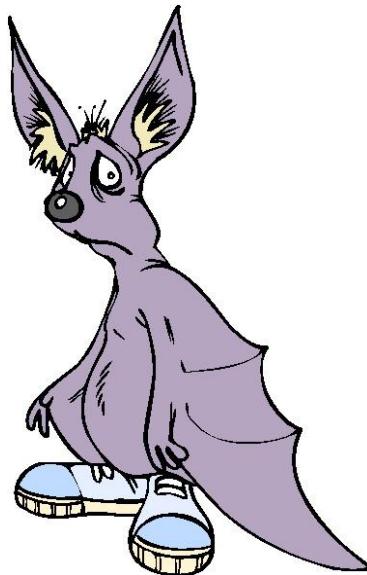
Nightwing News made some changes this year I hope for the better. I tried to focus more on our Annual Meeting in this issue, we have kind of been over looking all the great things that we all enjoy about attending the meeting. I know I have missed a few things and I trust that you will let me know and offer suggestions on how we can continue to improve the Newsletter.

Special **“Thanks!”** to Tim Carter and David Saugey for providing pictures of the meeting.

No excuses, you now have the Spring to concentrate on your projects and only have to deal with me picking at you for information in the Fall. SO, I will be expecting you to step up and submit some really great stuff from this summer.

I hope everyone has a very productive summer research season. I look forward to seeing what you have all been doing and what you have accomplished in the December issue. Yes, already working you for next issue.

“THANK YOU ONE AND ALL.”



As always take good notes and be safe out there no matter what you are doing.