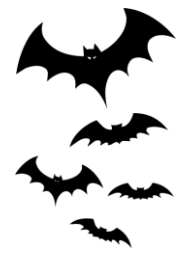


# Nightwing News



The Newsletter of the Southeastern Bat Diversity Network

Volume 102, Number 2

December 2012

## PRESIDENT'S ADDRESS

Submitted by Mike Lacki

With my term as President of SBDN winding down, I view this address as a time for thought, reflection, and closure. Rooted in the mammal colloquiums of the mid-1990s, where meetings were a fairly loose collection of individuals with common interests in wild mammals, SBDN has grown into a thriving organization that has long since surpassed its colloquium 'nest egg' in relevance and impact. This speaks to the substantial growth in attention to our Chiropteran brethren, not only here in the southeastern U.S., but elsewhere. The fairly sudden and rapid rise in interest and concern for bats has always puzzled me. Why bats and not another mammal group? The answer to that must lie in the breadth, diversity and complexity of their forms, physiologies and ecologies, but regardless of the reason(s) I am certainly glad to see it happen and to have played a small part in it.

My years as president have gone by rapidly; a blip on the radar screen if you will. Never-the-less, I am proud of what the organization has accomplished and of the recognition given to SBDN by other conservation organizations during this time. I believe much more is yet to come. The annual meeting in Mississippi provided key opportunities for SBDN to begin forming partnerships with organizations and individuals charged with management of public lands in the southeast, leading to dialogue on how populations of bats can be better managed for both now and into the future. The meeting in Kentucky the year before, where the Midwest and Northeast Bat Working Groups were invited to attend, created a stimulating environment for exchange and discussion of ideas, much needed at the point in time where white-nose syndrome was beginning to encroach upon the southeastern U.S. with its insidious and crippling effects on bats. As I stood in the back of the room where the plenary session was being held, I couldn't help but smile as I fondly remembered my very first talk on bats given at the 13<sup>th</sup> NASBR so many moons ago. That meeting was also held in Louisville, Kentucky, and at that time we used 35mm slides in carousels to give presentations and mine kept getting stuck in the projector! That 'international' audience was less than 1/3 in size of the attendance at the joint meeting of the 3 regional groups. I stood there thinking how far we had come.

The growth in interest in bats is fortunate, because the threats and dangers to bats due to habitat loss, wind energy development and disease are greater today than ever before, and it is likely that future threats from climate change and heretofore unknown forces will only add to the complexity of the problems facing us in our efforts to conserve bats into the future. I see SBDN and its membership playing an increasingly significant and important role in this conservation battle, and I am inspired by the overwhelming dedication of many members of the organization who willingly sacrifice their time and energies on behalf of bats. I am proud to have served with all of the members of the former Board of Directors and the current Executive Committee during the past years. Their passion for helping bats is unrivaled by the leadership of any other regional working group associated with NASBR. I also know that the future of SBDN is in good hands with the incoming president. It's clear to me already that Dr. Joy O'Keefe will be tireless in her efforts to keep SBDN at the forefront of bat conservation in North America.

In closing let me say thank you for allowing me to serve the organization as President. The process and opportunity have been rewarding and if I have one last promise to make, it is that the conservation strategy for Rafinesque's big-eared bats and southeastern myotis, that I have been trying to complete for 1 ½ years now, will be finished before my term as Past-president is over!

Season's greetings to all of you and your families.....

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# Executive Committee Meeting

Southeastern Bat Diversity Network  
Executive Committee  
Minutes of the Mid-Year Conference Call Meeting  
September 12, 2012

## Attendees

### **Executive Committee**

Mike Lacki, President  
Joy O'Keefe, President Elect  
Darren Miller, Past President

Tim Carter, Treasurer  
Bree McMurray, Secretary  
Katrina Morris, Member at Large

## Action Items

**AI 1:** Carter will send the update to the webmaster and send the new letterhead to President Lacki.

**AI 2:** Bylaws Committee will present the change to the membership through the ballot to be voted on electronically.

**AI 3:** O'Keefe will sign up as the SBDN representative to the SWG grant program support coalition to get in on the 2013 notices.

**AI 4:** O'Keefe will check with Krusac about status of locating the Regional Conservation Strategy for *M. leibii*.

**AI 5:** Carter will get with Brooke Hines to complete the write-up from the 2011 joint annual meeting.

**AI 6:** Lacki will address time limit for claiming student award and forfeiture of funds with the Awards Committee for next year's SBDN meeting.

**AI 7:** Lacki will coordinate with 2013 meeting host Brian Carver regarding meeting planning progress.

**AI 8:** Lacki will consider when to form a Website Committee and what its duties would be, table this discussion for Annual Exec Committee meeting in February 2013.

**AI 9:** O'Keefe will poll the *Myotis leibii* working group for interest and times for a meeting at the annual SBDN meeting in TN in 2013, and Lacki will talk with host Brian Carver about providing non-overlapping timeslots at SBDN for the working group(s), business meeting, and Executive Committee meeting.

**AI 10:** Lacki will go back through his tenure as President and make an accounting of all actions and votes that were taken by the Executive Committee between meetings. Lacki will also include this as an agenda item for February 2013 to finalize how this will be documented in the future.

Call to Order: 4:07pm EST, President Lacki

## 2012 Feb Executive Committee and Board of Directors meeting action items:

- Carter-Mission statement added to letterhead, website, and bylaws:  
Added to letterhead. Carter will contact webmaster to have added to website after this meeting. Regarding updating the Bylaws, there isn't a specific place already, but can replace Article 2 Section 2 with the new Mission Statement. Will be added to part of the ballot for an electronic vote of the membership.

**AI 1:** Carter will send the update to the webmaster and send the new letterhead to President Lacki.

**AI 2:** Bylaws Committee will present the change to the membership through the ballot to be voted on electronically.

- Lacki-disposition of the Conservation Strategy for CORA/MYAU:  
Lacki sent out draft to eight-member review panel, with comments expected by the end of October 2012. Lacki will incorporate comments in a final draft to BCI in December 2012. (There was a brief discussion on the changes taking place at BCI). SBDN and BCI will be co-authors and split cost of the final document, which will be available in both electronic and hardcopy formats.
- Morris and Krusac-Federal Contact list added to State Contact and submitted to JD Wilhide for newsletter.
- Wilhide-Editorial changes/comments for newsletter statement have been added.
- Morris-State Wildlife Grants support letter:  
Morris explained the process has changed to signing onto a prepared letter when notices go out to coalition members. O'Keefe suggested SBDN join the coalition and get the notices to sign on at the appropriate times. O'Keefe also suggested that the position and contact for signing up should be the Vice President in our organization—all EC agreed.

AI 3: O'Keefe will sign up as the SBDN representative to the SWG grant program support coalition to get in on the 2013 notices.

- O'Keefe-Meeting History and Schedule of future hosts list complete. There was discussion about dates for the 2014 meeting with Texas being a strong possible host.
- Krusac-locate Regional Conservation Strategy for *Myotis leibii*.  
O'Keefe will make contact to determine status of this action item.

AI 4: O'Keefe will check with Krusac about status of locating the Regional Conservation Strategy for *M. leibii*.

- Carter and Hines-2011 joint bat meeting write-up: still pending

AI 5: Carter will get with Brooke Hines to complete the write-up from the 2011 joint annual meeting.

### **September 2012 Agenda**

- Committee Reports: Newsletter has the most up-to-date list, with some exceptions

Awards Committee-The student travel award for NASBR went to Evan Pannkuk. Awards Committee Chair Stephen Burnett presented an award letter, amount to be reimbursed AFTER the 2012 NASBR meeting.

Carter stated that in 2011 there were 3 awards announced, total amount \$1500, but one of the awards was never claimed. There was discussion regarding a deadline to claim the award. There was general acceptance of a 6-month time limit from the conclusion of the NASBR meeting for which the award is given. Also, if the student does not end up attending NASBR that year, then the award is forfeit for that year.

AI 6: Lacki will address time limit for claiming student award and forfeiture of funds with the Awards Committee for next year's SBDN meeting.

Database Committee-Region 8 USFS is providing \$10,000 in funding for entering data and housing the database.

Federal Representation Committee- No action yet. Mailing lists for federal representatives will be used to mail the Big-eared Bat Symposium Proceedings to managers. Looking for update at 2013 Annual SBDN meeting.

Membership Committee-no major action. More discussion later.

- Treasurer's Report: Carter provided to Executive Committee. Tax preparation fee has increased to \$610 annually. There are currently 90 paid members and 509 mailing list (electronic) members. McMurray sent 2011 audit comments to Exec. Comm. The 2012 SBDN meeting fund will be reimbursed roughly \$100 that it fell short from the Colloquium Surplus Fund.
- Status of 2013 Bat Blitz: Morris/Blitz Committee reported that Oklahoma USFWS Ozark Plateau NWR already had \$25,000 earmarked for summer 2013 blitz. Currently we are still assuming Louisiana for 2014.
- TWS Group Achievement Award will be accepted at the Portland, OR annual meeting by Darren Miller representing SBDN.
- Gulf Coastal Plain and Ozarks Landscape Conservation Cooperative-Miller: there is a stakeholder meeting in Vicksburg, MS and upcoming meeting for science team on mammals group in Oct 2012. SBDN's future involvement in the group is under consideration.
- Nominations and Election Committee-Miller will chair, call for nominees will go out in November. Terms ending in 2013 (at conclusion of February annual meeting) are Vice President, Secretary, and Board Member at Large. Secretary and Member at large can repeat up to 2 consecutive terms.
- 2013 Annual Meeting preparations update-Lacki: Brian Carver (host) couldn't participate today, but he is getting the hotel/resort pricing in order and Steve Samoray is assisting with organizing the meeting. Lacki will check in with Dr. Carver regarding timelines for paper submissions, scheduling associated meetings, and working with SBDN Treasurer on registration forms and deposits.

AI 7: Lacki will coordinate with 2013 meeting host Brian Carver regarding meeting planning progress.

### **New Business**

- Control of Website Content:

In regards to the security of our organization and website content, there was discussion on the current method of back up security, passwords, access, and ownership. There was a suggestion of forming a Website Committee in the future to

research the available options. In the meantime, any committee that wants things up on the website, send them to Carter in ready form to pass along to the webmaster.

AI 8: Lacki will consider when to form a Website Committee and what its duties would be, table this discussion for Annual Exec Committee meeting in February 2013.

- MYLE Working Group:

O'Keefe-There was much discussion this summer and 60 people signed up to participate in a working group. A webpage was created, as well. There is interest in having a timeslot at the annual SBDN meeting for the working group to gather.

AI 9: O'Keefe will poll the *Myotis leibii* working group for interest and times for a meeting at the annual SBDN meeting in TN in 2013, and Lacki will talk with host Brian Carver about providing non-overlapping timeslots at SBDN for the working group(s), business meeting, and Executive Committee meeting.

- Business meeting notes from annual meeting:

There was discussion about an official record of the Business meeting held at the Annual Meeting. For 2013, notes will be taken, just as a record, but not subject to approval.

- Documentation of decision-making by the Executive Committee between meetings:

Lacki-The organization will keep one document of approvals of actions taken since the last time the Exec Committee met. There was discussion as to how and where to document the key votes between meetings. This will be on the agenda for February 2013 to discuss.

AI 10: Lacki will go back through his tenure as President and make an accounting of all actions and votes that were taken by the Executive Committee between meetings. Lacki will also include this as an agenda item for February 2013 to finalize how this will be documented in the future.

Motion to adjourn by Carter, seconded by O'Keefe call: passed unanimously  
5:47pm adjournment

# BAT BLITZ

## Bat Blitz Committee Report

Trina Morris (Chair), GA DNR, [katrina.morris@dnr.state.ga.us](mailto:katrina.morris@dnr.state.ga.us)  
Tim Carter, Ball State University, [tccarter@bsu.edu](mailto:tccarter@bsu.edu)  
Dennis Krusac, US Forest Service, [dkrusac@fs.fed.us](mailto:dkrusac@fs.fed.us)  
Bree McMurray, MO DOT, [mobatgirl1@yahoo.com](mailto:mobatgirl1@yahoo.com)  
Joy O'Keefe, Indiana State University, [joyokeefe@gmail.com](mailto:joyokeefe@gmail.com)  
Blake Sasse, AR Game & Fish Commission, [dbsasse@agfc.state.ar.us](mailto:dbsasse@agfc.state.ar.us)  
David Saugey, Old Bat, [dsaugey@fs.fed.us](mailto:dsaugey@fs.fed.us)



**Arrowhead Thunderbird Lodge will serve as 2013 Blitz Headquarters along the Illinois River in Talequah, OK.**

Oklahoma has submitted a proposal to host the 2013 Bat Blitz. The Blitz Committee accepted the proposal and OK has already secured a majority of the funding needed for the event. The Blitz will be held July 28<sup>th</sup> – 31<sup>st</sup>, 2013 in the Ozark Plateau National Wildlife Refuge. The headquarters will be at the Arrowhead Thunderbird Lodge in Tahlequah, OK.

Louisiana is working on a proposal for the 2014 Blitz. Blitz hosts are still needed for 2015 and beyond. Potential hosts should contact Trina Morris ([katrina.morris@dnr.state.ga.us](mailto:katrina.morris@dnr.state.ga.us)) for more information about hosting a future blitz!



# United States Department of the Interior

Fish and Wildlife Service  
Ozark Plateau National Wildlife Refuge  
16602 County Road 465  
Colcord, OK 74338  
Phone: 918/326-0156



## SAVE THE DATE

### 2013 Bat Blitz

*28 July – 1 August*

The Southeastern Bat Diversity Network and Ozark Plateau National Wildlife Refuge are proud to announce the 2013 Bat Blitz, 28 July – 1 August. Site headquarters will be located at the Arrowhead Resort ([www.arrowhead-thunderbird.com](http://www.arrowhead-thunderbird.com)) on the scenic Illinois River in the Ozark Highlands of northeastern Oklahoma. Bunk beds for 100 have been reserved for the event. Additional camping, individual cabins, and RV hookups are available through the Resort office. The Resort will provide a free float trip for all registered participants. Food will be catered by various local vendors. Lodging facilities do have functional kitchens, air conditioners, and shower facilities.

Participants will have the opportunity to net bats within in the Oklahoma Ozarks. Teams will conduct surveys on the Ozark Plateau National Wildlife Refuge, The Nature Conservancy's Nickel Preserve, Cherokee Nation lands, Oklahoma Department of Wildlife Conservation lands, City of Tulsa land, as well as on other private lands. There is potential to net and photograph rare species such as the Ozark big-eared bat, though not guaranteed. All students and researchers who would like to collect data during the event (acoustics, DNA, use of transmitters, etc...), should contact Refuge Staff ([Shea\\_Hammond@fws.gov](mailto:Shea_Hammond@fws.gov)) and Ecological Service Biologist ([Richard\\_Stark@fws.gov](mailto:Richard_Stark@fws.gov)) immediately to assess needs, permitting, and logistics.

As always, there is a need for Team Leaders. We are currently consolidating leader lists for permitting purposes. If you have been a team leader in the past and/or have appropriate experience/permits and are interested in leading a team in 2013, please contact Shea at 918-326-0156 and/or Richard at 918-382-4520 or via email. If you don't email soon, then you will likely receive a call within the week!

More information about this event will be provided soon, but please go ahead and mark your calendars! In the meantime, feel free to contact me if you have any questions.

Looking forward to an awesome Bat Blitz!

Shea Hammond, Deputy Refuge Manager  
[Shea\\_Hammond@fws.gov](mailto:Shea_Hammond@fws.gov)  
Phone: 918-326-8510

# STATE WORKING GROUP REPORTS

Submitted by:  
J. Allison Cochran  
Certified Wildlife Biologist  
Bankhead National Forest



The Alabama Bat Working Group (ABWG) held the annual Alabama Bat Blitz on October 22-26, 2012 on Wheeler National Wildlife Refuge Complex headquarterd in Decatur, Alabama. Twenty-three individuals including biologists, students, and volunteers mist-netted and harp-trapped for bats. Representatives from the US Fish and Wildlife Service, Alabama A&M University, US Forest Service, Auburn University, Alabama Department of Conservation and Natural Resources, Redstone Arsenal, Regan Smith Energy Solutions, Alabama Geological Survey, and the Alabama Bat Working Group descended upon Wheeler to survey fall migrating bats in the Tennessee Valley and to gain experience with bat survey and monitoring techniques. Dr. William Stone (Alabama A&M), Bill “Gator” Gates and Chris Lewzader (Wheeler NWR) organized the outstanding event.

Individuals mist netted for bats on Wheeler NWR for three nights and harp trapped at Cave Springs Cave on this refuge one night. Participants also mist netted and harp trapped at Key Cave NWR one night. Unfortunately, only one red bat (*Lasiurus borealis*) was captured during the mist netting despite numerous net set-ups. Twenty-two gray bats (*Myotis grisescens*) were captured at Cave Springs Cave (CSC) and one tricolored bat (*Perimyotis subflavus*) was captured at Key Cave (KC) during harp trapping. All bats were wing (uropatagium) punched and the very small piece of tissue will be sent to the American Museum of Natural History. Tissue is collected to preserve unique genetic information about these bat species for future researchers. All bats were released after being examined.

Other portions of the Alabama Bat Blitz included training and a meeting of the Alabama Bat Working Group. Participants learned about and participated in decontamination protocols to prevent the spread of White-nose syndrome in bats. Bill Gates provided training on Acoustic Monitoring Surveys and explained the protocols used by the US Fish and Wildlife Service and US Forest Service for conducting Summer Acoustic Driving Surveys. During these surveys biologists and volunteers drive a designated route and record bat echolocation calls with Anabat Acoustic Monitoring Equipment in efforts to determine species presence/absence and long-term trends in bat abundance. These agencies are always looking for volunteers to assist with this monitoring effort in the summer months.

## Who is the ABWG?

The Alabama Bat Working Group was formed in February 2009 to bring together individuals, organizations, and agencies interested in conserving the state’s bat species. In summer 2009 the group formed a committee known as the Alabama White-nose Syndrome (WNS) Management Team to develop a management strategy for this fungal pathogen and its deadly effects. WNS has killed up to 100% of hibernating bats in some caves in the Northeast and has been spreading rapidly south since 2006. White-nose syndrome was documented in Alabama during the 2011/2012 winter survey season. For more information on the ABWG visit <http://alabamabatwg.wordpress.com/>

## Blake Sasse

Arkansas Game and Fish  
Commission



During the summer, the Arkansas Game and Fish Commission began an acoustic survey using car-mounted equipment in the Ozarks and also conducted several weeks of mist netting on the Madison County Wildlife Management Area in northwestern Arkansas. Routine endangered bat monitoring was conducted in summer caves used by our three endangered bats.

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The Buffalo National River participated in the AGFC’s acoustic survey project and also began one of their own on the river and its tributaries.

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Devil’s Den State Park held their 23<sup>rd</sup> annual Bat-o-Rama in June and have continued to educate visitors about the importance of the park’s caves to the Ozark big-eared bat. Visitors were asked to sign a “bat pledge”.



### Bat Pledge

I \_\_\_\_\_ play an important role in  
(your name here)  
the future of our planet, just like bats. So I pledge to  
stay out of the caves and crevices until the day that I  
know bats are okay! To be a force for good, I will con-  
tinue to explore, learn, and share my knowledge!

Devil's Den State Park  
11333 W Hwy 74, West Fork, Ark 72772  
<http://www.arkansasstateparks.com/devilsden/>

\*\*\*\*\*

US Fish and Wildlife Service biologists at the Arkansas Field Office (AFO) organized a cave clean-up project at The Wonderland Cave in Bella Vista, Arkansas. For years The Wonderland Cave has been cherished by the local community due to its rich historical significance; which includes serving as a night club, a fallout shelter, and a winery. This cave is biologically significant because it provides habitat for many cave adapted species and is suspected to have supported a colony of federally listed endangered gray bats (*Myotis grisescens*). However, over the years the cave has been abandoned by previous owners, continually broken into, and severely vandalized. Therefore, with landowner permission and funding provided by the CPWN initiative, the AFO successfully worked with 75 volunteers from the local community (i.e., local residents, students and faculty from Rogers High School's "Outdoor Education" class, members of the Boston Mountain Grotto caving club, and biologists from various state and NGO's) and spent the day removing trash from the delicate cave ecosystem. In addition, student volunteers were educated on cave biology, water quality, endangered species, and White Nose Syndrome (WNS). Upon conclusion of the project, volunteers had completely filled a 20-yard open top dumpster with trash from the cave and gained valuable knowledge about how to protect fragile cave ecosystems.



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Dr. Tom Risch's bat lab at Arkansas State University has been active in mist netting for endangered bats on the Ozark National Forest and located a new gray bat bachelor cave in Johnson county. Acoustic monitoring was conducted at single turbine wind generation sites. In the lab, research has continued on the role of fungal proteases in wing necrosis during WNS, mechanical properties of bat wings during WNS, and the surface lipid content of bats.



Submitted by:  
Trina Morris



Summer 2012 Interns & Grad Student

Jackie Jeffrey and Bronson Curry completed summer work as interns helping Craig Bland, UGA grad student on a joint project between UGA and GA DNR. The crew worked on Sapelo Island and Little St. Simon's Island completing mist netting, radio telemetry and vegetation plots related to the yellow bat (*Lasiurus intermedius*) project. Jackie will continue work into the next period working on data entry and analysis from Anabat routes and cave emergence counts.





Jackie Jeffrey with a yellow bat captured on Sapelo Island, GA

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### Anabat Routes

Georgia launched the statewide Anabat survey volunteer project during this period. Biologists along with public affairs staff developed a website for volunteers including an instructional video, interactive map and downloadable forms (<http://www.georgiawildlife.com/AnabatProject>). We had hundreds of interested volunteers and got all routes covered within the first week of the program. This winter we plan to use the recently released software to analyze calls from this year and previous year's surveys.

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### Indiana Bat

Biologist from the GA Dept. of Natural Resources, US Forest Service, US Fish and Wildlife Service and volunteers conducted three mist netting sessions on Rich Mountain WMA trying to catch another Indiana bat (*Myotis sodalis*). The team was trying to find out more about a newly discovered population (see GA DNR May E-Newsletter for more information on this find <http://content.govdelivery.com/bulletins/gd/GADNR-3e82b5>). Though no Indiana bats were captured during the three sessions, biologists got some important information about the bat community in the area.

The team captured big brown bats (*Eptesicus fuscus*), Eastern red bats (*Lasiurus borealis*), evening bats (*Nycticeius humeralis*), little brown bats (*Myotis lucifugus*) and Northern long-eared bats (*Myotis septentrionalis*). The sessions also allowed for some discussion about the future directions for work with this species in Georgia.



Biologists and volunteers work to set up mist nets during an Indiana bat survey this summer.

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### WNS

For the third year in a row, GA secured a WNS Grant to continue work in the state for winter 2012/2013. The grant includes funding to hire contractors to complete cave surveys for WNS in GA during the winter. Biologists in GA are unable to visit the large number of caves with small numbers of bats in the state. Contractors will focus on identifying sites for future monitoring and checking sites near the WNS front.



TAG Cave-In participant with a clean caving sticker.

Biologists have also continued education efforts related to WNS in GA. We attended the Fall TAG Cave-In for the third year in a row. GA DNR and the GA Museum of Natural History had a booth at the event and passed out information about WNS and decontamination protocols.

### Moving on...

This fall, GA DNR said goodbye to Nikki Castleberry. Nikki worked with us for 5 years as a wildlife biologist, small

mammal expert, wildland fire lighter/fighter and state parks biologist. She was an invaluable partner/office wife for many of our bat related projects in GA. I don't know what I'm going to do without her...



Nikki Castleberry all dressed up and counting bats on one of the many WNS surveys we completed in Georgia.

Nikki took a new position as Assistant Curator of Vertebrate Collections at the GA Museum of Natural History. This is her dream job and we're very happy to have a new connection at the museum. Nikki will continue to work on projects with us and be active in SBDN. Congratulations Nikki!!!

Submitted by:  
Steve Samoray



Copperhead Environmental Consulting continued studies of the Indiana bat colonies at Ft. Knox, KY. Copperhead worked with the USFWS to develop and test acoustic lures in an effort to increase capture success of Indiana bats at mist-net sites and also refined their artificial roost bark. An interesting capture note: during the acoustic lure tests a screech owl was captured but escaped, leaving its prey item, a pickerel frog, behind in the mist-net.



Copperhead also assisted in WNS surveys of 35 caves throughout Kentucky's karst region. Samples taken at 5 caves in 2 counties tested positive for G. destructans.



Submitted by:  
Becky Rosamond  
Wildlife Biologist  
North Mississippi Refuges Complex

**Annual Mist Net Event**

The Mississippi Bat Working Group (MBWG) held their ninth annual mist net event July 24 – 26, 2012 at the Chickasawhay Ranger District of De Soto National Forest near Laurel, Mississippi. The event kicked off with a potluck supper at the Maynor Creek Water Park where participants enjoyed a variety of delicious foods. After a safety briefing, the group divided into three night of netting.

On Wednesday, participants were treated to a guided tour of the Triple H and Pitts caves, led by Dr. David Beckett of the University of Southern Mississippi. In addition to bats



(*Myotis austroriparius*), the group observed two-lined, three-lined, and slimy salamanders, pickerel frogs, and several crayfish. This was a new experience for several of the participants and was very much enjoyed. Following protocol, no equipment was taken into either cave that had been used in any white-nose positive state.



Members of the group following the cave excursion

Wednesday evening, after supper, the group again divided into three groups for a second night of netting. One highlight of the evening was spotting an eastern diamondback rattlesnake crossing the road on the way to the netting site!



In all, the group caught a total of 15 bats, a flying squirrel, and a bronze frog (Really! It was in the net!) The distinction of most bats caught each night was held by the team led by Chester Martin and Austin Trousdale, who accounted for 11 of the 14 bats captured.



Species captured included *Lasiurus seminolus* (8), *L. borealis* (2), an unknown *Lasiurus* (1) - escaped, *Nycticeius humeralis* (3), and *Perimyotis subflavus* (1). Four juvenile bats and 10

adult bats were captured. The group followed the national protocol for handling bats to avoid spreading white-nose syndrome, wearing nitrile gloves, cleaning equipment between uses, and boiling nets between uses. No equipment was used that had previously been used in a white-nose positive state. Additionally, the wings of captured bats were examined for damage, using the “Wing-Damage Index” developed by Jonathan Reichard. No significant damage was observed.



The group would like to thank the following individuals: sponsors Chester Martin, Carol Ann Dunn, and David Dunn; Stephanie Steele and Kathy Shelton who helped with site selection; Eva Kristofik, Chester Martin, Andrea Schuhmann, Kathy Shelton, and Austin Trousdale who served as group leaders and assistants; Frank Hensley and Lynda Leppert provided additional assistance with bat handling; and Jay McClain (U.S. Forest Service) provided maps to netting locations. Additional thank you’s go out to Deb Freeman for arranging the great accommodations at Maynor Creek Water Park and to all the individuals who helped with meal preparation and all the other details that are necessary to put together an event.



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## Education and Outreach

- Vice-chair Kathy Shelton was a guest on the Creature Comforts radio show speaking on bats and fielded some great questions about attracting bats and had no "how do I get rid of bats" questions.
- The MBWG manned a booth at the Choctaw Wildlife Festival, held on the Choctaw Reservation near Philadelphia, MS. The booth featured information on species found in Mississippi and an interactive display on bat research methods.
- Members of the MBWG hosted the Collierville Boy Scout Pack 37 at Strawberry Plains Audubon Center on the evening of Saturday, September 22nd to scout for bats. Armed with flashlights, headlamps, and sack lunches, the group hiked out to Sharecropper Pond to learn more about nature's only winged mammals. The scouts learned where bats live, what they eat, and their ecological significance while also observing how researchers from U.S. Fish and Wildlife Service and Army Corps of Engineers study bats using acoustical bat detectors and mist nets.

As the sun went down, the real fun began. Positioned a short distance from the base of the occupied bat houses, the expectant crowd watched with amazement as nearly two hundred bats exited for the evening. The opportunity to share and observe this natural wonder always makes for a great night!



Thanks to Pack 37 who donated two amazing, hand-made bat houses to Strawberry Plains Audubon Center.

- On September 27, 2012, members of the MBWG spoke with a group of approximately 20 home school kids and parents about bat conservation and bat houses. This presentation was followed by a netting demonstration the same night at Sardis Lake. (Participating members included: Becky Rosamond, Deb Waz, George Harris, Cody Scruggs, Shea Staten, Rachel Long, and Ellie Mangelinckx.)

- MBWG Bat House Committee Chair, Shea Staten, assisted the Horn Lake, MS Parks & Recreation Department at Latimer Lakes Park to promote the MBWG, bat conservation, and the park's bat conservation efforts. Literature was provided and contact was made with approximately 75 individuals. The Horn Lake Parks and Recreation Department is promoting bat conservation efforts throughout their parks.
- Chester Martin was a guest presenter at the Student Chapter of The Wildlife Society, Delta State University, October 5, 2012. He presented a seminar entitled "Mississippi Bats – Species Status, Conservation Needs, and Selected Research Efforts." The seminar series was arranged by Dr. AHM Ali Reza, Asst. Prof of Biology (Wildlife Management), Delta State Univ. The presentation was followed by a mistnet activity at Dahoney National Wildlife Refuge.
- Dr. Frank Hensley, Department of Biology, Mississippi College, presented a program titled "Seeing Bats: Bat Echolocation" at the Clinton Community Nature Center, Clinton, MS, on Thursday, Nov 15, 2012.

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## Bat Houses

- The group has implemented a Statewide Bat House Database. The database currently lists known bat houses by county.
- Additionally, the group has been working with volunteers toward the construction of nursery style bat houses to be donated throughout MS by the MBWG. Current donated locations include: Sky Lake WMA in Humphrey's County, Tunica Riverpark & Museum in Tunica County, Latimer Lakes Park DeSoto County, and several privately owned properties (Guy Ray, farmer in Leflore County, and David Hale in Tate County). The goal is to have all 82 counties represented in the database with bat houses donated by MBWG. Locations are to include rural, urban/suburban area, farm areas, museums, parks, wildlife management areas, agri-tourism locations, etc. This effort has been spearheaded by MBWG board member Shea Staten

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## Research

- Kathy Shelton continues her work monitoring caves and culverts in Mississippi. One primary focus is to document bat populations pre-WNS for the state.
- Dave Richardson has spearheaded an acoustical monitoring effort throughout the state. Presently there are 10 routes monitored 3 times per year.

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## Other Activities

- Member Mike McConnell has worked to exclude over 20,000 bats from homes, businesses, schools, and other buildings throughout Mississippi in 2012.
- Member Dave Richardson has worked on 3 exclusion projects to exclude big brown bats and Brazilian free-tailed bats from private homes.

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## Special Recognition

- Chester Martin was recognized as a 2012 “Champion of Conservation” by the Mississippi Wildlife Federation, as presented on page 50 of “Mississippi Wildlife” (Vol. 25, Summer 2012). The biographical sketch included a summary of his bat conservation and research efforts and involvement with the Mississippi Bat Working Group.

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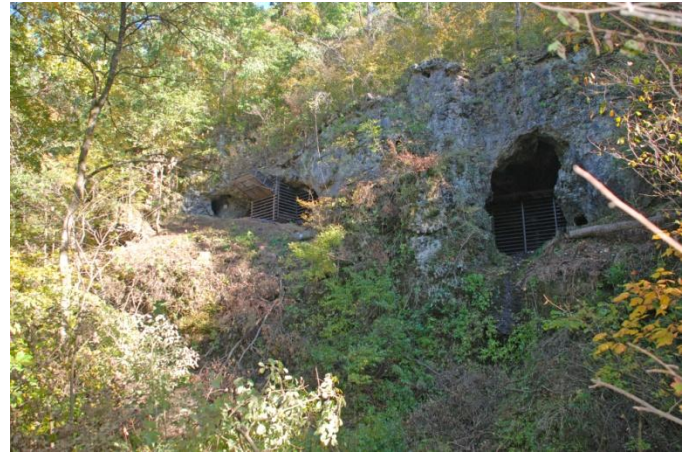
## Upcoming Meeting

The Mississippi Bat Working Group will hold its annual business meeting on January 23, 9 a.m. – 3 p.m. at the Mississippi Museum of Natural Science. Please contact the group at [msbats@hotmail.com](mailto:msbats@hotmail.com) for more information.

Submitted by:  
Theresa Davidson  
Forest Wildlife Program Manager  
Mark Twain National Forest



The Mark Twain National Forest continues to do great things for bats! In 2012, three bat friendly gates were constructed. One gate was constructed at McCormack Cave which replaced a wall constructed at the entrance in the 1960's. Bats have already begun to use the cave. A “chute” style cave gate and a flyover gate were constructed at the two entrances of Bat Cave (Oregon County) (picture attached). This cave is home to a large gray bat maternity colony.



The biologists continued to run WNS Anabat transects on almost every district. They also did mist netting of various project areas on the Forest and on properties adjacent.

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Submitted by:  
Megan York-Harris  
Wildlife Biologist  
Mark Twain National Forest

This summer the Mark Twain and Shawnee National Forest partnered with the U.S. Army Corps of Engineers (Wappapello Project) to search for Indiana bats along the St. Francis River in southeast Missouri. We located a large colony last year (168 Indiana bats in a dead 26-inch cottonwood) and wanted to document the new primary tree. This year we found the colony approximately 0.75 mile from the previous location along the bank of the St. Francis River in Wayne County. Exit counts revealed 215 bats using another dead 26-inch cottonwood. Three Indiana bats (two adult females and one female juvenile) were transmittered and led us to that tree. No secondary roosts were located.

We trapped another site where five Indiana bats (two adult females and three male juveniles) were captured and transmittered, and a new Indiana bat maternity roost was documented. This was also in Wayne County but approximately 13 miles downriver of the other Indiana bat colony. Fifty-nine Indiana bats emerged from that roost, which was a 17-inch black oak. One secondary tree (a dead 8-inch birch) was located.

Lastly, a non-reproductive female Indiana bat was captured and transmittered in Wayne County. This bat was tracked for 19 days. Interestingly, six roost sites were documented including a live but fire-scarred 4-inch redbud and a dead shortleaf pine leaning 45 degrees. This non-reproductive female stayed within the same ridgetop area for the entire 19 days of tracking.

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Submitted by:  
Kirsten Alvey, Executive Director  
Missouri Bat Census

Mo Bat Census formed in Nov 2007 and became a non-profit organization in Nov. 2012. We conducted 298 cave surveys last year. 157 in house and 141 through volunteer cavers, educators and citizen conservationist. We have 326 caves and quarries under WNS and bio-data survey contracts and manage 617 total privately owned caves and quarries. We have also developed, maintain and manage a private lands cave and quarries biodatabase.



Our winter hibernacula surveys this year counted 1170 unknown myotis, 1142 Gray bats, 31,349 Tri-color, 1614 Northern Long eared, 1417 Big Brown, 11,942 Little Brown, and a conservatively estimated 30,000+ Indianas in a new hibernacula we discovered which we are coordinating with USFWS, CRF and Mo Dept of Conservation to manage, map and bio survey.

We did aerial mapping of Moniteau and Buzzard Cave sinkplains for watershed protection and exploration, and began the Buzzard Cave System Sink Clean-up Project in October, removing 2 tons of metal recyclables, 600lb of clear glass and 3 tons of trash to date.

We have hosted 17 caving bio educational groups, taught 4 high school summer education programs, 4 Boy Scouts of America events, numerous graduate students and private research contractors, and participated in 3 regional NSS events.



As a member of Missouri Dept of Conservation Cave Stewards, I assisted MDC on 15 cave monitorings including TIR summer night flight filmings, winter WNS monitoring surveys, WNS swabbing, fall swarm netting, bat banding,

wing punching, hair sampling, and DNA swabbing, and give educational demonstrations on home and field decontamination techniques.

I retired in September from my profession to dedicate myself to this full time. I have scheduled 317 caves/quarries for survey this year and expect almost 150 others to be turned in by volunteers. Bats are BEYOND a passion for me!

I launched our Facebook Page in Sept 2012 [www.facebook.com/MissouriBatCensus](http://www.facebook.com/MissouriBatCensus) and have 107 followers in 7 countries. Our website is currently being built.

Submitted by:  
Mary Frazer



The NC Bat Working Group 6th annual meeting had 28 attendees and focused on Wind Energy and Bats.

Kathy Matthews (USFWS) discussed the USFWS role in wind energy siting, permitting and regulation. There are 6 proposed wind projects in NC, all in coastal plain; BOEM looking at offshore leasing sites.

Doug Newcomb (USFWS) is producing a Wildlife and Habitat Risk Map for Land-Based Wind Energy Projects.

Harry LeGrand (NC Natural Heritage Program) accepted comments and held a discussion about whether to change the state-listed status of any NC bats species, especially those affected by WNS.

Jack Grider (University of NC-Greensboro) is conducting netting and acoustic monitoring to gather more information about bat distribution in the coastal plain. MYSE (a peripheral population) have been captured at two locations, in addition to CORA and MYAU captures.

Matina Kalcounis-Ruppell (UNCG) spoke about the importance of peripheral and vulnerable bat populations in eastern NC.

Gabrielle Graeter (NC Wildlife Resources Commission) is continuing collecting WNS data. WNS is in 5 counties in NC; suspected in two others. 61% decline in MYLU at WNS sites. There were multiple reports around the state of dying EPFU that were not WNS-related; some pups died of interstitial pneumonia.

Sue Cameron (USFWS) - Bat boxes erected at the Dillsboro dam had 900 bats.

Cordie Diggins, (NCWRC/Virginia Tech) spoke about the NC Bat Acoustic Monitoring Program: 2011 - 25 routes, 5271 calls (5.3 bat calls/mile)

2012 - 31 routes, 4319 calls (3.6 bat calls/mile)

NCDOT will be funding a research project to track COTO as they exit their winter hibernaculum. A bat detector has been placed at the hibernaculum entrance to monitor activity through the winter.

Gary Libby had a couple of small survey projects in NC this season in western NC involving netting and acoustic surveys. He is testing several new programs for analyzing acoustic data and is interested in how well rare species such as MYSO, MYLE, and CORA are detected.

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Submitted by:  
Joy O'Keefe

Joey Weber (new M.S. student at Indiana State University) will be studying the roosting and foraging ecology of Virginia big-eared bats in western North Carolina. Along with Dr. Joy O'Keefe, lab mate Zach Kaiser, and technician Katherine Caldwell, Joey visited the study area in November 2012 to install a bat detector for long-term monitoring at the entrance to the primary hibernaculum. The crew also scouted locations for radio telemetry towers for an intensive telemetry study, which will begin in March when the bats emerge from their winter hibernacula. This study will be a collaborative effort by Indiana State University, NC DOT, Copperhead Consulting, NC Wildlife Resources Commission, US Fish and Wildlife Service, NC State Parks, and Grandfather Mountain.



Joey Weber listening for interference on the top of Grandfather Mountain, NC.

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### 2013 Bat Blitz

28 July – 1 August



The Southeastern Bat Diversity Network and Ozark Plateau National Wildlife Refuge are proud to announce the 2013 Bat Blitz, 28 July – 1 August. Site headquarters will be located at the Arrowhead Resort ([www.arrowhead-thunderbird.com](http://www.arrowhead-thunderbird.com)) on the scenic Illinois River in the Ozark Highlands of northeastern Oklahoma.



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Submitted by:  
Steve Samoray



The 9th annual meeting of the Tennessee Bat Working Group was held on November 15<sup>th</sup> at Fall Creek Falls State Park, TN with over 75 attendees. Presentations covered several aspects of bat research in the state, presenters and topics are listed below:

- Kristina Hammond: Utility of Landscape-Scale Models in Predicting Indiana Bat Summer Roosting Habitat Compared to Known Roost Characteristics in the Southern Appalachians
- Veronica Mullen and Dr. Andrew Barrass: Bats of Dunbar Cave State Natural Area: An update
- Piper Roby: Tennessee Indiana Bat Spring Migrations
- Amanda Janicki: *Geomyces destructans* detection and distribution
- David Pelren: Changes in FWS Indiana Bat Guidance and Mitigation Fund
- Cory Holliday: 2012 WNS disease surveillance/bat population monitoring
- Chrissy Richards: TDOT mist net data and bat sampling
- Amy Gilbert: Bats and Rabies in Tennessee
- Anabel Lereculeur: Summer roosting ecology of the northern long-eared bat (*Myotis septentrionalis*) at Catoosa WMA
- Brian Flock: Introduction to TWRA Cave and Bat Coordinator

- Riley Bernard: Winter activity of bats in TN; a possible refugia from WNS
- Tara Thomson: Roost Associations in a Population of Eastern Small-footed Bats in the Southern Appalachians
- Alex Wyss: An Update on TNC's Artificial Cave

In an effort to combat the spread of WNS, The Nature Conservancy of Tennessee completed construction of The Artificial Bat Cave in Montgomery County, TN. This 80-foot long, 11-foot high structure can physically hold over 200,000 bats and offers an alternative roost that can be cleaned and treated during the non-hibernation season. More information is available at: <http://www.nature.org/ourinitiatives/regions/northamerica/unit edstates/tennessee/index.htm>

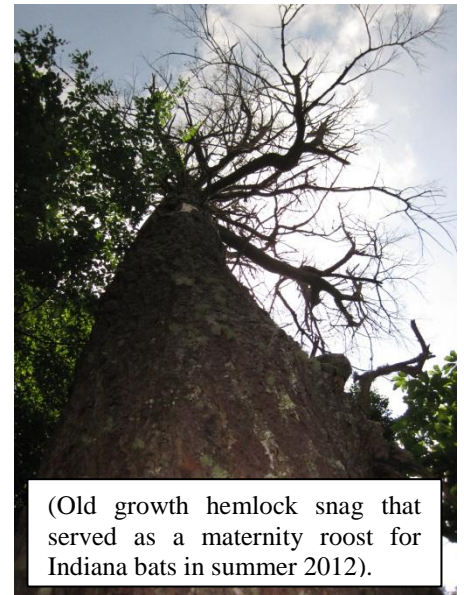


White Nose Syndrome monitoring continued in Tennessee during the 2011-2012 winter season. Seventy-four sites in thirty-seven counties were surveyed. In all, the number of confirmed WNS+ counties in Tennessee doubled between 2011 and 2012. Several new sites were confirmed through laboratory analysis, and bats at some sites in already confirmed counties were observed to have field signs consistent with WNS. The syndrome was also discovered at two gray bat hibernacula: Bellamy Cave and Pearson Cave. These two observations represent the first confirmation of WNS on gray bats. Although WNS continues to spread throughout Tennessee, for the most part large scale die-offs have not been observed. Most hibernating bat colonies in TN remain stable, excepting the two easternmost WNS sites, where WNS has been confirmed for three years now: Grindstaff Cave and Worley's Cave. Grindstaff Cave bat numbers were down 99.5% compared to 2010 when WNS was first discovered there. Worley's Cave hibernating bats were down 96.6% from 2011.

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Submitted by:  
Joy O'Keefe

We had way too much fun in our final season of data collection for our long-term study on the effects of prescribed fire on Indiana bat roost habitat in the southern Appalachian Mountains. If you would like to learn more about the study results, consider attending



(Old growth hemlock snag that served as a maternity roost for Indiana bats in summer 2012).

the concluding workshop, to be hosted by the USFS-Southern Research Station, Indiana State University, and the



Consortium of Appalachian Fire Managers and Scientists in April 2013. You can find out more about the workshop here: <http://www.cafms.org/>

Kristina Hammond and Joy O'Keefe (Indiana State University) captured an adult male Indiana bat in Sevier County, Tennessee, in the Great Smoky Mountains National Park. Though several known hibernacula are in Blount County to the west, Indiana bats had not yet been captured in Sevier County. The adult male roosted in two Table Mountain pine snags on a ridge in the Park.

Working on the NC-TN state line, Kristina, Joy, and technicians Caroline Byrne, Candace Dean, and Heather Mason captured and tracked a female Indiana bat to a stand of dead old growth hemlocks in the Citico Wilderness area of the Cherokee National Forest. Subsequently, we tracked two additional Indiana bats to this same stand, where they used two very large hemlocks during the hottest part of the summer. While it was 105 degrees F in town, the daytime temps were only about 85 degrees F at the roosts (elev. ~4300 feet). In 2013, Kristina will complete her M.S. thesis, which will include a chapter on landscape-scale roost habitat models and a chapter on thermoregulatory strategies of Indiana bats in summer roosts.



Joy O'Keefe, Kristina Hammond, Candace Dean, and Caroline Byrne after a rainout along the Cherohala Skyway in eastern TN.

Tara Thomson, an M.S. student at Indiana State University, completed her second season of field work studying the roosting ecology of eastern small-footed bats in western NC and eastern TN. In 2012, Tara and her technician Jocelyn Karsk banded and PIT tagged 43 small-footed bats and she tracked 8 individuals with radio telemetry. Tara is planning to complete her M.S. thesis in Spring 2013; her thesis will describe the roosts used by bats in her study area and the factors that affect roosting associations in manmade roosts to which the population shows long-term fidelity.



An eastern small-footed bat roost along the Cherohala Skyway in eastern TN.



### Virginia big-eared bat summer counts in West Virginia, 2012

**Craig W. Stihler**  
West Virginia Department of Natural Resources



Summer night-vision emergence counts have been conducted at Virginia big-eared bat (*Corynorhinus townsendii virginianus*) maternity colonies since 1983. Counts are conducted in early June (usually between 1 June and 15 June) of each year. Although some colonies were discovered after 1983, all ten known colonies have been counted each June since 1993.

In 2012, WV Division of Natural Resources biologists conducted emergence counts at these ten colonies between 2 June and 14 June. The total number of bats in these colonies was the highest on record with 7,531 bats tallied. This is up 0.9% from the 2011 total and up 18.2% from 2008, the summer before White Nose Syndrome (WNS) was found in West Virginia.

WNS was first observed in West Virginia in January 2009. That winter, four caves were found to be WNS-positive. All four of these caves were in Pendleton County where eight of the ten known maternity colonies for *C.t. virginianus* in West Virginia are located. In addition, the largest hibernating concentration of *C.t. virginianus* anywhere is in Pendleton County. To date, we have not observed any hibernating *C.t. virginianus* exhibiting signs of WNS. The summer counts also suggest that this species is not being impacted by WNS, even at site where other species (mainly *Myotis lucifugus*, *M. septentrionalis*, and *Perimyotis subflavus*) are experiencing quite high mortality rates.

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## AWARDS AND RECOGNITION



Recently, SBDN was recognized by The Wildlife Society (TWS; [www.wildlife.org](http://www.wildlife.org)) with TWS's Outstanding Group Achievement Award. This award is conferred to recognize "an organization's outstanding wildlife achievement that is consistent with and/or assists in advancing the objectives of The Wildlife Society. SBDN was specifically acknowledged for Bat Blitzes, response to WNS, facilitation of bat conservation across the southeastern U.S., and mentorship opportunities for students. In 2011, SBDN received the Wildlife Management Excellence Award from the Southeastern Section TWS. To see a list of past winners, go to: <http://www.wildlife.org/who-we-are/awards/group-achievement>.

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### **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.

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### **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 awardee's CV, and pictures of the award presentation will be deposited in the SBDN archive.

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# 2011 16<sup>th</sup> SBDN and 21<sup>st</sup> Mammal Colloquium

## SOUTHEASTERN BAT DIVERSITY NETWORK 17th Annual Meeting, and 22st COLLOQUIUM ON THE CONSERVATION OF MAMMALS IN THE EASTERN UNITED STATES

### ABSTRACTS

#### **DO LITTLE BROWN BATS (*MYOTIS LUCIFUGUS*) MAKE EFFECTIVE SURROGATES FOR ENDANGERED INDIANA BATS (*MYOTIS SODALIS*)?**

Scott M. Bergeson, Michael D. Whitby, and Timothy C. Carter. *Department of Biology, Ball State University, Muncie, IN 47306*

The use of common species as surrogates for those that are threatened or endangered is best conducted using species that are biologically related. If the two species are fairly dissimilar then conclusions based on data collected from surrogates may be misleading. The abundant little brown bat (*Myotis lucifugus*) has been suggested as a suitable surrogate for the endangered Indiana bat (*Myotis sodalis*) due to their close morphological similarities. In order to examine the suitability of little brown bats as surrogates in ecological based research and management, research was conducted on the home ranges, habitat selection, and roosting ecology of both species. While research is available on Indiana bats, in these subjects, there is a paucity of information on little brown bats. Therefore, data were collected concerning these ecological factors to determine the similarity between the species. Data were collected during the summers of 2003, 2007, and 2009-2011 from 2 study areas in the Shawnee National Forest, IL, and 2 study areas in south-central Indiana. Bats of both species were tracked during the day to record maternity roost characteristics and again at night to record foraging locations. A total of 39 Indiana bats and 32 little brown bats were tracked during our study. Our results show that while the species are similar in some ecological characteristics (roosting habitat, roost tree species) they are also different in several other characteristics (roost type, home range, and habitat selection). Therefore, little brown bats may be suitable surrogates for some research and management projects and unsuitable for others, depending on the objectives of the project.

#### **A COMPARISON OF ACTIVE AND PASSIVE ACOUSTIC SAMPLING IN THE POST-WNS WORLD: A PILOT STUDY AT FORT DRUM MILITARY INSTALLATION**

Laci S. Coleman, Chris A. Dobony, W. Mark Ford, and Eric R. Britzke *Department of Fisheries and Wildlife Conservation, Virginia Polytechnic Institute and State University, Blacksburg, VA (LSC), Fort Drum Military Installation, Natural Resources Branch, Fort Drum, NY (CAD), U.S. Geological Survey, Virginia Cooperative Fish and Wildlife Research Unit, Blacksburg, VA (WMF), U.S. Army Engineer Research and Development Center, Vicksburg, MS (ERB)*

Since white-nose syndrome (WNS) onset in 2008, there has been a marked decline in bat activity at Fort Drum. Summer mist-netting, although costly, has been a typical and accepted way to monitor bats, however, as bat populations decline in the Northeast, this method has become inefficient and ineffective. We suggest acoustical methodologies will likely become the best primary means of monitoring declining populations. In the summer of 2011, we utilized Anabat detectors to repeat passive monitoring at sites previously sampled in 2006, pre-WNS. We also performed active acoustic sampling at these sites and compared methods. Wilcoxon two-sample tests showed a significant decline in mean nightly activity from 2006 to 2011 in *Myotis lucifugus* (78.2 vs. 7.25 passes,  $P < 0.0001$ ), *Myotis septentrionalis* (3.67 vs. 0.34 passes,  $P < 0.0003$ ), *Myotis sodalis* (8.76 vs. 1.67 passes,  $P = 0.002$ ), and *Perimyotis subflavus* (3.76 vs. 0.46 passes,  $P = 0.0230$ ). Additionally, we observed declines from 2006 to 2011 in two species not known to be affected by WNS: *Lasiurus borealis* (10.62 vs. 3.46 passes,  $P = 0.0435$ ) and *Lasiurus cinereus* (24.62 vs. 9.91 passes,  $P = 0.0136$ ), possibly due to increased regional wind energy development. High detection probabilities of extant species were achieved in 2 nights per survey site in 2006 vs.  $\geq 3$  nights in 2011 for WNS-impacted species. Overall detection probabilities of 1 for little brown bats and Indiana bats in 2006 declined to 0.87 and 0.58, respectively, by 2011. Active sampling appears to be ineffective post-WNS, accounting for lower recorded nightly species richness (2.8 vs. 4.7 species) and far lower overall detection probabilities for myotis ( $< 0.45$ ). We also initiated a pilot study at Fort Drum to determine the most efficacious ways to deploy Anabat detectors for monitoring bats. Analysis is ongoing; however, methodology and preliminary results will be discussed.

#### **RESPONSE OF SMALL MAMMALS TO WOODY BIOMASS HARVESTING IN THE LOWER COASTAL PLAIN OF GEORGIA**

Christopher. B. Farrell and Steven B. Castleberry. *Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA 30602*

Removal of woody debris for biofuels during timber harvest may negatively affect small mammals and other vertebrate fauna. To create effective guidelines for biomass harvesting, research is needed to quantify the effects of increased debris removal. We sampled small mammals among six treatments representing varying levels of woody debris retention and distribution on two sites in the Lower Coastal Plain of Georgia. Treatments included traditional clearcut, 15% and 30% woody debris retention in clusters, 15% and 30% woody debris retention scattered throughout the treatment areas, and a complete biomass harvest. Using Sherman traps and drift fence

arrays, we sampled sites three times each between April and July, 2011. We captured a total of 181 small mammals across treatments and sites over the three sampling periods. Captures consisted of cotton mice (*Peromyscus gossypinus*), hispid cotton rats (*Sigmodon hispidus*), and eastern harvest mice (*Reithrodontomys humulis*). The highest number of captures occurred in the 15% clustered treatment (n=41), followed by 30% clustered (n=37), 15% dispersed (n=32), biomass harvest (n=32), 30% dispersed (n=26), and traditional clearcut (n=13). Preliminary analysis showed no statistical difference between treatments. The small numbers of captures within treatments were likely due to insufficient time after treatment implementation for small mammals to colonize sites. We expect capture numbers to increase in the second year and that treatment differences with respect to habitat quality for small mammals will be evident.

## **MOVEMENTS AND ROOST FIDELITY BY INDIANA BATS (*MYOTIS SODALIS*) IN THE SOUTHERN APPALACHIAN MOUNTAINS**

Kristina R. Hammond<sup>1</sup>, Joy M. O’Keefe<sup>1</sup>, and Susan Loeb<sup>2</sup>. <sup>1</sup>*Department of Biology, Indiana State University, Terre Haute, IN 47809.* <sup>2</sup>*USDA Forest Service, Southern Research Station, Clemson, SC 29634.*

Management guidelines for protecting Indiana bat habitat are based on the assumption that Indiana bats make fairly short movements (< 4.2 km) during the summer maternity period (15 May to 15 August). There are few available data on Indiana bat roost area fidelity and movements during this period. On the northern edge of the range, Kurta et al. found that Indiana bat roost changes were mostly under a kilometer but ranged up to 5.8 km, with roost switching occurring every 2.4 days. However, we know little about foraging movements and it is not clear that bats stay in the same focal area all season. Further, reproductive status may be an important factor in how far bats can move though, at present, all bats are given the same consideration. We examined 4 years of Indiana bat (n = 41 bats) tracking data from the southern Appalachian Mountains. Between 11 May and 6 August 2008–2011, reproductive bats (adult females or juveniles) moved as much as 3.8 km between roosts, and 3.8 km between capture site and farthest known roost, which suggests a 4.2 km radius buffer is adequate. However, our telemetry data suggest bats were shifting the center of their focal areas. Long distance movements were common during the reproductive season, as 19 pregnant or lactating bats were lost after 1 or more roosts were found. With a passive datalogging receiver, we recorded several long-distance foraging bouts ranging from 1 km to 24.5 km (n = 4 bats); the 24.5 km movement was recorded 4 days after the last known roost location. In the southern Appalachians, Indiana bats sometimes make long movements during the reproductive season, which may relate to availability of roost habitat and the ephemeral nature of favored roosts in this region.

## **WINTER TORPOR AND MOVEMENTS OF *CORYNORHINUS RAFINESQUII* IN MAMMOTH CAVE NATIONAL PARK, KENTUCKY**

Joseph S. Johnson, Steven C. Thomas, and Michael J. Lacki. *Department of Forestry, University of Kentucky, Lexington, KY 40546 (JSJ, MJL); US National Park Service, Mammoth Cave, KY 42259 (SCT)*

An estimated 5.5–6.7 million bats have died as a result of White-Nose Syndrome (WNS) in the United States as of January 2012. It is notable that no bat in the genus *Corynorhinus* (big-eared bats) has been found exhibiting histological symptoms of WNS to date, although known expansion of WNS into the range of *Corynorhinus* bats is currently limited. Historical records of Rafinesque’s big-eared bats (*Corynorhinus rafinesquii*) suggest this species may arouse from hibernation more frequently than other North American bat species. If WNS causes mortality through increasing arousal rates and duration in infected bats, a natural pattern of frequent winter arousals may help big-eared bats withstand infection or mortality. Our study describes winter torpor patterns and movement among winter roosts by Rafinesque’s big-eared bats and compares these data with similar studies of species susceptible to WNS in the northeastern United States. We radiotagged six (four female, two male) Rafinesque’s big-eared bats during the winter of 2010–2011 and 14 (eight female, six male) during the winter of 2011–2012 with temperature-sensitive radiotransmitters. We deployed datalogging receivers outside known winter roosts to record bat skin temperatures at 5-minute intervals. Radiotagged bats switched roosts within 2–6 days following initial capture and did not return during the winter of 2010–2011. We were unable to locate radiotagged bats after they left the hibernaculum. Bats switched roosts frequently during the winter of 2011–2012, and we were able to locate radiotagged bats moving among three caves and two man-made structure separated by 9 km. Our data demonstrate these bats typically use deep torpor bouts (body temperatures <10°C) of relatively short duration (≤10 days duration) during winter. Data presented will include analyses of torpor depth, duration, and roost-switching frequencies between sexes.

## **SUCCESSFUL DNA EXTRACTIONS FROM MUSEUM SPECIMENS OF ALLEGHENY WOODRATS (*NEOTOMA MAGISTER*)**

Jennifer M. Kanine, Travis C. Glenn, Michael T. Mengak, & Steven B. Castleberry. *D.B. Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA 30602 (JMK,MTM, SBC); Environmental Health Science, University of Georgia, Athens, GA 30602 (TCG)*

Allegheny woodrats (*Neotoma magister*) have been declining over the last 30 years throughout their range, with the most precipitous declines along the northern and western areas of the range. Although causes of the declines are uncertain, decreased genetic diversity may have contributed to declines or may have negative future consequences in declining populations. An understanding of contemporary genetic characteristics compared to characteristics of historic populations will provide essential information for mitigating potential impacts of low genetic diversity. As a part of a larger study designed to examine genetic structure in Allegheny woodrats in Virginia, we conducted a pilot study to determine if Allegheny woodrat DNA could be extracted from museum specimens. Samples were obtained from three museums. Depending on the specimens, tissue was obtained from the ventral incision,

skulls, skeletons or the incisions around the mouth. A total of 83 samples were collected from specimens collected between 1860 and 1989. DNA was extracted and amplified using PCR and mitochondrial cytochrome b sequencing primers. Samples were amplified with 88% success on the first PCR run following the first extraction. Eleven samples were extracted again and successful on the second attempt. To date, 98.8% of the samples have been successfully amplified. Our results show that amplifiable DNA can be extracted from museum specimens at least 151 years in age. The extracted DNA will be used to compare current and historic genetic characteristics of Allegheny woodrat populations.

#### **FORAGING HABITAT PREFERENCES OF BATS IN EASTERN OKLAHOMA**

Andrea Korman<sup>1,2</sup>, Karen McBee<sup>1</sup>, and Shea Hammond<sup>2</sup>

<sup>1</sup>*Department of Zoology and Collection of Vertebrates, Oklahoma State University, Stillwater, OK 74075;* <sup>2</sup>*US Fish and Wildlife Service, Ozark Plateau National Wildlife Refuge, Jay, OK*

We collected acoustic data monthly during summer and early autumn from six 30-mile mobile transects across five eastern Oklahoma counties to gather baseline data on species composition and population sizes of bat communities so that comparisons can be made if White Nose Syndrome (WNS) becomes established in these areas. We also used GIS spatial data to compare habitat types within each route because abundance of bats will vary depending on the available habitat. The transects cover a range of habitat types including urban, agriculture, streams, and forests. Calls were collected using an Anabat ZCAIM unit, which was also attached to a GPS unit. I used the GIS program to estimate the predominant habitat surrounding each call using buffers with radii of 1 and 2 km. An ANOVA test showed that habitat type was significant in determining bat abundance. A Post Hoc model showed that forested habitats were most significantly used by bats at both buffer levels and that pasture habitat was significant only at the 1 km buffer level. My landscape results suggest that retention of forest habitat would be most beneficial to the bat species of eastern Oklahoma while urbanization and landscapes dominated by intensive agriculture are least beneficial. Ultimately, this project should enable us to trace impacts if WNS moves through bat populations in Oklahoma. Increasing our knowledge of bat behavior and how bats use various types of habitat will strengthen conservation efforts by identifying important roosting and foraging environments that should be preserved to maintain a stable ecosystem.

#### **LAND USE HISTORY AND MATERNITY ROOST SELECTION BY *MYOTIS SEPTENTRIONALIS* IN A MESOPHYTIC HARDWOOD FOREST**

Alexander Silvis, W. Mark Ford, and Eric R. Britzke. *Department of Fisheries and Wildlife Conservation, Virginia Polytechnic Institute and State University (AS, WMF), U.S. Geological Survey, Virginia Cooperative Fish and Wildlife Research Unit (WMF), U.S. Army Engineer Research and Development Research Center, Environmental Lab (ERB)*

Preservation of summer maternity roosts is considered critical for bat conservation in North America, yet little is known about factors that drive patterns in roost selection. To examine patterns of maternity roost selection by northern bats (*Myotis septentrionalis*) we tracked 61 females to 105 roost trees of 21 different species on the Fort Knox military reservation during the summer of 2011. Sassafras (*Sassafras albidum*) trees accounted for 48.6% of the roosts located and were used more than expected based on their availability ( $\chi^2 = 6.8$ , *d.f.* = 1,  $P < 0.0001$ ). We detected no differences in dbh ( $W = 181.5$ ,  $P = 0.15$ ), height ( $W = 221.5$ ,  $P = 0.52$ ), decay ( $W = 296.0$ ,  $P = 0.4199$ ) or percent bark ( $W = 194.5$ ,  $P = 0.24$ ) between sassafras and the next most commonly used species, *Acer saccharum*. Similarly, we detected no difference in slope location ( $W = 168.0$ ,  $P = 0.09$ ), aspect ( $W = 226.0$ ,  $P = 0.58$ ), elevation ( $W = 302.0$ ,  $P = 0.36$ ), gap fraction ( $W = 158.5$ ,  $P = 0.06$ ), photon flux density ( $W = 210$ ,  $P = 0.39$ ) or leaf area index ( $W = 261.5$ ,  $P = 0.91$ ) at roost sites. We suggest that roost species selection is not a function of differences between individual tree species *per se*, but rather of land use history conditions that affect forest composition and structure. At our sites, succession from a single-age forest following old field abandonment to a multi-aged forest dominated by shade tolerant species has created a cohort of senescing sassafras that represent a locally available, suitable roosting resource. Current conditions are the result of decades old processes. Present successional trajectories may not provide this roost structure again without management intervention. This pattern underscores the need to take a “long-view” of bat habitat management.

#### **ROOST MOVEMENTS OF THE EASTERN SMALL-FOOTED BAT (*MYOTIS LEIBII*) IN THE SOUTHERN APPALACHIAN MOUNTAINS**

Tara J. Thomson and Joy M. O’Keefe. *Department of Biology, Indiana State University, Terre Haute, IN 47809.*

Little is known about the ecology of the eastern small-footed bat (*Myotis leibii*), a rare species currently being petitioned for federal listing. Our objective was to examine the roosting ecology of *M. leibii*, including locating natural roosts and measuring bats’ movements. We hypothesized that bats would travel short distances, roost close to the road, and switch roosts frequently. From 1 July to 7 October 2011, we attached 0.30- 0.36 g transmitters (5.8-7.7% of body weight) to 10 males and 5 females ( $\geq 4.5$  g) captured from expansion joints of 2 bridges in the southern Appalachian Mountains. On average, males ( $n = 8$ ) moved further from the capture site to the first roost site ( $2.6 \pm 1.2$  km) and between subsequent roosts ( $0.64 \pm 0.17$  km) than females ( $0.25 \pm 0.05$  km;  $0.20$  km;  $n = 2$ ). Males also showed higher fidelity to roost sites (mean of  $5.3 \pm 1.3$  consecutive days in a roost) than females (mean of  $2 \pm 1$  days). Males and females roosted approximately the same distance from the road,  $21.7 \pm 8.9$  m and  $14.3 \pm 8.6$  m, respectively, if we discount one male that roosted 1.2 km from the road. Movements between roosts were greater, and switching rates were lower than values reported for this species in the central Appalachians. Both individuals and the population as a whole showed fidelity to specific rock outcrops, suggesting these outcrops will be important to local and regional management plans for this species. Future work may

include collecting more detailed movement data with PIT tags and molecular analysis to assess the relatedness of bats in this population.

## **EVALUATING THE EFFECTIVENESS OF MOBILE ACOUSTIC TRANSECTS CONDUCTED ON ROADS AND RIVERS**

Michael D. Whitby, Timothy C. Carter, and Scott M. Bergeson *Department of Biology, Ball State University, Muncie, IN 74303*

Understanding population status and trends of any species is essential to conservation and management of that animal. However, landscape level population status of many bat species is not well understood. Recent threats (e.g. White-nose Syndrome and wind energy development) to bat populations have exacerbated the need to better understand the status of bat populations and provide baseline information to monitor population trends. In an effort to resolve this issue, a national mobile acoustic monitoring protocol was developed to survey summer bat populations. Following the guidance document, mobile acoustic transects were established along roadways by many state and federal agencies. However, some species are known to occur more frequently near or along river corridors, leading us to hypothesize that mobile transect conducted from boats may provide a more accurate picture of a landscape's bat community and increase monitoring opportunities by gathering data on more species. To test this hypothesis, a study comparing road and river mobile transects was conducted to determine if mobile sampling along rivers recorded a greater abundance of calls or species than mobile transects conducted on roadways. An ~8 mile stretch of river and an associated levee were sampled simultaneously a total of 22 times in 2010-2011 in Shawnee National Forest, IL. Species richness and abundance of the two methods were compared with rarefaction. Preliminary results indicate that species assemblages are similar, but a greater number of bat calls are recorded along the river. However, sample variances differ at the species level revealing that each method could be advantageous for monitoring different species. When examined in light of time investment for each method, we hope this study will help managers allocate their limited resources in a manner that will give them tools to design the most powerful monitoring protocol for the most species.

### **Non-Student Oral Presentation Abstracts**

## **KENTUCKY WHITE-NOSE SYNDROME UPDATE – SITE-SPECIFIC IMPLEMENTATION OF A WNS STATE RESPONSE PLAN**

Brooke A. Hines, Kentucky Department of Fish & Wildlife Resources, *#1 Sportsman's Lane, Frankfort, KY 40601*

White-nose syndrome (WNS) is a disease responsible for the deaths of over five million bats since its initial discovery in 2006 (USFWS 2012). In response to this on-going crisis, many states have adopted WNS Response Plans that include surveillance and monitoring programs. Kentucky was the first state to develop a Response Plan and has one of the most aggressive surveillance and monitoring programs. After the discovery of the first infected site in Kentucky, the Kentucky Department of Fish & Wildlife Resources (KDFWR) began implementation of the post-WNS phase of the Kentucky WNS State Response Plan. KDFWR, in cooperation with the U.S. Fish & Wildlife Service Kentucky Field Office outlined a site-specific plan tiered from the state-wide plan. This site-specific plan documented a timeline of activities at the site prior to and after WNS was detected and addressed potential research and management opportunities for the site. Development of a plan specific to the constraints of the site allowed for quick action and coordination. The management strategies implemented may provide information on the efficacy of environmental manipulations designed to slow the spread of WNS and survivorship of certain species from a known infected site. Also, documentation of a timeline of activities at the infected site, both pre- and post-WNS, provided researchers with baseline information allowing us to address specific research questions.

## **INDIANA BAT FALL HABITAT USE AND MIGRATION FROM NORTHERN KENTUCKY TO SOUTHERN INDIANA**

Piper L. Roby and Mark W. Gumbert. *Copperhead Environmental Consulting, Inc., P.O. Box 73, Paint Lick, Kentucky 40461*

There is a plethora of information about Indiana bat summer ecology, a few studies have been conducted during the post-maternity season, and even fewer studies have researched Indiana bat migration, most of which have taken place in the spring. This study was intended to link individuals from the Indiana bat maternity colony at Ft. Knox to their hibernacula. Bats were captured on base from 23 Aug – 16 Oct 2011 for radio tagging ( $n = 28$ ). Bats were tracked to day roosts and followed at night to monitor migration activity. Mean weight of bats increased throughout the sampling period as they prepared for migration and subsequent hibernation. Twenty-five roost trees were identified. Mean roost tree dbh ( $39.4 \pm 2.8$  SE cm) and mean roost tree height ( $14.1 \pm 1.2$  SE m) were not different from summer roost trees found in previous studies at Ft. Knox. First date of confirmed migration was 7 Oct and bats were still exiting Indiana bat roost trees on 16 Oct. When bats started migrating, they did so within the first couple of hours after sunset. Four radio-tagged bats were located in 2 caves in S. Indiana,  $45.9 \pm 2.0$  SE km NW of the base. A combination of bat mass, ambient temperature, distance to the hibernaculum, and possibly barometric pressure are factors in determining when a bat leaves its summer grounds to migrate to its hibernaculum.



## Poster Session Abstracts

### **OPEN-SOURCE BAT RESEARCH: THE ECHOLOGGER SYSTEM FOR TRACKING BAT ECHOLOCATION ACTIVITY.**

Stephen C. Burnett, Department of Natural Sciences, Clayton State University, Morrow GA, 30260

Monitoring the behavior of bats using echolocation calls tends to suffer from a number of difficulties including very expensive equipment. This tends to limit the number of sites that researchers can examine at a given time. This study took advantage of low-cost, open-source hardware and software to develop monitoring devices that can detect bat echolocation activity and use wireless communication to collect data on the number of calls detected from multiple sites at one time. This system is based on Arduino microcontrollers and XBee wireless communication devices, which are capable of transmitting signals over extended distances, thus allowing a researcher to monitor a fairly wide area. The monitoring devices transmit their data to a central base station which can provide real-time updates on activity to the researcher. All the software used in the system is free and the cost of the hardware is fairly low, so assembling this system can be done with reasonable cost. Because these devices are associated with the open-source movement, there is a worldwide base of users that can be tapped as a source of example software, advice, and troubleshooting. This allows someone with minimal experience to produce results in a reasonable amount of time. These devices will not replace more expensive systems that are more precise, but they can be included in the set of overall techniques used by bat researchers while keeping costs low.

### **THE DISCOVERY OF A BREEDING POPULATION OF THE EASTERN SMALL-FOOTED MYOTIS (*MYOTIS LEIBII*) IN ILLINOIS**

Timothy Carter, Michael Whitby, Rod McClanahan, Scott Bergeson, Stephanie Rutan. Department of Biology, Ball State University, Muncie, IN 47306; USDA Forest Service, Shawnee National Forest-Hidden Springs RD, Vienna, IL (RM)

The only record of eastern small-footed myotis (*Myotis leibii*) in Illinois was from a 2005 discovery of 2 individuals under a rock at the Fink Sandstone Barrens of Shawnee National Forest. The Illinois Department of Natural Resources lists *M. leibii* as a species of possible occurrence but it is not considered a resident species. In 2011, the Fish and Wildlife Service found “substantial information indicating that listing a species may be warranted” and requested information on the species in order to complete the review. In response to this request the Shawnee National Forest initiated a survey of likely areas of *M. leibii* occurrence. A survey of likely roosting habitat for the rock dwelling species was conducted in July and August 2011. Twenty-nine individuals, including post lactating females and juveniles, were discovered by surveying rock outcrops around the original site of discovery. While, the extent of *M. leibii* occurrence in Illinois is still poorly understood, this survey indicates that a resident breeding population occurs within the southern tip of the state.

### **SURVEYING FOR THE ELUSIVE RAFINESQUE’S BIG-EARED BAT (*CORYNORHINUS RAFINESQUII*) IN SOUTHEASTERN MISSOURI: ONLY THE BEGINNING**

Shelly N. Colatskie, Anthony G. Elliott, Bree K. McMurray, Shannon R. Romeling, Ben Hale, C. Ryan Allen, and Larisa Loros-Bishops and Lynn W. Robbins. Missouri Dept. of Conservation, Jefferson City, MO 65102 (SNC); Missouri Dept. of Conservation, Kirksville, MO 63501 (AGE); Missouri Dept. of Transportation, Jefferson City, MO 65102 (BKM); Missouri State University, Springfield, MO 65807 (SRR, BH, CRA, LLB, LWR)

August 11, 2009, a male Rafinesque’s big-eared bat (*Corynorhinus rafinesquii* – CORA) was captured at Otter Slough Conservation Area (OSCA) in Stoddard County, Missouri as part of the Southeastern Bat Diversity Network’s Bat Blitz. This was the first bat survey on OSCA. The 12g scrotal male was captured in a double high 9m mist net placed in the interior of a small forest block between a road and office building. A 0.5g transmitter was affixed, which allowed tracking to a day-roost in an area building. On August 9, 2011 the Missouri Department of Conservation surveyed OSCA again with more effort. On August 9 three mist nets were placed in the area where the CORA was captured in 2009. One scrotal male CORA was captured in a single high 9m mist net placed in the middle of a dry, wooded swamp. Another site consisted of 4 nets and captured 1 eastern red bat (*Lasiurus borealis*). A 0.6 gram transmitter was placed on the CORA and it was tracked for 10 days. The bat day roosted in a large overcup oak (*Quercus lyrata*) with a cavity halfway up the trunk. Two nights of foraging data were taken and 10 days of homing to the day-roost were completed. Each day of homing, the CORA was found in the same roost tree until the transmitter failed or left the area. Staff searched the entire OSCA on day 10 and the signal was not found. Mist nets set near the roost tree on August 10 captured two eastern red bats and one evening bat (*Nycticeius humeralis*). The two records for CORA at OSCA are half of the records in Missouri. These surveys show that more effort is needed in bottomland hardwood forests of southeastern Missouri. Plans are being developed to survey similar areas during spring 2012.

### **HOME RANGE DELINEATION AND ACTIVITY OF THREE INDIANA BAT MATERNITY COLONIES**

Benjamin T. Hale, Joseph R. Lemen, and Lynn W. Robbins, Missouri State University, Springfield, Missouri 65897

The determination of home range size and areas of activity are critical for assessing risk to individuals within a reproductive unit (maternity colony). We used the methodology presented in response to the question “How do we delineate an Indiana bat maternity colony home range?” ([www.fws.gov/midwest/endangered/mammals/inba/pdf/IndianaBatWindGuidance22August2011.pdf](http://www.fws.gov/midwest/endangered/mammals/inba/pdf/IndianaBatWindGuidance22August2011.pdf)). In this methodology, a buffer with a 2.5 mile radius from a roost tree is used as the estimated home range for the colony. Our methodology

includes all relevant points including capture locations, roost trees, and estimated locations using telemetry in a minimum convex polygon to estimate colony home range. We conducted a survey during the summer of 2011 to determine the possible presence of one or more maternity colonies. We tracked 12 reproductively active females during a total of 41 tracking nights (one bat tracked for one night) for an average of 27 hours of tracking per bat. These efforts resulted in a total of 9 primary or multiple bat/multiple day roost trees, 594 separate telemetry points, and three distinct colonies based on a minimum convex polygon inclusion of capture sites, roost trees, and estimated locations. We placed three Anabat detectors in an area of activity associated with primary and alternate roosts and 50 and 300 feet away from this forested habitat. These data indicated that activity of this species is concentrated in areas of suitable habitat relative to adjacent and potentially unsuitable habitat. Home range estimates based on capture site, roost sites, and telemetry differed by bat and by capture date but showed large areas of overlap. Combining these data increased the home range estimate for these three colonies but still resulted in a lower overall estimate when compared to the USFWS method. Home range estimates alone should not be used to infer risk without describing and delineating suitable habitat within that area.

## **USING OCCUPANCY ESTIMATES TO ASSESS THE EFFECTIVENESS OF INDIANA BAT MANAGEMENT IN NORTHEAST MISSOURI**

Sarah Pennington<sup>1</sup>, Sybill Amelon<sup>2</sup>, Matthew Gompper,<sup>1</sup> and Anthony Elliott<sup>3</sup>

<sup>1</sup> *Department of Fisheries and Wildlife, University of Missouri, Columbia, MO*; <sup>2</sup> *US Forest Service Northern Research Station, Columbia, MO*; <sup>3</sup> *Missouri Department of Conservation, Kirksville, MO*

This study is one component of a long-term interagency collaboration between the Missouri Department of Conservation, The Northern Research Station of the U.S. Forest Service, and the University of Missouri in an effort to provide a tool to measure the effectiveness of habitat mitigation efforts for the benefit of the federally endangered Indiana bat. The overall objectives are to determine probability of patch occupancy and probability of detection for Indiana bats on Charlie Heath Memorial Conservation Area, Fox Valley Lake Conservation Area, and Deer Ridge Conservation Area and develop predictive occupancy and habitat use models based on site, and landscape covariates. Furthermore, we look to understand the role that competition among co-occurring bats may have on the patch occupancy of Indiana bats. We will sample 100 points for two consecutive nights across different types of forest management within each of the three study areas. We will passively collect bat echolocation calls using Anabat I and Anabat II detectors coupled with Zero-Crossing Analysis Interface Modules with CF memory card storage (CF ZCAIM; Titley Electronics). We will analyze the resulting detection history using the program PRESENCE 3.0 to estimate proportion of sites occupied and objectively evaluate multi-season models and Nichols-Royal heterogeneity models relative to both probability of detection and site occupancy. We will also evaluate two species models to assess interspecies interactions.

## **A COMPARISON OF FULL SPECTRUM AND ZERO-CROSSING BAT CALL IDENTIFICATIONS IN SOUTHERN MISSOURI**

Shannon Romeling, Ryan Allen and Lynn Robbins, *Missouri State University, Springfield, MO*

In 2011, we conducted a study to explore the make up of individual call files and reported call parameters produced by two zero-crossing Anabats (SD1 and SD2 units by Titley Electronics, Inc.), and an SM2 (Wildlife Acoustics). For this study, these calls were analyzed by two different bat identification software systems in order to understand the differences between the two systems. The three detectors were aligned next to each other on a table approximately 1 meter off the ground and manually set to record in unison for 15 second sessions on August 6-8, 2011 in Current River State Park, MO. Both Anabats used a division ratio of 16 and sensitivity of 5.5. The SM2BAT was configured in mono with a sampling rate of 192 kHz according to the manual and suggestions from Wildlife Acoustics and SonoBat. SM2BAT files were also converted to zero-crossing files using WAC2WAV. Calls will be identified using SonoBat 3.03 Ozark and BCID East 2.4.1.1 software. Files that will be analyzed by SonoBat 3.03 Ozark were processed first by SM2 Batch Compensator (SonoBat). SonoBat 3.03 Ozark classifier will be set to consider the maximum number of calls per file (100), an acceptable call quality of 0.70, and a discriminant probability threshold of 0.90. BCID East will be set to have a minimum of 5 calls present within 15 seconds and to have the default species turned on for the state of Missouri. Number of calls identified and species identifications will be analyzed. This information will assist others in understanding any differences that may exist when using these software systems to analyze bat calls.

## **ACOUSTIC SURVEY FOR VERTICAL DISTRIBUTION OF HABITAT USE BY BATS IN THE NANTAHALA NATIONAL FOREST**

Daniel Schaefer and Joy O'Keefe, *Department of Biology, 600 N. Chestnut St., Indiana State University, Terre Haute, IN 47809*

There are few data on the vertical stratification of foraging activity by forest bats, but it is important to understand the vertical distribution of foraging areas when making forest management decisions. The objective of this study was to compare bat foraging activity near the canopy and near the ground in small canopy gaps in a mature hardwood forest in the southern Appalachian Mountains. The average area of the canopy gaps was  $89.3 \text{ m}^2 \pm 33.9$  (min =  $8.1 \text{ m}^2$ , max =  $325.3 \text{ m}^2$ ). Data collected may serve as baseline data for future studies after scheduled timber harvests have occurred. From 2 June through 1 July 2011, we passively deployed Anabat SD2 detectors at 26 points in 16 stands (sampling an average of 3.6 stands/night; with a range of 1-7 stands/night) within a 3 km radius of the central plot, with detectors simultaneously recording data in canopy gaps (n = 29 nights) and just above ground level (n = 33 nights) at each point. Of 85,010 files collected, 3715 were determined to be bat calls. Of these, 2234 came from the canopy recorders and 1481 were recorded by ground level detectors. Canopy Anabats monitored higher activity levels (mean=77.03  $\pm$  15.8 calls/night) than ground level Anabats (mean=44.88  $\pm$  9.3 calls/night). We plan to compare activity levels for

high and low frequency phonic groups. It appears bat foraging activity was higher in the higher strata of the forest, though the difference was not statistically significant ( $P = 0.052$ ). This higher activity may relate to the presence of less clutter, as clutter might attenuate bat echolocation calls or obstruct flight. Bats may find canopy gaps easier to navigate or canopy gaps may contain more insect prey. Therefore, management activities that create small open patches may provide foraging grounds for forest bats.

#### **BAT OCCUPANCY OF FOREST AND MANAGED SAVANNA AND WOODLAND IN THE MISSOURI OZARKS**

Clarissa A. Starbuck, Sybill K. Amelon Ph.D., and Frank R. Thompson, Ph.D., *University of Missouri, Columbia, MO (CAS); U.S. Forest Service, Northern Research Station, Columbia, MO (SKA, FRT)*

Many Missouri agencies are restoring native savannas and woodlands with prescribed fire and forest thinning. Little is known about how bat foraging varies among savanna, woodlands and forest. We identified management compartments that are actively managed for savanna and woodland conditions and control areas that consist of sites with similar landform but no recent management and have succeeded to more closed canopy forest. We are using Anabat II bat detectors with Zero-Crossing Analysis Interference Modules with Compact Flash memory storage (CF ZCAIM) and SD1 (combined Anabat detectors and CF ZCAIM unit; Titley Electronics) to survey bats at several points during May to July of 2011 and 2012. The objectives are to evaluate a priori hypotheses concerning how bat foraging activity varies among savanna, woodland, and forest habitats in the Missouri Ozarks and their relative location within the landscape. We hypothesize that: the probability of detecting bat species with acoustic detectors will vary by species and is affected by temperature, relative humidity, tree density, Julian date, distance to water, time of night and abundance; the probability a site is occupied by foraging bats varies among species as a function of forest type, tree density, distance to water, distance to flyways (trails or small forest roads), distance to urban areas, canopy closure, tree diameter, vegetative composition, interspersion and road density; and vegetative structural conditions created by savanna woodland restoration and management result in greater occupancy of *Myotis septentrionalis*, *Lasiurus borealis*, *Nycticeius humeralis*, *Eptesicus fuscus*, and *Perimyotis subflavus* than in mature, un-managed forest.

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## Items of Interest



Rocío Díaz Martínez and Jennifer Walford Vann, co-directors of La Troje Productora, are working in collaboration with the Program for the Conservation of Mexican Bats (PCMM) to create a new documentary named Testimonial, which illustrates the essential ecosystem services provided by bats in México and which promotes the conservation of bats, agaves, and their ecosystems. The documentary features a fascinating interview by Laura Navarro, co-founder of PCMM. Rocío and Jennifer attended the 15<sup>th</sup> International Mezcal Fair in Oaxaca, México to give a presentation about the integral relationship between bats and the production of mezcal. Currently, Jennifer is working with Rocío to create English-language subtitles for the Spanish-language documentary Testimonial. Since bats are the primary pollinators of agaves, they are essential to the production of mezcal and tequila, and therefore help maintain a culturally and economically important part of México's heritage. Jennifer and Rocío are working on plans to build a "bat barn" in the state of Michoacán, México, similar to those located on the University of Florida campus, to further their efforts in environmental education and conservation. Testimonial is supported by Michoacán State Secretary of Culture and the Mexican Center for Sonoran Music and Art (CMMAS).

Rocío Díaz M. is a multidisciplinary artist of the State of Michoacán with a special interest in bat conservation through documentary films. Jennifer Walford Vann has a bachelor's degree in anthropology with a minor in linguistics from the University of Florida, where she worked for 5 years for the Department of Wildlife Ecology and Conservation. She has also volunteered in animal husbandry for Lubee Bat Conservancy in Gainesville, Florida.

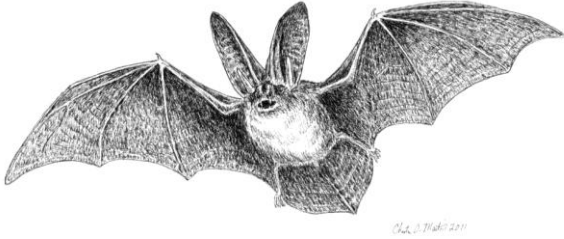
Information about Testimonial:

<http://conceptocirculararte.blogspot.mx/>

Email (English and Spanish):

[LaTrojeProductora@gmail.com](mailto:LaTrojeProductora@gmail.com)

# UPCOMING MEETINGS



**23-25 February 2012**

**18<sup>TH</sup> ANNUAL MEETING OF THE SOUTHEASTERN BAT  
DIVERSITY NETWORK AND 23<sup>RD</sup> COLLOQUIUM ON  
THE CONSERVATION OF MAMMALS IN  
SOUTHEASTERN US**

Fall Creek Falls State Park, Pikeville TN  
14-15 February 2013

**FIRST CALL FOR ABSTRACTS!!**

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93rd Annual Meeting of the American Society of  
Mammalogists  
14-18 June 2013  
Philadelphia, PA

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**2013 Bat Blitz**  
28 July – 1 August 2013  
Ozark Plateau National Wildlife Refuge  
Colcord, OK

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Southeastern Association of Fish And Wildlife Agencies  
2013 Conference  
Oklahoma City, OK  
13-16 October 2013

43rd North American Symposium of Bat Research  
And  
16<sup>th</sup> International Bat Research Conference  
12-16 August 2013  
San Jose, Costa Rica

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**20th Annual Conference of The Wildlife Society**  
Milwaukee, Wisconsin  
5-9 October 2013

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69<sup>th</sup> Annual Northeast Fish and Wildlife Conference  
Saratoga Springs, NY  
7-9 April 2013

You all did a great job!



A very special

**“Thank You!!”**

to all of you who sent in items, you truly made this issue a real success.

Send all your interesting bits to J.D. Wilhide (jd\_wilhide@cml.net)

**Merry Christmas and a Happy New Year!!!**