Nightwing News

The Newsletter of the Southeastern Bat Diversity Network

Volume 100, Number 2 December 2010

PRESIDENT'S ADDRESS

Submitted by Darren Miller

Time truly does fly by. It is nearly incomprehensible that I will soon be passing the gavel to Dr. Mike Lacki as the next SBDN President. Where did the 2 years go? I suppose another old adage is also true – time flies when you are having fun. And, I can honestly say, the past nearly 2 years have not only been fun, but also rewarding and humbling. We have made great strides in furthering the mission and goals of SBDN over the past 2 years, accomplishments that I am proud about doing my part to bring to reality. The Board recently approved a change in the governing structure of SBDN that I believe will allow the organization to operate more efficiently and increase opportunities for our members to be more active in the daily operation of SBDN. This newsletter is another accomplishment – improving communications and interactions to and among our members; I hope to see this newsletter grow as a primary source of updates and information for bat conservation in the southeastern U.S. Recently, we signed an MOU with Bat Conservation International, with both organizations pledging to work together for the future of our bats. Nina Fascione, Executive Director of BCI, will attend our February meeting for a signing "ceremony" and to meet and talk with members. Again, I am hopeful that this partnership will help us meet or goals and mission as an organization. There are also numerous other accomplishments that were achieved and needed to keep an organization moving forward, that are too numerous to list here.

Thos of you that know me well realize I don't have a strong "humble streak." However, I have to say that serving as President of SBDN has been a truly humbling experience. First, what WE have been able to accomplish while I was President was only possible due to the strong, passionate commitment to conservation and to SBDN by many of our members. So many individuals contribute to the success of this organization that it is literally impossible to list them all here. From the most active Board members, Committee Chairs, and Officers to the student "just" paying membership dues, the obvious zeal for our natural resources among the group is truly amazing. It is humbling to see so many individuals spend so much time, energy, and "emotional capital" to further bat conservation in our region. A case in point is the annual SBDN Bat Blitz. The time and effort needed to pull this off each and every year is remarkable. When you see SBDN members like Trina Morris and Nikki Castleberry, weary after days and weeks of preparation and then active participation in the event itself, it is humbling. When you see people like Tim Carter, using his own vehicle (pulling the "Myotis Machine", no less) and time to travel hundreds of miles to attend the Blitz, it is humbling. Yet, our members make these types of sacrifices and commitments almost daily in their personal and professionals lives for the singular motive of conservation. What can be more humbling? So, THANK YOU to each and every one of you.

I will close with the same message I closed within the last newsletter - our organization is only as strong as our membership. Please stay active and involved in our beloved SBDN. Take the opportunity to serve on committees or otherwise be as active as you are able in SBDN. I think SBDN's future is bright even as we face many significant challenges – WNS, an ailing economy, an increased detachment from natural resources by a larger and larger proportion of society, and other issues are ones we will all have to face. But, I am confident that successes in natural resource management will continue and ultimately prevail due to the deep passion so many of us possess for these resources. I look forward to seeing you at the annual meeting in Louisville and, again, best to all and thanks for all that you do to help conserve bats!!

In This Issue

Southeastern Bat Diversity Network
Board of Directors
Meeting Minutes
Fort Mountain State Park, Georgia
27 July 2010

Attendees:

Darren Miller, President
Tim Carter, Treasurer/BOD
Joy O'Keefe, Secretary/BOD
Nikki Castleberry, BOD
Dennis Krusac, BOD
Katrina Morris, BOD

Participating by telephone:
Mike Lacki, President-elect
Bree McMurray, BOD
Tom Risch, BOD
J.D. Wilhide, SBDN newsletter editor

Not in Attendance:
Michael Baker, BOD
Brian Carver, BOD
James Kiser, BOD

Action Items:

- Send copy of Bat Research News abstracts to Darren
- Darren will send Bat Coordinator position statement to SBDN BOD
- Darren will send SBDN/BCI MOU to BOD for approval and then to BCI
- Dennis will find out about possibility of USFS funding for CORA/MYAU action plan by 1 Oct. 2011
- Nikki will send draft mission statement and bylaws to SBDN BOD for review by mid-August
- Tim will add fees for online registration to website for Feb 2011 joint meeting
- Tim will send message to former SBDN members asking them why they dropped membership/how SBDN could be more appealing to them
- Darren should look into MS as Blitz host for 2012
- Dennis will check with east TX about hosting Blitz in 2012
- Tim will send J.D. a check for the newsletter
- J.D. will send list of empty states to Darren so Darren can contact those states
- Darren/Nikki will check with KY TWS folks about possible joint mtg in 2011
- Darren will appoint Evan Pankuk as chair of SBDN WNS Committee
- WNS Committee should provide update on activities to J.D. for Dec 2010 newsletter

Darren called the meeting to order at 11:13 am EST.

Incomplete Action Items/Old Business:

Darren reviewed the action items from the Feb 2010 BOD meeting. Most have been completed. **Darren would like a copy of the 2010 Colloquium bat presentation/poster abstracts that were recently published in Bat Research News.**

Bat Coordinator position – Bree sent statement to Darren with position description (PD), ideas for potential funding sources and goals. Would be a term position, maybe with a buy in from SE states. Bat Coordinator committee suggests doing a poll of SE states for input on position goals. **Darren will send PD to BOD for comments.** Mike pointed out that if person has to solicit their own funding, the position might have higher turnover.

Federal employees serving on BOD – Darren was waiting for input from Shawna Ginger and Dennis Krusac, but Dennis suggests we may want to drop this topic.

MOU with BCI – **Darren will solicit comments and approval from BOD. Darren will send final draft to BCI.**

Darren suggests committees need to be informed of tasks and also need to make sure committees know they need BOD approval for actions.

CORA/MYAU Conservation Plan – money might be available for someone to do the work on the plan. BCI might have some money and Dennis put in 2 requests for at least $15K to complete the plan for CORA/MYAU.
Dennis will know about USFS funding by Oct 1.

Nikki reports that mission statement and bylaws are still in draft form. **Will send drafts to Darren by mid-August, then to BOD and then documents will be finalized.** Ultimate deadline is late fall so documents can be sent to membership before Feb 2011 meeting.

Credit card payments – Mike Baker found out you can pay thru PayPal without being a member. The link is hidden on PayPal's webpage. Because PayPal takes a percentage of the payment, **a fee will be added to the online registration for the Feb 2011 meeting.**

Reports:
Treasurer's Report - About $28K in all accounts. The 2010 Blitz has $5500 and still more money to sequester from USFS. Major source of income is membership. Major expenses are student travel awards, tax fees. Have 80 paid members and lost 49 individuals as members from 2009 to 2010. Need to think about motivation for membership. Perhaps a members' only area on webpage (password protected), a membership drive at Feb 2011 meeting, or raffling off memberships at Blitz. **Tim will send message to former SBDN members asking them why they dropped their membership.** Listserv has 454 members.

Blitz Committee Report - 2011 Budget request is due in about 3 weeks, so now is time to secure federal funding for 2011 Blitz. Joy and Mary Kay Clark are working on options for a Blitz in N C in 2011. **Darren will look into MS for 2012 and Dennis will check on east TX for 2012.**

Newsletter - **Tim needs to send J.D. a check for the original newsletter he produced. J.D. will send Darren a list of empty states and Darren will contact those states to ask for reports for next newsletter.** Colloquium abstracts can be published in newsletter and Bat Research News as long as they are in different formats. Other items for the newsletter could include a Blitz summary (2009 & 2010), the meeting announcement for 2011, anecdotes from the field, and a spotlight on an undergrad or grad student. Call for submissions will go out at end of Oct/early Nov. Second call in mid Nov and final call at end of Nov.

2011 Meeting - Dates are Feb 23-25, 2011 (Wed-Fri). Tim is working with Brooke Slack (KDFWR). Tentative schedule is Wed AM – WNS Symp., Wed PM – techniques workshop (possible continuing ed credit), Thurs AM – business mtgs for 3 grps, Thurs PM – Wind and bats symp., Fri-Colloquium. **Darren and Nikki will check with KY folks about KY TWS meeting (possible joint meeting).** Tentative BOD mtg time is Tues evening from 6-8 pm.

Big-eared Bat Symposium - Sent abstracts back to authors for revisions. Publication costs will be lower than expected ($4K), so some leftover funds could be used for CORA/MYAU conservation plan (perhaps $4K).

WNS Committee - Tom Risch would like to step down as committee chair and suggests his PhD student, Evan Pankuk, take over as committee chair. **Darren will appoint Evan as chair. WNS Committee needs to provide update on WNS Committee for Dec 2010 SBDN newsletter.**

New Business:
Webpage - Tim pointed out that some have had a hard time accessing SBDN webpage. Joy echoed this problem. Might be a timing issue for the page loading. Aleida and David have made changes to the webpage since David took over as historian/webpage liaison.

Distance learning – Dennis mentioned that he is pushing for the creation of a bats distance learning tool like the Pollinator Live or Monarchs Live webpages.

Meeting adjourned at 12:59 pm EST.

BAT BLITZ

9th Annual Southeastern Bat Diversity Network Bat Blitz

Chattahoochee National Forest
Fort Mountain State Park, Georgia
July 25th – 29th, 2010

Prepared by: Trina Morris, Nikki Castleberry and Ruth Stokes

A complete write up can be found in the State Working Group section - Georgia.

10th SBDN BAT BLITZ: 31 July – 4 August 2011

Pisgah National Forest and vicinity, western North Carolina

CONTACT: Mary K. Clark, 10th SBDN Bat Blitz Coordinator

mkcmoonlight@gmail.com

General registration for the blitz will begin in Spring 2011.

Registration notification will be via the SBDN listserve.

Updates posted on the SBDN listserve. More details at www.sbdn.org and on the FaceBook page "10th SBDN Bat Blitz"

B. H. Corpening Training Center, Crossnore, NC, is our base station. Located on the Linville River, the facility has a large kitchen, dining room, ample lodging and two well-equipped classrooms.

Three federally endangered species are known from locales in the vicinity of the Pisgah National Forest: Indiana bat, gray bat and Virginia big-eared bat. Additionally, there are four species of concern likely to occur in the area; small-footed bat, little brown bat; Northern long-eared bat and Rafinesque's big-eared bat. Other species that may be captured include silver-haired bat, tri-colored bat, big brown bat, red bat and hoary bat.

Some of the most beautiful scenery in the Southeast is found here. The Pisgah National Forest is known for its waterfalls and points along the Grandfather Mountain trail system provide stunning vistas.

JOIN US IN WESTERN NC FOR THE 10th SBDN BAT BLITZ, 31 JULY – 4 AUGUST 2011

WHITE-NOSE SYNDROME

Article found on the Missouri Department of Conservation website: Discover Nature

In mid-April, 2010, the Missouri Department of Conservation confirmed Missouri's first signs of a new disease in bats that scientists have named "White-Nose Syndrome." The name describes a white fungus, *Geomyces destructans*, typically found on the faces and wings of infected bats.

The WNS fungus appears to spread mainly through bat-to-bat contact and has not been found to infect humans or other animals. It thrives in the cool, damp conditions found in many caves, which are also ideal hibernation and roosting sites for many bat species. The disease causes infected bats to awaken more often during their winter hibernation and fly outside in search of insects to eat. This activity uses up stored fat reserves needed to get them through the winter, and they usually freeze or starve to death.

White-nose syndrome was first discovered in a cave in New York in 2006. MDC scientists have been tracking the westward progression of the disease since its discovery. Laboratory tests recently confirmed the presence of the WNS fungus on a bat found in a cave in Pike County.

According to Bat Conservation International, a leading authority on bat conservation, education and research, WNS has killed more than a million bats in 11 states and Canada.

The MDC has a WNS action plan in place that focuses on MDC lands. The Department is working with other state and federal agencies, conservation groups and private cave owners, including owners of Missouri show caves, to develop a Missouri-wide WNS action plan to address the threat of WNS to the state's valuable bat populations.

There are more than 6,300 caves in Missouri with 74 percent of them privately owned. More than 500 are known to house bat colonies, but that number may be as high as 5,000.

Missouri is home to at least 12 species of bats. They are our front-line defense against many insect pests including some moths, certain beetles and mosquitoes. Insect pests can cause extensive forest and agricultural damage. Missouri's 775,000 gray bats alone eat more than 223 billion bugs a year, or about 540 tons.

This is the photo of the actual bat that was suspect in the Pike County, MO cave.

Bat Conservation International information states that the more than one million bats killed by WNS would have consumed just under 700,000 tons of insects each year. That equals the weight of about 175,000 elephants.

(Complete article can be found at:
http://mdc.mo.gov/nathis/caves/
or
http://mdc.mo.gov/discover-nature/habitats/caves-and-karst/white-nose-syndrome-missouri)

STATE WORKING GROUP REPORTS

In February, 2009, the Alabama Bat Working Group was formed. This group of agency biologists, university researchers, members of the caving community, and other conservation partners is focused on a state-wide inventory of Alabama's bat fauna and Alabama's response to white-nose syndrome (WNS). The group held its first mini-Bat Blitz in October 2009 in the southern part of the state. The Nature Conservancy's Splinter Hill Bog Preserve served as our host site. Locations surveyed included Sanders Cave, Blakeley State Park, Bon Secour National Wildlife Refuge, and TNC's Preserve. A sub-committee was created in response to WNS and a Draft Management Plan for the State has been developed. The Draft Plan is currently being coordinated with the caving community and other interested individuals and organizations. Coordination efforts are underway for winter surveys of high priority cave resources. Individuals interested in volunteering with the Alabama Bat Working Group may contact Eva Kristofik at Eva_Kristofik@fws.gov

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From: Tom Risch

Planning is underway to hold the 2011 White Nose Syndrome meeting in Little Rock on May 17-19 with further details to be announced in the near future through Bat Conservation International, which will be coordinating the conference.

David Saugey, longtime wildlife biologist on the Ouachita National Forest and mainstay of the bat research community in Arkansas is retiring at the end of 2010. David Kampwerth, the karst biologist and frequent bat surveyor for the US Fish and Wildlife Service in Arkansas has transferred to a position in Idaho.

The Arkansas Game and Fish Commission will be modifying 7 old concrete bunkers and building a concrete block bat roost for Rafinesque's big-eared bats on the Hope Upland Wildlife Management Area this winter with funding provided through the US Fish and Wildlife Service's State Wildlife Grant program. Additionally, the AGFC has purchased a steel cover to be placed on a well on private land in southern Arkansas that is used by this species.

Here at Arkansas State University we have been continuing our investigations into fungal digestion of bat integument. A four month digestion was performed and UV/vis spectrophotometric data was collected and the solubilized proteins were separated out by SDS-PAGE. We are currently analyzing protein bands in the Protein Chemistry lab at the Arkansas Biosciences Institute in conjunction with the University of Arkansas Medical School (Little Rock).

An AR state wildlife grant was awarded to ASU. The grant is to analyze the lipid constituents on bat integument. Further studies will analyze how the WNS fungus grows on bat lipids and how they are incorporated into the fungus.

Tracy Klotz (graduate student in the bat ecology lab), Patrick Moore (an undergraduate at ASU), and Phillip Jordan (an undergraduate at ASU) had a successful field season this year studying Indiana Bats. Quite a few Ozark Big-eared bats were caught and wing punches were taken. They are being sent to Dr. Ronald A. Van Den Bussche for genetic testing. Wing punches from Eastern red bats are also being sent to Dr. Vonhoff at Western Michigan University. Wing punches were taken from a majority of bat captures this year in an attempt to collect as much pre-WNS data as possible.

ASU students Patrick Moore and Phillip Jordan have also been involved in a collaborative project with Bat Conservation International serving as lead organization at St. Francis National Forest and Lake Greeson. Gates were put up to protect cisterns at Stumpy Point and in front of mines at Lake Greeson. At stumpy point, data loggers are being installed to record temperature and humidity levels.

BCI's Eastern Rare Bats Program Coordinator, Dr. Michael Baker, is working with the Arkansas Game and Fish Commission to bring the GateKeeper beam-break system to Edgeman Cave, Newton Co., AR in the summer of 2011.

In spring of 2010 BCI's WNS and Caves and Mines Program Coordinators, Mylea Bayless and Jim Kennedy, respectively, coordinated the installation of bat-friendly gates across the entrance to two mine adits used by southeastern myotis near Lake Greeson, on the Ouachita National Forest, AR with invaluable assistance by our partners, The US Forest Service, Arkansas State University (ASU), Arkansas Game and Fish Commission (AGFC), and the US Army Corps of Engineers.

In spring 2010 BCI's WNS and Caves and Mines Program Coordinators, oversaw the installation of a bat-friendly cupola-style bat gate over the Stumpy Point cistern opening, which allowed continued access by Rafinesque's big-eared bats, addressed liability issues associated with open cisterns/wells on USFS land, and reduced potential disturbance by National Forest visitors.

No News Reported

9th Annual Southeastern Bat Diversity Network Bat Blitz
Chattahoochee National Forest
Fort Mountain State Park, Georgia
July 25th – 29th, 2010

Prepared by: Trina Morris, Nikki Castleberry and Ruth Stokes

More than 100 bat biologists, researchers, managers and students converged at Fort Mountain State Park July 25th – July 29th, 2010 for the Southeastern Bat Diversity Network's 9th Annual Bat Blitz. These volunteers represented 34 agencies, corporations, universities and organizations and traveled from 19 states including Oregon, Indiana, Illinois, Texas, Michigan, and Wisconsin. They volunteered their time and shared survey equipment to conduct a landscape-scale survey for bats in the Chattahoochee National Forest and adjacent state and federal lands including Carters Lake (USACE), and Fort Mountain State Park.

The event began with an education night on Sunday, July 25th. Nearly 100 people attended the event. The evening began with displays and activities for kids presented by Bat Conservation International, Southeastern Cave Conservancy, US Forest Service, GA Department of Natural Resources, Habitat for Bats and other presenters. Vicky Smith from A-Z animals gave a general bat presentation and SBDN President Dr. Darren Miller from Weyerhauser gave a presentation on Bat Conservation in Georgia. Participants then enjoyed an echolocation game, followed by a mist-netting and Anabat demonstration.

Seventy-six volunteers registered for the event with additional GA DNR and USFS blitz support staff. Thirty-four sites were sampled over the 3-night period. Netting sites were located in the park, surrounding lands on the Chattahoochee National Forest and Carters Lake (USACE), state lands and other sites in Gilmer, Fannin, and Murray Counties in Georgia. Habitats included oak-hickory-pine forest and southern mixed forest along mountain streams, trails and road corridors. Sites were selected in known or suspected bat roosting, foraging and travel corridors, most often near water. Bats were captured using mist nets. Data collected on each bat included species, sex, age, weight and selected measurements as well as an assessment of reproductive condition. All bats were released after data were recorded.

During three nights of sampling, the volunteers captured 292 bats representing 9 species. These included 89 northern long-eared bats (*Myotis septentrionalis*), 41 big brown bats (*Eptesicus fuscus*), 73 red bats (*Lasiurus borealis*), 9 little brown bats *(M. lucifugus)*, and 65 tri-colored bats (*Perimyotis subflavus*), 7 evening bats (*Nycticeius humeralis*), 1 hoary bat (*L. cinereus*), 5 small-footed myotis (*M. leibii*- state species of concern), and 2 gray bats (*M. grisescens*- Federally Endangered).

Genetics samples were taken from each bat for the American Museum of Natural History and fecal samples were collected for dietary analysis. Occurrence data will be used to make informed management decisions and provide baseline data in the face of White-nose Syndrome.

The blitz was a cooperative effort between the Georgia Dept. of Natural Resources, the US Forest Service and the Southeastern Bat Diversity Network. Sponsors of the blitz included the US Forest Service, Georgia Department of Natural Resources, Southeastern Bat Diversity Network, ABAC Student Chapter of the Wildlife Society, Atlanta Zoo, Bat Conservation International, Ecotech, GA Museum of Natural History, GA Power, Gary Libby Consulting, Georgia Chapter of The Wildlife Society, Hardees, TERN, UGA Student Chapter of the Wildlife Society, US Army Corps of Engineers and Weyerhauser.

2010 Summer Interns

The 2010 GA DNR summer bat interns, Beth Oxford and Brannon Knight were irreplaceable! They managed to help with setting up and completing the bat blitz as well as run some anabat routes, track yellow bats, enter bat data and many other important activities. We couldn't have done it without them and they will be missed. We'll be looking for interns next summer to do both bat and general small mammal work. Look for an announcement on the GA DNR website in the spring (http://www.georgiawildlife.com/getinvolved/career-opportunities).

2010/2011 Winter WNS Monitoring & Education Efforts

Currently GA is still WNS negative. We will continue WNS monitoring this year revisiting last year's sites and expanding monitoring with the help of Georgia's caving community. We've been focusing time on education activities in GA. We have been giving presentations around the state and Nikki Castleberry was able to attend the Fall TAG Cave-In. GA DNR had a booth at the event and passed out information about WNS and decontamination protocols.

Piper Roby
Biologist/GIS specialist

Copperhead Environmental Consulting, Inc.

Here's what we did this year:

- Spring migration tracked an Indiana bat from Cornstarch Cave in TN to a new maternity colony near Eagle Creek in Carroll County, KY
- Spring migration tracked an Indiana bat from Rose Cave in TN to just north of Birmingham, AL
- Collected roost data on male Indiana bats just out of hibernation in Fentress County, TN
- Caught an Indiana bat and Gray bat at the Town Creek Tract of Yellowbank WMA, KY. Found roost trees for IBAT – new maternity record
- Continuing monitoring of Indiana bat colony at Ft. Knox, including collecting foraging data
- Caught juvie male IBAT in Jackson County, IL
- Collected roosting data on Indiana bats and evening bats at Camp Atterbury, IN
- Caught Indiana bats and radio-tracked to roost trees at project in parts of Boone, Clinton, Montgomery and Tippecanoe counties, IN
- Caught Indiana bats and radio-tracked to roost trees at project in parts of Champaign, Ford and Vermilion counties, IL

BCI partnered with the Kentucky Department of Fish and Wildlife Resources (KDFWR) to install and maintain Anabat detector systems at 8 priority hibernacula across Kentucky during the winter of 2010 (early February through late April) to monitor for activity at these sites during the winter. The project was plagued by equipment malfunctions, likely arising from the use of small batteries and solar panels during winter when adequate sunlight is not reliable and inadequate 3-week maintenance intervals. Much shorter maintenance intervals might have resulted in more useful data.

BCI also partnered with the KDFWR to fund and install the GateKeeper beam-break system, designed to count bats as they enter and leave hibernacula by David Redell, Bat Ecologist with the Wisconsin Department of Natural Resources, on 3 priority hibernacula for the federally endangered Indiana and gray myotis in Kentucky. BCI, presented preliminary beam-break data analyses for the system on Saltpetre Cave, Carter Co., KY, along with an update on continuing efforts by BCI, caver volunteers, and state and federal agency partners, to restore the microclimate in this cave, to separate meetings of the Tennessee and Kentucky Bat Working Groups in November of 2010. Past restoration efforts at this site have accompanied an increase of nearly 7,000 Indiana myotis using this site between project initiation in 1998 and the in-cave census conducted in winter of 2007.

BCI's Caves and Mines Specialist, Jim Kennedy, led partners (American Cave Conservation Association, Kentucky State Nature Preserves Commission, Kentucky State Parks Department, US Fish and Wildlife Service) and caver volunteers in successful efforts to replace the flood-damaged gate on the upper entrance to Bat Cave, Carter Co., KY in late August of 2010. Funding for this effort was provided to BCI by the USFWS and wind energy companies through the Bats and Wind Energy Cooperative, coordinated by BCI's Programs Director, Dr. Ed Arnett, and BCI's new Bats and Wind Energy Program Coordinator, Dr. Cris Hein.

BCI's Eastern Rare Bats Program Coordinator, Dr. Michael Baker, is working with Steve Thomas of the National Park Service to bring the GateKeeper beam-break system to an important man-made maternity roost for the Rafinesque's big-eared bat (i.e., the Wondering Woods Chapel), Mammoth Cave National Park, KY in the winter of 2011.

No News Reported

No News Reported

The Mississippi Bat Working Group's 2011 Annual Meeting will be held on Wednesday, January 19, 2011 at the Tully Auditorium at Mississippi State University. Anyone wishing to present should contact Becky Rosamond at msbats@hotmail.com or 662-226-8286 x114 by December 17, 2010

Bree McMurray
(MO Dept of Transportation-MODOT)

On April 1, 2010 MO Department of Transportation installed three multi-chamber bat houses along the Katy Trail in New Franklin, MO (State Park trail in central Missouri).

This was volunteer mitigation for the removal of a known big brown bat maternity roost, the Rt 5 bridge over the Katy Trail, at the same location. No bats were seen roosting in the new boxes yet this spring or summer.

In April and June 2010, attended the state multi-agency White Nose Syndrome workshop. The goal was to bring together stakeholders from federal, state, private, academic, and non-profit interests groups to begin working on a comprehensive white nose response plan for our state.
In June 2010, assisted USFS Mark Twain National Forest biologists with a bat survey on the Potosi Ranger District, eastern Missouri, as part of their regular monitoring.
In June 2010, I participated in gating of Kelly Hollow Cave in Oregon County, an event coordinated by the US Forest Service Mark Twain National Forest and the Cave Research Foundation. There were numerous volunteers from the caving community
In September 2010, Shelly Colatskie (Missouri Department of Conservation) and I conducted the bat survey portion of the Forest Park Bio-blitz in St. Louis, MO. We spoke to a group of about 35 (ages 10 to 60), and were able to demonstrate mist-net deployment and removal and handling, and a little "getting to know you" up close and personal time with some big brown bats. That was my 3rd St. Louis Bio-blitz event showcasing bat research (every two years).

Outside the state:
In February, I attended the Southeastern Bat Diversity Network meeting in Asheville, NC. I currently serve as a Board Member, assist with transitioning my duties from State Reports Committee Chair to the Newsletter Editor, and serve on the Bat Blitz Committee.
In May 2010, I attended the Midwest Bat Working Group meeting in Terre Haute, IN. I gave the state summary for Missouri, was elected to the Board of Directors, and I am "chairing" the state reporting committee.

Shelly Colatskie (MO Dept of Conservation-MDC)

December 2009: Graduated Missouri State University with my Masters of Science in Biology (under Dr. Lynn Robbins): Master's Thesis Title: **Roost Selection, Roosting Fidelity and Activity Patterns of Female Indiana Bats (*Myotis sodalis*) in Northern Missouri.**

April 2010: Attended the White Nose Syndrome workshop meeting in Springfield, Missouri

June 2010: Attended a second White Nose Syndrome Workshop meeting in Springfield, Missouri. Also assisted Derek Shiels and Bill Elliott with TIR (Thermal Infrared) surveys on gray bat maternity caves.

September 1st, 2010: Began working as the Assistant Cave Biologist (under Bill Elliott) for the Missouri Department of Conservation.

September 2010: Bree McMurray (of MODOT) and myself conducted a bat survey for the BioBlitz at Forest Park in St. Louis, Missouri. We showed a very interested group of about 40 how to set up a mist net, how we capture and process bats and they even got to see 3 big browns!

Late September 2010: Did an all night TIR monitoring at Pilot Knob Mine (to get an idea of bat behavior and swarming).

October 3rd and 4th: Tony Elliott (MDC), Charlie Scott (USFWS-Columbia) and Ann Froscher (USFWS) and I took NBC and Jeff Corwin to a couple of caves to film the gray bat flight/swarm, as well as set up a mist net to capture some. This was a piece that compared Aeolus cave in Vermont (which lost nearly all of its' bats to WNS) to a cave (caves) in Missouri that still have a large population of bats (focusing on Gray Bats in this case) that has not been affected by WNS yet. They showed us doing research and monitoring (how we look for signs of WNS, measuring guano, bat counts, mist netting, etc). Air date on NBC Nightly News with Brian Williams TBA.

October 27th: Attended the Caves and Karst Workshop at the National Natural Areas Conference at Tan-Tar-A Resort at Lake of the Ozarks, Missouri

November 2010: Planning winter bat survey dates for Missouri Department of Conservation caves.

Volunteer efforts:

In October 2010 Risa Wright volunteered at the Springfield Conservation Nature Center at its annual Halloween Happening to teach children and their parents about local species of bats.

BioBlitz, 2010. The MSU bat team mist netted at the Wildcat glade in Joplin Missouri as part of the Audubon Centers BioBlitz.

School Programs & Bat work/education:

October 1st – 2nd Dr. Lynn Robbins and MSU bat team took 30 undergraduate mammalogy students mist netting at Peck Ranch State Wildlife Management Area in southeastern MO.

In October 2009 Ben Hale began an educational outreach program to connect students to bat conservation. He has conducted 7 programs, speaking to groups of 10-30 students (ages 6 – 14), and demonstrates mist-net deployment, removal and handling, along with up close contact with red bats.

Bat Program's Missouri State Bat Lab:

Science on Saturday – Bat Program (2nd, 3rd, 4th grade) – Truman State University, Kirksville, MO. 11/7/2009 and 2/28/2010

Expanding your Horizons – Bat Program – 7th grade female students – Missouri State University, Springfield, MO. 10/24/2009

Missouri Department of Conservation Nature Center Halloween Bat program – All ages. October 2009 and October 2010

Bear Camp – Bat Program – 1st grade students - Missouri State University, Springfield, MO. 7/27/2010

Joseph Baldwin Academy – Bat and Insect Trapping Program – Truman State University, Kirksville, MO. 7/26/2010

Ben Hale using a stuffed bat to introduce children to bat ecology and conservation issues, inside an inflatable cave he designed for educational outreach programs.

MSU graduate Students thesis titles:

Janelle Bowcock. "How Does Prescribed Burning and Vegetation Type Affect Bat Community Structure in Ozark National Scenic Riverways."

Joseph R. Lemen. "The use of GIS and landscape-scale variables to model Indiana bat habitat."

Shannon Romeling. "Predicting Bat Mortality Caused by Wind Turbines."

Ben Hale. "A New Method for Reliable and Repeatable Searcher Efficiency for Post-construction Mortality Surveys at Wind Energy Locations."

Risa Wright's thesis project is looking at the use of microclimates during arousals in hibernating tri-colored bats and its implication as a mitigation tactic for white-nose syndrome.

Perimyotis subflavus, a Tri-colorded bat caught in a mist net by MSU's bat team, and the focus of Risa Wright's thesis research.

Little brown bat (*Myotis lucifugus)* captured in a mist net by MSU graduate student researchers.

(Photo by Risa Wright).

Consultants:
June 2010 MSU's bat team spent two weeks mist netting bats at National Guard Training sites, Wappapello and Macon, for an endangered species survey and detected Indiana bats acoustically.

Research:
Ryan Allen has developed automated software for identification of bat calls. An early version of this Bat Call Identification (BCID) is available online at batcallid.com.
Missouri State University's Bat lab has been conducting research in the Ozark National Scenic Riverways since April 2009 to present. We are involved in a three year project at the Ozark National Scenic Riverways to determine the extent to which Indiana bats are present within the park during the summer, particularly within prescribed burn units. We identify important Indiana bat habitat to develop best management practices for prescribed fire and other park actions relevant to bats, especially listed species. We also monitor changes in community structure year-round at important hibernacula to gather baseline activity data pre- and post-white-nose syndrome.

Outside the State, Missouri State Bat lab:
June 13-15th 2010, three members of the MSU bat team mist netted and did an acoustic demonstration for the Devil's Den Bat-O- Rama in Devil's Den State Park in Arkansas. Evening bats were caught and acoustic detectors were used and explained.
August 31st – October 1st, Lynn Robbins attended Bats and Mines in West Virginia.
Two members of the MSU bat team attended the Sonobat Research in Jumonville, Pennsylvania where the basics full spectrum hardware and software were taught and discussed.
October 15th and 16th the MSU bat team attended the Central Plains Society Mammologists meeting in Ames, Iowa and presented their research.
October 19th -21st, Ryan Allen and Larisa Bishop-Boros attended the Ozark Summit in Tahlequah, OK.
October 19th -21st, two members of the MSU bat lab attended Wind and Wildlife Research Conference in Denver Colorado and presented posters on bat and wind related issues.
October 27th -31st 2010, Dr. Robbins' and Dr. Tomasi's bat labs attended the North American Society for Bat Research in Denver, Colorado.

ANNOUNCEMENT

10th SBDN Bat Blitz - Pisgah National Forest *(cs.unca.edu/nfsnc)* **and vicinity** (northwestern NC)

31 July - 4 August 2011; headquarters, Crossnore, NC (www.dfr.state.nc.us/education/**corpening_facility**)

- Inventory focus area: Pisgah National Forest and other public and private parcels in the vicinity.
- Well-known features in this area include Grandfather Mountain (www.grandfather.com) and Linville Falls (www.ncwaterfalls.com)
- A **facebook page** for the 2011 blitz (named "**10th SBDN Bat Blitz**") has been established.
- More information will be posted on **facebook** and on the **SBDN website**, www.sbdn.org in 2011 as we proceed with planning.

Contact: Mary Kay Clark, 10th SBDN Blitz Coordinator, mkcmoonlight@gmail.com

Joy O'Keefe and Susan Loeb (USDA Forest Service, Southern Research Station) are conducting a Joint Fire Sciences Program-funded study on the effects of prescribed fire on Indiana bat roost habitat in 3 areas in the southern Appalachian Mountains: 1) Cherokee National Forest (Polk and Monroe counties, TN, 2) Nantahala National Forest (Cherokee and Graham counties, NC), and 3) Great Smoky Mountains National Park (Swain County, NC; Blount and Sevier counties, TN). In 2010 we established treatment and control plots in the 3 areas to assess the effects of prescribed fire on existing snags and creation of new snags. To test the effects of fire history and landscape position on roost availability we also surveyed transects at 3 slope positions in areas with differing burn histories. We also conducted a radio telemetry study on Indiana bats in the same areas from mid May to early August 2010. We captured 18 Indiana bats, placed transmitters on 14 individuals, and found 29 roost trees in 2010. We have developed a website (http://www.srs.fs.usda.gov/uplandhardwood/JFSP_index.htm) to provide information on this research and we have presented these data at the 2010 annual meetings of SBDN, NASBR, NC Bat Working Group, and TN Bat Working Group.

A 700 acre burn unit lit by hand and helicopter, Nantahala National Forest, NC.

Transmitter attachment on an adult female Indiana bat, Nantahala National Forest, NC.

Susan Loeb, USFS Southern Research Station, is examining bat and insect responses to oak regeneration treatments in the Cold Mountain Gamelands. This was the third year of a long-term study and the first year of complete post-treatment data collection.

At the Fort Bragg army installation, no mist-netting was conducted, but work continued with Sonobat surveys. They have been conducting acoustic surveys since 2004 to monitor bat populations. This is the 1st year they collected data using the Anabat system for the east coast study organized by Eric Britzke. They are also working with Eric to monitor the Southeastern Myotis population on base using Anabat .

Eric Donaldson at the University of North Carolina Department of Epidemiology, published the following article: Donaldson EF, Haskew AN, Gates JE, Huynh J, Moore CJ, Frieman MB. Metagenomic Analysis of the Virome of three North American Bat Species: Viral Diversity Between Different Bat Species that Share a Common Habitat. J Virol. 2010 Oct 6.

Matina Kalcounis-Rueppell, UNC-Greensboro, is modeling peripheral bat populations in the Southeast to determine how they may help mitigate the effects of WNS on core bat populations.

David Webster and Brian Chapman, UNC-Wilmington, has been tracking the range extension of the Brazilian free-tailed bat in NC. Free-tails were first observed in NC in 1984 and now inhabit 43 counties.

Staff at the North Carolina Zoo maintains a vampire bat colony; the oldest bat is 39. Zoo staff members conduct public bat feedings with talks and Q&A. They also conduct an educational program, Batology (in its 5th year), which includes an informational exhibit including audio and museum specimens. Another educational program, Masters of the Night, is a program funded by the Z Smith Reynolds Foundation that travels to educational institutions. Zoo Snoozes are also conducted where overnight guests at the zoo build bat houses. There is an article in the NC Zoo magazine on WNS.

NC Wildlife Resources Commission Winter 2010: Continued regularly scheduled monitoring in priority hibernacula, increased frequency of visits to some sites. They are looking for WNS and submitting some specimens for WNS diagnostics. Tier 1 surveys were conducted at 14 sites, Tier 2 at 1 site, Tier 3 at 10 sites. They are limiting the number of volunteers on surveys but are recruiting for Tier 3 monitoring. Summer 2010 mist-netting: 25 sites netted, 572 bats captured (including escapes); 1300+ bats observed when including roost checks. Thanks to Dottie Brown for all her hard work this last summer! Four bats were tested but were negative for WNS, although some wing damage was observed in early summer captures.

Lauren Bryde and Kacy Cook of NCWRC conducted Anabat driving surveys in the Uwharrie National Forest.

Cherokee Fisheries and Wildlife Management continued long term summer mist-net monitoring at four Tribal sites in collaboration with the NCWRC in 2010. They also initiated an Anabat driving survey transect on Tribal lands and assisted the Great Smoky Mountains National Park with their Anabat survey efforts.

NCDOT conducted mist-netting for two highway projects, one in the mountains and one in the coastal plain (rare bats captured were two Southeastern bats). Two more rocket boxes were installed at a wetland mitigation site in the mountains. (They recommend using a cherry picker or crane. Which they did not have.)

North Carolina hosted the *15th Annual Meeting of the Southeastern Bat Diversity Network* (SBDN) and *20th Colloquium on the Conservation of Mammals in the Southeastern United States* in Asheville in February. Mary Kay Clark did the vast majority of organizing for this successful event, with assistance from Lisa Gatens, Joy O'Keefe, Matina Kalcounis-Rueppell and Mary Frazer. Registration totaled 152.

The NC Bat Working Group met November 4th with 30 attendees, hosted by the NC Zoo. Dottie Brown won the Golden Bat Award for significant contributions to bat conservation in NC. Dottie organized and conducted an extensive mist-netting program for the NC Wildlife Resources Commission and implemented an exhaustive decontamination protocol.

Dottie Brown (blue and purple scrubs) organizes volunteers for capturing bats at a bridge roost.

Rafinesque's big-eared bat roosting in a shed in Johnston County, a new county record.

No News Reported

Mary Bunch
SC Department of Natural Resources

Using a special WNS federal grant, SCDNR is putting up a sign at Stumphouse Tunnel Park, warning visitors about the potential spread of WNS to bats in the antebellum railroad tunnel.

The same grant is funding the collection of temperature/humidity data from a significant MYAU hiberbaculum in Orangeburg Co, SC.

Bats submitted for rabies testing at SCDHEC are shipped post-testing by SCDNR to Southeastern Wildlife Disease Study (SCWDS) for WNS testing.

SCDNR is putting up a concrete culvert alternate roost for CORA bats at Silver Bluff Plantation and Audubon Sanctuary (Aiken Co) this winter. That project is funded by SCDNR and a federal State Wildlife Grant. The same funding source is providing cave closure and WNS related signage for Santee State Park and provided four 4-chamber bat boxes as alternative roosts for Myotis at Oconee State Park.

In April 2010, SCDNR, in partnership with the Sumter National Forest, installed two bat-friendly gates at the entrances of two old soapstone mines that are sometimes used by PESU and CORA bats.

Susan C. Loeb, Southern Research Station
Department of Forestry & Natural Resources
Clemson University

In 2010 the USFS-Southern Research Station surveyed the Savannah River Site, Groton Plantation, and Webb Center for Rafinesque's big-eared bats. This is the second year of a 3-year study. Big-eared bats were found in all 3 sites and maternity colonies were found on the Webb Center and Savannah River Site. Ultimately a landscape-scale model of Rafinesque's big-eared bats in the Savannah River Flood Plain will be developed based on these data. We also conducted the first bat survey on the Carolina Sandhills National Wildlife Refuge. Five species were captured in 3 nights of mist-netting.

White Nose Syndrome was detected in six caves throughout the state of Tennessee in the winter of 2010. This has focused most of the state's efforts towards WNS related work. This past August the Tennessee WNS Advisory Council was formed. This group is made up of individuals from various state, federal, private, and academic organizations and was formed to help coordinate WNS monitoring efforts throughout the state. The Advisory council has prioritized plans for monitoring, disease surveillance, and population counts for the winter of 2010-2011 and also produced the Cooperative White-Nose Syndrome Monitoring and Surveillance Plan for Tennessee (John Lamb and George Wyckoff, editors) (Available at http://www.tn.gov/twra/tnbwg/tnbwg.html). Forty caves throughout Tennessee have been scheduled to receive either population estimates, mortality monitoring, or both during the winter of 2010-2011.

The seventh annual meeting of the Tennessee Bat Working Group was held on November 18th at the Stones River Hunter Education Center in Nashville, TN. The meeting was well attended with folks representing 21 different groups from three states, including high school students, cavers, agency personnel, and academia. Presentations covered

several aspects of bat research, but the subject of WNS dominated most discussions. Please visit the TN Bat Working Group webpage for additional information, new officer info, and updates on next year's meeting (http://www.tn.gov/twra/tnbwg/tnbwg.html).

2010 TNBWG Meeting Presentations

- Excluding Bats from a Historical Gym—Update – Bettina Bowers Schwan, Walden's Puddle Wildlife Rehabilitation and Education Center
- Status of the Acoustic Monitoring of Bats Project at the U.S. Forest Service, Land Between the Lakes – Riley S. McCormick, Morgan E. Kurz, and Andrew N. Barrass, The Center for Field Biology, Austin Peay State University, Clarksville Tennessee
- Update on Restoration Efforts and Beam-break System Function at Saltpetre Cave, Carter Co., Kentucky – Dr. Michael Baker, Jim Kennedy, and Mylea Bayless, Bat Conservation International, Brooke Slack, Kentucky Department of Fish and Wildlife Resources, Mike Armstrong, US Fish and Wildlife Service, Kentucky Field Office, David Redell, Wisconsin Department of Natural Resources
- Dispersal of White-nose Syndrome – Dr. Thomas G. Hallam, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville
- White-nose Syndrome: The National Plan – Dave Pelren, USFWS Cookeville Field
- White-nose Syndrome Survey and Monitoring Efforts in TN - Josh Campbell, Tennessee Wildlife Resources Agency
- The Pathogenesis of White-nose Syndrome: What little we know – Dr. Kevin Keel, Southeastern Cooperative Wildlife Disease Study College of Veterinary Medicine
- Identification of Bats to Species: Lessons from Bats and Rabies – Dr. Gary McCracken, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville
- Status of the Dunbar Cave Bat Project: Tracking Restoration and WNS – Morgan Kurz, Seth McCormick, and Andrew N. Barrass, The Center of Excellence for Field Biology, Austin Peay State University.
- The Effects of Prescribed Fire on Roosting Habitat of the Endangered Indiana Bat, *Myotis sodalis* – J. M. O'Keefe and S. C. Loeb, USDA Forest Service, Southern Research Station, Clemson, SC
- Spring Migration of Female Indiana Bats (*Myotis sodalis*) From Caves in Eastern Tennessee; Don't They Fly North?! – Mark W. Gumbert, Piper L. Roby, and Jeffrey A. Hawkins, Copperhead Environmental Consulting
- An Artificial Cave in Tennessee – Cory Holliday, The Nature Conservancy, Tennessee Chapter

The Nature Conservancy of Tennessee continued with efforts to promote "clean caving" through outreach presentations to a variety of cave user groups. In addition, the Conservancy produced a "Suggested Steps for Clean Caving" laminated card to hand out to individuals. The card provides a summary of decontamination steps provided by the U.S. Fish and Wildlife Service as well as a list of approved decontamination agents. The goal is to not only encourage proper decontamination procedures associated with WNS, but to also emphasize that cleaning gear and equipment can be an important step towards preventing future biological crises.

Tennessee is prepared for the likely increase of WNS sites in Tennessee and to document potential mortality associated with WNS in 2011. Members of the TN WNS Advisory Council are coordinating with landowners, research facilities, and public entities to ensure the capture of pertinent data relating to WNS and to ensure those data are being utilized appropriately and to the fullest potential.

BCI's Caves and Mines Specialist, Jim Kennedy, assisted the Tennessee Wildlife Resources Association (TN WRA), the Tennessee Chapter of The Nature Conservancy, and the Cookeville, TN Field Office of the US Fish and Wildlife Service in their gray bat census work in the winter of 2009/10.

BCI's Dr. Michael Baker, is working with the TN WRA to bring the GateKeeper beam-break system to Bellamy Cave, Montgomery Co., TN in the summer of 2011.

John Young
Texas Parks and Wildlife Department

With the discovery of G. destructans in Oklahoma, our efforts to develop a WNS Surveillance and Monitoring plan increased rapidly. We convened a group consisting of Bat Conservation International, Texas State Department of Health Services, and several universities to assist with developing the plan. A draft plan is currently under way and being reviewed by the various partners. Texas State Department of Health Services has agreed to wing score bat species known to be affected by WNS and submit any bats suspected of WNS to TPWD for further testing. TPWD has been in contact with the USGS National Wildlife Center regarding PCR testing for WNS and will be conducting testing of suspect bats. Any bats that test positive will be sent to USGS for confirmation.

As reported by BCI's Bracken Cave Coordinator, Fran Hutchens:

- Volunteers from Bexar Grotto, San Antonio Zoo and local Explorer groups worked on Cave trail maintenance, including repairing eroded areas with crushed limestone.

- Bexar Grotto volunteers have mowed grass around the Cave trail before each Member night.
- Goniela Iskali, MS Candidate at Texas State University, continues to study invertebrates and food webs inside Bracken Cave.
- The School of Biological Sciences at the University of Texas continues to study the plant diversity in managed areas.
- BCI completed new interpretive signage for the Cave Trail, which is scheduled for Fall installation.
- So far this year, 740 visitors have learned the important role Bats play in our ecosystem during Bat flight tours at Bracken.

As reported by BCI's Education and Outreach program Coordinator, Dianne Odegard:

- Dianne Odegard continues our very effective partnership with Texas Wildlife Association (TWA) to conduct "distance-learning" programs that allow two-way video with classrooms around Texas and occasionally beyond. A one-day education session in May, the largest audience ever for a TWA distance learning event, reached more than 1,500 students in 31 classrooms, including one in Westbury, New York.
- Our members, colleagues and the public continue to turn to BCI for answers to questions about bats and bat conservation. Odegard responded to about 230 phone calls and emails seeking information in June and July.
- BCI has re-established a volunteer presence at the Congress Avenue Bridge in Austin, TX after a two year hiatus. Odegard recruited and trained six volunteer docents to distribute BCI literature and answer visitors' questions during bat emergences. Volunteers are present three evenings a week.
- Odegard set up an information booth and provided information at Earth Day in Austin, TX where BCI's message reached thousands of people, as well as state and federal organizations.
- To promote and facilitate bat-friendly exclusion and management of bats in buildings, BCI helped the Texas AgriLife Extension Service organize two 1-day Integrated Bat Management Workshops for school personnel, professional excluders and others in Houston and Round Rock, Texas, in August. Odegard and partner Laura Finn of Fly by Night Inc. were featured speakers at these "how-to" sessions which reached more than 80 people.

No News Reported

Protecting Threatened Bats at Coal Mines: A Technical Interactive Forum August 31-September 3, 2010 Charleston, WV.

This was the third Technical Interactive Forum sponsored by the Office of Surface Mining Reclamation and Enforcement (OSM) on protection of threatened and endangered bats associated with coal mine operations. The current challenges associated with this topic are daunting. One the one hand, OSM looks with great satisfaction at the progress that has been made by the many abandoned mine land programs whose construction of bat gates and other bat friendly closures at mines all across the country protect important underground bat habitat. We look forward to the uniform implementation of the recently developed Range-wide Indiana Bat Protection and Enhancement Guidelines jointly developed by USFWS, IMCC and OSM. On the other hand, we look with shock at the recent devastation of eastern and Midwestern bat populations infected with the White-Nose Syndrome that now threatens to move many of these species toward extinction. The results of this forum will focus on better ways for all of us to work cooperatively in the critical time ahead searching for proven methods to protect these species that result in a positive working relationship between all concerned.

The goal of the current forum was to create an interactive environment that brings OSM, related Federal agencies, states, industry, and academia together to exchange technical innovations in the areas of bat protection, mitigation, and conservation, share successes and failures, and discuss how to better implement protection and mitigation strategies related to mine permitting and mined land reclamation.

The proceedings to the forum will be jointly published by OSM and the Coal Research Center at Southern Illinois University sometime in early 2011. Earlier OSM publications on this subject can be found at: http://www.mcrcc.osmre.gov/MCR/Resources/forums.shtm or by contacting Kimery Vories at kvories@osmre.gov or (618) 463-6463 x 5103.

AWARDS AND RECOGNITION

"The Bat Lady"

She's called the "The Bat Lady" and some say she is batty. She is Vicky Beckham Smith and she is a wildlife educator and though she gives presentations on a wide variety of environmental topics her BATS, BATS, BATS program is her most requested and her favorite. Vicky has been doing bat education programs since 1997. She is the care taker of 6 bats---a Mexican free tail named Juanita who was injured when the bat house she was living in was accidently knocked down , Sparky, a southeastern Myotis, who was hit by fireworks and had one wing amputated and 4 Egyptian fruit bats----Isis, Pammie, Phaedra and Cleo. Vicky presented her bat program at the SBDN Bat Blitz in GA this past summer so if you were there you probably met Pammie and Phaedra as they visited the main building each day so people could ohhhhh and ahhhhhh over them. GA public broadcasting that was filming the Bat Blitz also shot a segment with Vicky and the fruit bats that will air at a later date.

Vicky has had some special recognition this past year. She was featured on the Discovering Alabama TV show about bats which aired in late summer. She was nominated as Best Environmental Educator of the year as part of the Environmental Education Association of AL (EEAA) special environmental education recognition program. And she was the featured presenter at Petite Preserve's Bugs, Bats and Bark event as well Bootanical at the Huntsville AL Botanical Gardens this fall. She also presents teacher workshops and she was an instructor at teacher workshops for Legacy of AL, EEAA and at Lubee Bat Conservancy this year. Several newspapers interviewed Vicky and ran nice articles and photos.

Vicky presented programs in GA, AL, FL and NC this year. She reached over 4,000 people this year with her bat program alone. Vicky loves these little winged furry creatures of the night and she is happy to share her passion with you. Yes, she is batty!!!

20TH COLLOQUIUM ON THE CONSERVATION OF MAMMALS

IN THE SOUTHEASTERN UNITED STATES

19 February 2010, Asheville, NC

ABSTRACTS

THE INDIRECT EFFECTS OF PRESCRIBED FIRE ON BATS IN THE HIGH PINE ECOSYSTEM

D.W. Armitage*, and H.K. Ober. *Department of Wildlife Ecology and Conservation, University of Florida, Gainesville, FL 32611*

The historical exclusion of fire from the longleaf pine-wiregrass (high pine) ecosystem has resulted in a tremendous net loss of this important habitat. Prescribed fire has become the status-quo for maintenance of these systems, and its restorative effects on tree, shrub, and ground-layer plant communities are well-documented. Our goal was to elucidate which factor, the physical structure of the stand or its insect prey base was the most influential predictor of bat activity (mean no. calls night^{-1}) and whether either of these factors was impacted by the periodicity of prescribed fire. We conducted a two-year echolocation-monitoring study of bats in xeric longleaf pine-wiregrass habitats representing three categories of fire periodicity: 0-1 years, 3-5 years, and > 8 years. We found significant differences in tree, shrub, and ground-layer characteristics among each of these categories. We did not detect fire-treatment effects for most orders of nocturnal insects. However, lepidopteran biomass was greatest at sites with the longest time between burns and was positively associated with fire-dependent deciduous tree and shrub densities. Overall bat activity above the canopy was equal among burn treatments and was not associated with any stand, insect, or landscape variables. Bat activity below the canopy was significantly lower in stands burned > 8 years ago than in either of the other treatments and was positively associated with height of canopy closure (a fire-dependent variable). Species-specific activity patterns confirmed ecomorphological predictions, with small, clutter-adapted species replacing larger species below the canopy at sites with >8 year burn frequencies. These results suggest that the prescribed fire regime is an important indirect determinant in structuring the communities of bats that forage in the understories of high pine ecosystems.

K-NEAREST-NEIGHBOR CLASSIFICATION TO IDENTIFY BAT CALLS; PERFORMANCE WITH A SUITE OF COASTAL PLAIN FOREST SPECIES AND COMPARISON TO DISCRIMINANT FUNCTION ANALYSIS.

Michael J. Bender*, Steven B. Castleberry, Darren A. Miller, and T. Bently Wigley.
Daniel B. Warnell *School of Forestry and Natural Resources, University of Georgia (MJB and SBC); Weyerhaeuser Company (DAM); National Council for Air and Stream Improvement, Inc. (TBW).*

The primary purpose of many acoustic surveys is to monitor and determine presence of free-flying bats. A critical step in this process is accurate identification of species based on echolocation calls. Many quantitative approaches to identification have been used, but discriminant function analysis (DFA) is a relatively accurate and commonly used method. K-nearest-neighbor analysis (KNN) is an alternative classifier that is relatively simple, widely available, and free from restrictive assumptions. Our objectives were to test performance of KNN as a quantitative method to classify bat calls and compare accuracy rates to those produced by DFA. KNN achieved an 82.50 percent overall accuracy rate which was 9.91 and 7.63 percentage points higher than linear and quadratic DFA rates, respectively. Our results indicate that KNN analysis should be given strong consideration when the primary objective is identification of unknown bat calls.

MITIGATING ROAD IMPACTS TO WILDLIFE IN NORTH CAROLINA

A. M. Burroughs, *North Carolina Department of Transportation, Raleigh, NC 27604.*

Roads result in road kill, reduced wildlife habitat, and increased habitat fragmentation. Rare species like the Florida panther (*Puma concolor coryi*) can be affected by individual loss and mass-migrating species can become imperiled when roads cross migration routes, yet research indicates that road kill typically does not impact healthy populations. While roads destroy habitat, unless the habitat is rare, the effect is generally not severe. Habitat fragmentation however, is a serious threat to wildlife. Physical and audio barriers associated with roads can inhibit wide-ranging species like black bears (*Ursus americanus*) from reaching food and reproductive resources or can simply divide populations, leaving smaller populations more prone to extinction. Efforts to reduce road

impacts are categorized as broad based planning, modifying human behavior and/or modifying animal behavior. Deer crossing signs are the most commonly employed driver modification tool, but signs have proven to be vastly ineffective. Efforts to modify animal behavior with wildlife crossings and fences have been more successful but require careful planning and (frequently) large monetary expenditures. Structural details (location, design, and frequency of installations) greatly affect the performance of wildlife crossings. In North Carolina several structures have been installed specifically targeting black bear, red wolves (*Canis rufus*) and white-tailed deer (*Odocoileus virginianus*). Crossings under US 64 in Washington County have been the focus of the first large scale pre- and post-construction wildlife crossing study in the US. The efficacy of the crossings at reducing fragmentation of black bear habitat will require more research. Some unintended negative impacts to other species were detected and can be mitigated for in future wildlife crossing designs. While animal behavior modification can help reduce fragmentation, the most efficient and effective mitigation is early planning which avoids and/or minimizes impacts by considering important ecological linkages during transportation planning.

DO EDGES ACT AS CONDUITS OR FILTERS FOR FORAGING BATS?

K.M. Briones*, M.M. Marshall, D.A. Miller, J.A. Homyack, and M.C. Kalcounis-Ruppell. *Biology, University of North Carolina at Greensboro, NC, 27402 (KMB, MMM and MCKR); Weyerhaeuser Company, Columbus, MS 39701 (DAM); Weyerhaeuser Company, Vanceboro, NC 28586 (JAH).*

Research on managed forest landscapes in the southeastern U.S. has shown that six bat species (*Lasiurus borealis, L. cinereus, Eptesicus fuscus, Nycticeius humeralis, Tadarida brasiliensis,* and *Perimyotis subflavus*) have substantially higher activity along hard forest edges (older forested stands adjacent to young open-canopy stands) than in forest interiors, consistent with studies that show high bat species richness and abundance along hard forest edges. Hard edges may create a semi-permeable barrier to movements of bats into the forest, causing an accumulation of bat activity along edges (a filtering effect). Alternatively, forest edges may improve connectivity between foraging areas (a conduit effect), or serve as both a filter and a conduit. To investigate this, we used a microphone array and thermal imagery during summer 2009, along hard forest edges, to examine how individual bats use edges and to test the hypotheses that edges act as filters (fly perpendicular to edge) and/or conduits (fly parallel to edge). We used a 4-channel microphone array (Avisoft USG) to determine position of the incoming echolocation call, relative to the edge, based on time of arrival of the call at each microphone in the array. In addition, we used a thermal imaging camera (Photon 320; Flir/Core by Indigo) with the microphone array to visualize individual bat flight at the edge. We sampled 10 different edge sites, each for 3 continuous nights, within a managed forest landscape owned and managed by Weyerhaeuser Company in eastern North Carolina. To date, we have analyzed a subset of the data from five of the edges. More bats flew parallel to the edge than perpendicular or in an alternate direction, suggesting that the edge acts as a conduit for bats in this landscape. In the future we will analyze the thermal imagery data to confirm our microphone array results and identify echolocation calls to examine species-specific use of edges as conduits or filters.

ECOLOGY OF *MYOTIS LUCIFUGUS* IN THE SOUTHEAST: COMPARISONS WITH THE NORTHEAST

Eric R. Britzke, U. S. Army Engineer Research and Development Center, Vicksburg, MS 39180

Like many other common bat species, the ecology of little brown bats (*Myotis luficugus*) is poorly understood. Existing data is largely from extensive banding efforts at caves prior to the 1970s. In the southeastern United States, little brown bats occur over a wide area, but constitute a small percentage of the bats captured during summer or observed in hibernacula surveys. In summer, most roosts have been found in human structures (barns, old buildings, bridges, etc.), while some tree roosts have been located. Little browns typically forage over streams, particularly on stretches of calm water where they can forage on newly emerging insects. In winter, little browns are often present in the same hibernacula as Indiana bats (*Myotis sodalis*), but are normally less abundant than Indiana bats. Information on little brown bats in the northeast will be provided for comparison. With White-nose Syndrome affecting little brown bats, there is an imminent need to gather basic information on the ecology of little browns to inform future conservation efforts before these bats disappear from the landscape.

ROOST COMMUNICATION IN THE INDIANA BAT, *MYOTIS SODALIS*

Caroline M. Byrne*, Dylan A. Horvath, Joy M. O'Keefe. *Binghamton University, NY 13903 (CMB and DAH); USDA Forest Service, Southern Research Station, Clemson, SC 29634 (JMO).*

In a pilot study, vocalizations of the Indiana bat, *Myotis sodalis*, were recorded at communal summer roosts. The goal was to capture social calls, differentiated from echolocation calls by their solely communicative function. Echolocation calls were eliminated with the use of known samples from *M. sodalis.* We used an Anabat bat detector and CF ZCAIM to record calls at known roosts from 15 minutes pre-emergence to 5 minutes post-emergence. Recorded calls were analyzed in AnalookW and compared to parameters given in Pfalzer and Kusch 2003, who describe four general types of call based on corresponding behaviors. Calls were recorded at 1 roost in June-July 2008 and 6 roosts in June-July 2009; there were 45 call files, containing a total of 138 pulses. The preliminary results show calls recorded at the M. sodalis roosts fit the general parameters of the mother to juvenile isolation or directional call

type(frequency modulated with a curved structure, single pulses with a duration of 5-58ms or double pulses). If social calls of North American bats are found to exhibit species-specific characteristics similar to those found in Europe by Pfalzer and Kusch(2003), social calls could become a noninvasive research method, done alongside existing research. If researchers are vectors in the spread of White Nose Syndrome, acoustic surveys could be a viable alternate to survey methods that require handling bats. Further research is needed to determine species-specific characteristics, and the period in which the recordings are made should be extended to include pre-juvenile and mating periods.

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NICHE BREADTH, FORAGING PLASTICITY AND CONSERVATION RISK OF *MYOTIS LEIBII, M. LUCIFICUGUS*, AND *M. SEPTENTRIONALIS*

Aaron J. Corcoran, Joseph M. Szewczak. *Wake Forest University, Winston Salem, NC, 27106; Humboldt State University, Arcata, CA, 95521*

An animal's behavioral plasticity is one of many factors that can determine its extinction risk in a changing environment. In bats, dietary breadth is indeed related to extinction risk. Microchiropteran bats use echolocation to detect and locate prey. The structure and variation of a bat species' echolocation repertoire can tell us much about its habitat selection and foraging flexibility. Echolocation structure has also been shown to reflect niche differentiation for bats in the genus *Myotis*. For the purposes of understanding the factors contributing to the conservation status of three bat species (*M. leibii, M. lucifugus,* and *M. septentrionalis*), I report on what is known of the dietary variation and echolocation repertoires of these species. All three species are known to use multiple foraging strategies, including aerial hawking and gleaning off of substrates. They all also forage widely on over eight orders of insects and spiders, and are typically considered generalist foragers. These myotines frequently eat soft-bodied insects, including lepidoptera. This is particularly true for *M. septentrionalis* and *M. leibii. M. lucifugus* has the broadest repertoire of echolocation call structure, including calls suited for foraging in open and forest interior. *M. septentrionalis* and *M. leibii* calls show less variation and reflect foraging only in forest interior. Out of the three species, *M. septentrionalis* echolocation structure appears the best suited for gleaning and foraging in cluttered environments. In summary, the three species are all generalist foragers that eat many soft bodied insects. Echolocation structure reflects a greater degree of niche partitioning than does diet of these bats, with *M. lucifugus* employing the greatest breadth of echolocation call structure. Concordantly, *M. septentrionalis* and *M. leibii* may be more at greater conservation risk due to their specialized foraging within forest interior.

CONSERVATION OF A LARGE CARNIVORE: THE RED WOLF

J. A. Dellinger* and T. L. Best. Department of Biological Sciences, Auburn University, Auburn University, AL 36830 (JAD and TLB).

Re-introduction and conservation of large carnivores is heavily associated with the western United States. However, a re-introduction and conservation effort centered on a large carnivore, the red wolf (*Canis rufus*), has been underway for the past 23 years in the southeastern United States. To date the effort has been labeled a success. The single wild population, occurring on the Albemarle Peninsula in northeastern North Carolina, has reached carrying capacity for the current recovery area and shows an ability to co-exist alongside humans. The success of this effort can be attributed to the multifaceted approach that the United States Fish and Wildlife Service- Red Wolf Recovery Project (USFWS-RWRP) took to re-introduce and conserve the red wolf. By using science, technology and politics, the USFWS-RWRP has allowed local people to develop a better attitude and working relationship with a once feared and persecuted animal. The USFWS-RWRP anticipates this effort will be duplicated elsewhere within the historic range of the red wolf in the near future. However, much remains to be learned about the red wolf and how it interacts with other animals and its environment. Nevertheless, this effort serves as an example and reminder that large carnivores and human interests can co-exist.

NEITHER RAIN NOR SLEET NOR GLOOM OF NIGHT: STUBBORN BRIDGE ROOSTING HABITS OF BIG BROWN BATS (*EPTESICUS FUSCUS*)

M. E. Frazer and M. R. Miller, *NC Department of Transportation, Raleigh, NC, 27603-1598*

Although big brown bats (*Eptesicus fuscus*) probably favor large hollow trees and rock crevices as day roosts, they are commonly observed roosting in a variety of man-made structures, such as concrete bridges. Bats roosting in large bridges may enjoy thermal benefits from sunlight-warmed concrete and reduced exposure to predators, but bridge-roosting bats still have to contend with weather. We monitored big brown bats roosting in three bridges in western and central North Carolina to determine roosting habits. Bats day-roosted in guardrail crevices and in bridge deck expansion joints despite the lack of overheard cover and their proximity to traffic noise and exhaust, while night roosting occurred underneath bridge decks. During rain events, instead of moving to a well-used night roost below the bridge, a maternity colony of 50-100 individuals remained in a bridge deck expansion joint despite exposure to the elements. Other observations include winter roosting by big browns under bridge decks and opportunistic use of bat boxes mounted on a bridge that had been intended for eastern small-footed bats (*Myotis leibii*). Since they could not fit into the narrow slots of the bat boxes, big browns simply wedged themselves between the bat box and the side of the bridge. These observations

demonstrate big browns' versatility in adapting to a variety of roost types and weather conditions. The ability to use a wide range of roosts in summer should benefit resource managers seeking to create or improve big brown summer roosting habitat, although care must be taken not to do this at the expense of less common species. This adaptability may also help big brown bats when contending with white-nose syndrome (*Geomyces destructans*) in winter.

TEMPORAL ROOSTING PATTERNS AND POPULATION DYNAMICS OF TWO BRIDGE POPULATIONS OF EASTERN SMALL-FOOTED BATS (*MYOTIS LEIBII*)

M. E. Frazer and J. M. O'Keefe. *NC Department of Transportation, Raleigh, NC, 27699-1598 (MEF); USDA Forest Service, Southern Research Station, Clemson, SC, 29634 (JMO)*

Bats often use bridges as day or night roosts to supplement or replace natural roost sites. The eastern small-footed bat (*Myotis leibii*) is a tiny (4–6 g) bat that typically roosts in natural rock crevices, but they have also been found roosting in the crevice-like expansion joints of concrete bridges. The objectives of our study were to identify temporal roosting patterns and to measure population dynamics in two bridge populations of eastern small-footed bats in western North Carolina, where this species is considered vulnerable. At the Fontana bridge (elevation ~500 m), bats were first banded in 2000 and were monitored in the bridge ≥3 times per year from March–November 2004–2009. At the Stratton Meadows bridge (elevation ~1400 m), bats were first banded in 2004 and were monitored in the bridge ≥1 times per year from May–June 2007–2009. The warmer Fontana bridge is primarily used by adult females (n ≥ 22), but male and juvenile small-footed bats and male little brown bats (*M. lucifugus*) are sometimes observed. The Stratton Meadows bridge is used by ≥ 36 bachelor male and ≥7 female small-footed bats, as well as the occasional male little brown bat. Although numbers of bats using the bridges varies by day, eastern small-footed bats show fidelity to both bridges; one female has used Fontana bridge for ≥7 years and several males have used Stratton Meadows bridge for ≥5 years. Relatively large populations and long-term fidelity indicate that both bridges provide important roosting habitat for eastern small-footed bats.

CHARACTERIZATION OF ULTRASONIC CALLS IN TWO SPECIES OF GLIDING MAMMALS: *GLAUCOMYS SABRINUS* AND *G. VOLANS*

L. M. Gilley* and T. L. Best. *Department of Biological Sciences, 331 Funchess Hall, Auburn University, AL 36830*

Ultrasonic calls in lab mice (*Mus musculus*) and rats (*Rattus norvegicus*) has long been studied in the biomedical field. Outside of biomedical research, the study of ultrasound in mammals has largely focused on echolocation in bats and odontocete whales. More recent works have described complex ultrasonic signals being used for communication in several myomorph species and one sciuromorph. However, very little is known about the extent to which ultrasonic signaling is used in mammals, and even less is known about function. We describe the first known ultrasonic calls in two species of gliding mammals: northern flying squirrels (*Glaucomys sabrinus*) and southern flying squirrels *(G. volans*). Ultrasonic calls from captive *G. sabrinus* and *G. volans* were recorded and analyzed. We identified and characterized four common call-types of ultrasonic vocalizations for northern and southern flying squirrels. Results show high levels of stereotypy for certain call parameters within species, and discriminant function analysis correctly classified seven of the eight common call-types at ≥ 85%. The high degree of stereotypy observed in these calls suggests that acoustic surveys may be a viable tool for documenting and monitoring the presence of sensitive species of flying squirrels in North America. Furthermore, a better understanding of the acoustic repertoire in mammals will provide insight into behaviors associated with both conspecific and heterospecific interactions.

DETERMINATION OF CALVING INTERVAL AND PREGNANCY RATE OF BOWHEAD WHALES (BALAENA MYSTICETUS) VIA ANALYSIS OF STABLE ISOTOPES AND TRACE ELEMENTS IN BALEEN

Samuel Hirt* *331 Funchess Hall Auburn University, Alabama 36849*

Bowhead whales (*Balaena mysticetus*) are a long-lived species that inhabit the Arctic and sub-Arctic waters, but despite being extensively studied for that past 30+ years, little is known about their reproductive life histories. Baleen from tip to tip can be up to 20 years old and contains a history of individual whales. The objectives of my research are to:

1) Determine calving interval of bowhead whales by examining trace elements in baleen
2) Analyze trace elements in baleen to estimate parameters of life history such as age at weaning, the relationship between age and length at sexual maturity, duration of gestation, and elements that may be limiting in pregnancy
3) Analyze trace elements in baleen over time to see if these levels have changed over time

To study these questions I will analyze sections of baleen collected from Eskimo subsistence hunted bowhead whales from the past 20+ years. I will first compare concentrations of elements in the most recently grown portion of baleen between pregnant males and non-pregnant individuals to understand which elements are significantly different during pregnancy. I will then section baleen and analyze the oscillation of ratios of stable isotopes to create a "timeline" for individual whale baleen sections. I will section the baleen and extract trace elements that were significant in the first experiment to determine reproductive state and fecundity throughout the

growth of the baleen. Finally, I will investigate concentrations of elements in baleen to assess changes in the population over time. My research will help us understand the potential for population increase in this stock of whales and their response to the changing arctic environment. I will present preliminary results from analysis of baleen from 3 whales that show varying concentrations of trace elements.

THE SBDN/NEBWG BAT CAPTURE DATABASE: CURRENT STATUS AND FUTURE USES

Heather Irwin, Susan Loeb, and Eric Britzke, *Department of Forestry and Natural Resources, Clemson University, Clemson, SC; USDA Forest Service, Southern Research Station, Clemson, SC; Eric Britzke, U.S. Army Engineer Research and Devlopment Center, Vicksburg, MS.*

Regular monitoring of bat populations is needed to assess the impacts of threats to bats such as climate change, wind turbines and White-nose Syndrome. Researchers have been collecting bat capture data for many years and combining that data into an organized database is important in monitoring bats populations. The Southeastern Bat Diversity Network and the Northeast Bat Working Group (SBDN/NEBWG) Bat Capture Database is just such an example. The database is similar to databases currently used by some State agencies and houses bat data from researchers throughout the eastern US. Currently the database ranges from 1999 to the present and covers data from Arkansas, Georgia, Illinois, Indiana, Kentucky, Maine, Missouri, North Carolina, New York, Ohio, South Carolina, Tennessee, and Virginia. The database can be used to document band recoveries. Further, relationships are established to facilitate efficient management of information in order to ascertain any patterns in variables such as species, location, and habitat. These patterns can then be compared to known threats to bat populations to establish possible cause and effect such as species distribution and capture frequency from 1999-2009. Extensive range maps as well as ones specific to certain species of bats can also be produced given the significant amount of data from a wide range of sources. Tables and reports can be generated to summarize the number of bats captured in each county each year. While the database will be maintained by members of the SBDN/NEBWG Database committee, it will be possible for contributors who have research and management needs to request specific queries. One of the biggest advantages of having such a database is the accessibility of data to researchers. Sharing knowledge leads to cohesive studies and ultimately improves overall research and management.

BAT COMMUNITY STRUCTURE WITHIN RIPARIAN AREAS OF NORTHWESTERN GEORGIA

J. B. Johnson*, W. M. Ford, J. W. Edwards, and M. A. Menzel. *Division of Forestry and Natural Resources, West Virginia University, Morgantown, WV 26506 (JBJ and JWE); US Army Engineer Research and Development Center, Vicksburg, MS 39180 (WMF); Federal Bureau of Investigation, Kansas City, MO 64105 (MAM)*

Although it is well known that bats commonly forage in riparian areas, which provide water resources and insect concentrations, the role that the physical structure of riparian areas plays in influencing local bat communities is less certain. In 2000–2002, we used acoustic monitoring to determine bat species presence at 338 riparian sites in northwestern Georgia, USA. We used a 2-dimensional nonmetric multidimensional scaling (NMDS) ordination to assess how separations among species were partially associated with riparian conditions. Our NMDS analysis found some degree of habitat partitioning among bat species occurring in northwestern Georgia and was dictated in part by riparian condition. Myotis grisescens and *M. septentrionalis* were associated with low-elevation lotic waterways, whereas M. lucifugus, Lasiurus borealis, and *Eptesicus fuscus* were associated with high-elevation lentic waterways with sparse canopy cover. However, riparian conditions had weak relations with NMDS axes, possibly resulting in coincidental associations in some cases. Regression tree analysis indicated that higher bat species richness was associated with apparently uncommon small, high-elevation waterways with sparse canopy cover as well as larger streams and rivers that had wetlands adjacent to them. Including high-elevation waterways with existing management recommendations for endangered gray *Myotis* foraging areas (large, low-elevation streams and rivers) will be the most effective conservation strategy to benefit the most bat species in northwestern Georgia and probably elsewhere in the southern Appalachians.

OCCUPANCY RATE AND DETECTION PROBABILITY OF THE CAROLINA NORTHERN FLYING SQUIRREL IN NORTH CAROLINA

C. A. Kelly and W. M. Ford. North Carolina Wildlife Resources Commission, *1751 Varsity Drive, Raleigh, NC 27606 (CAK); U.S. Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199 (WMF)*

Preliminary analysis of the Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*) dataset from the Appalachian Mountains in North Carolina from 1996-present has shown that annual nest box surveys have been plagued by low capture/recapture rates and tag loss. Accordingly, we explored the utility of transitioning from quantifying population abundance to monitoring habitat occupancy over time. We used 74 nest box transects located among seven recovery areas to develop capture histories. With a multiple-season occupancy model in PRESENCE, we estimated occupancy rate (ψ), extinction rate (ε), and detection probability (p). We assumed that colonization did not occur between populations inhabiting isolated massifs. In addition to the null model, we modeled these metrics

using two covariates: habitat quality ranking with occupancy and detection, and proportional patch size with extinction. We considered red spruce (*Picea rubens*)-Fraser fir (*Abies fraseri*) and northern hardwood-red spruce habitats to be higher quality, whereas pure northern hardwoods or red spruce-red oak (*Quercus rubra*) forests were lower quality. Our best-approximating model was $\psi(.),\varepsilon(.),p(\text{habitat})$. Occupancy remained constant ($\psi = 0.51 \pm 0.046$), whereas detection probability varied by habitat quality. Detection was greater in higher quality habitat ($p = 0.75 \pm 0.047$) than in lower quality habitat ($p = 0.63 \pm 0.029$). Our $\psi(\text{habitat}),\varepsilon(.),p(\text{habitat})$ model also received strong support. Patch size was not a supported covariate for extinction. We believe constant occupancy reflects the close proximity and heterogeneous mixing of all high-elevation forest types over relatively small areas in North Carolina. This contrasts with the Virginia northern flying squirrel (*G. s. fuscus*) where far larger landscape patches of northern hardwoods and spruce-northern hardwoods resulted in differences in occupancy but not detection. Simulations indicate that monitoring $\geq$30 nest box transects will be necessary to detect changing trends statewide in occupancy by Carolina northern flying squirrels.

CAROLINA NORTHERN FLYING SQUIRRELS USE WOOD POLES TO GLIDE ACROSS A ROAD BARRIER IN THE UNICOI MOUNTAINS, NORTH CAROLINA.

Chris Kelly, *North Carolina Wildlife Resources Commission, 32 Amber Lane, Asheville, NC 28803*

Radio telemetry monitoring of the endangered Carolina northern flying squirrel has documented that the Cherohala Skyway, a scenic byway traversing habitat in Graham County, North Carolina, is a barrier to dispersal. The width of the pavement, shoulders, cut bank, and fill slope exceeds the gliding ability of the northern flying squirrel, effectively bisecting the Unicoi Mountains population. Both short and long-term conservation measures were developed to reconnect and improve habitat. Wood utility poles, serving as artificial trees, were posted adjacent to the road shoulder to narrow the width of the canopy gap until trees mature. A total of six poles, modified with horizontal launch beams and escape shelters, were erected in pairs set opposite each other in three locations along the Skyway in June 2008. Evaluation of the crossing structures began in March 2009 and included infrared camera monitoring, nest box surveys, and experimental releases of radio-collared flying squirrels onto poles on the opposite side of the road from the capture site. Three still images, six videos, and two captures from an escape shelter have documented Carolina northern flying squirrel on four of the six poles. Three videos have documented flying squirrels using the poles to cross the road. Six of eight recordings were taken on nights with low visibility due to fog or moon phase, suggesting predator avoidance. We have demonstrated that flying squirrels are using the poles to glide across the road, will den in the escape shelters, are using dens on both sides of the road, and can cross heading downslope or upslope. Camera monitoring will continue to evaluate the potential threat from barred owls. Long-term conservation measures are underway to protect maturing trees along the road banks, treat hemlocks for hemlock wooly adelgid, and plant suitable conifers in the surrounding forest to supplant dying hemlocks.

SMALL MAMMAL USE OF NATIVE WARM-SEASON AND EXOTIC COOL-SEASON GRASS FIELDS

R.L. Klimstra* and C.E.Moorman. *College of Natural Resources, Fisheries and Wildlife Sciences Program, North Carolina State University, Raleigh, NC 27607*

Grassland-dependent songbirds and small mammals have suffered population declines throughout the United States, mostly from habitat loss. Converting exotic cool-season grass (ecsg) pastures to native warm-season grass (nwsg) fields may improve habitat quality for wildlife while still allowing forage production for cattle. In 2009 and 2010, we compared small mammal populations among 5 nwsg, 4 ecsg, and 4 wildlife fields (i.e., nwsg and forbs planted specifically for wildlife), located in the western piedmont of North Carolina. We captured small mammals using Sherman live traps during spring and summer on the 13 privately owned fields, all of which are enrolled in the Cooperative Upland Restoration and Enhancement (CURE) program. We expected fields containing nwsg to harbor higher densities of small mammals than ecsg fields. In 2009, small mammal captures differed among the three field types ($p=0.002$). We captured more small mammals in wildlife fields (=50.3±10.0/1000 trap nights) than in ecsg (=4.5±2.9/1000 trap nights) and nwsg (=20.6±4.0/1000 trap nights) fields. Although captures were higher in nwsg fields, capture numbers did not differ significantly from ecsg fields. Based on preliminary data, ecsg and nwsg forage fields do not provide the same habitat quality as the diverse plant communities in wildlife fields.

EVALUATION OF EXPERIMENTAL CROSSING STRUCTURES FOR THE CAROLINA NORTHERN FLYING SQUIRREL IN GRAHAM COUNTY, NC

Andrew Lawrence*, Chris Kelly. *North Carolina State University. 110 Brooks Avenue, Raleigh, NC, 27607; North Carolina Wildlife Resources Commission, 1751 Varsity Drive, Raleigh, NC 27606.*

The Cherohala Skyway in the Unicoi Mountains of Graham County, North Carolina, acts as a dispersal barrier bisecting an isolated population of the endangered Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*). In June of 2008, six modified utility poles, intended to function as launch points for dispersing squirrels, were installed in treeless areas along the Skyway, narrowing the

gap between forest edges. Evaluation of flying squirrels' use of the poles involved radio-telemetry, experimental release of flying squirrels onto poles, camera monitoring, and nest box captures. While telemetry and capture could document that a flying squirrel had relocated to the opposite side of the road, camera monitoring was needed to determine if flying squirrels used the poles to leap across. Since March of 2009, the poles have been monitored with DLC Covert Scoutguard trail cameras. The cameras are triggered by an infrared sensor aimed down a horizontal launch beam, and feature an infrared flash that goes undetected by flying squirrels or predators. The squirrel's ability to leap across the road from the top of a pole was first confirmed during an experimental release of a radio-collared squirrel. The telemetry readings correspond with time-stamped images showing the squirrel perched at the end of the launch beam. Subsequent video monitoring provided further evidence that flying squirrels are actively exploring the poles and using them to cross the road. Five videos show flying squirrels gliding across the road from the launch beam, crossing in both the upslope and downslope direction, and using at least one pole in each of the three crossing corridors. Given the remoteness of the study site and nocturnal habits of the flying squirrel, passive monitoring with infrared cameras has proven to be an effective way to document use of the poles for dispersal across the road barrier.

EFFECTS OF DIET QUALITY ON THE ACTIVITY PATTERNS AND GUT MORPHOLOGY OF THE WHITE-FOOTED MOUSE, *PEROMYSCUS LEUCOPUS*

K. E. Lucia* and J. A. Cranford. *Department of Zoology, Center for Animal Behavior, Miami University, Oxford, OH 45056 (KEL); Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg, VA 24060 (JAC)*

Habitat fragmentation and other changes to habitat can alter biodiversity and diet quality for small mammals. To evaluate the effects of decreased diet quality, white-footed mice (*Peromyscus leucopus*) were maintained in the laboratory on two diets. The first diet was comparable to standard lab chow and was comprised of 5% nonnutritive fiber. The second diet had a level of 35% nonnutritive fiber, replacing a large portion of the glucose in the diet. Feeding times, activity levels and patterns were monitored. Additionally, morphological data from the gastrointestinal tract of mice on 35% fiber diet were gathered and compared with mice on rodent chow. Mice on 35% fiber diet did not exhibit a significant change in activity intensity during the dark cycle, but did display a significant increase in activity during the light cycle marked by a 2-hour anticipation of onset of darkness. The anticipation of darkness was driven by hunger as indicated by a significant increase in feeding activity during the 4 hours prior to darkness. Significant morphological changes also occurred at 35% fiber diet, mostly to the hindgut, which is indicative of a response to diet quality and not simply an increase in the quantity of food consumed. Bimodal activity patterns were observed in mice on 35% fiber diet, characterized by two peaks in activity during the dark cycle. The first peak was higher in intensity than the second. These changes demonstrate that morphological changes to the gastrointestinal tract can allow for normal activity levels to be maintained even on a lower quality diet. However, the hunger-driven anticipation of darkness may increase predation risk for this nocturnal rodent.

IMPACTS OF MANAGING LOBLOLLY PINE PLANTATIONS FOR BIOFUELS PRODUCTION ON RODENT ABUNDANCE, DISTRIBUTION, AND DEMOGRAPHICS

M. M. Marshall*, M.C. Kalcounis-Rüppell, D.A. Miller, J.A. Homyack, *Biology Department, University of North Carolina at Greensboro, Greensboro, NC 27402-6170 (MMM and MCKR); Weyerhaeuser Company, P.O. Box 2288, Columbus, MS 39701 (DAM); Weyerhaeuser Company, 1785 Weyerhaeuser Road, Vanceboro, NC 28586 (JAH)*

To help meet demands for renewable sources of energy for transportation fuels, Weyerhaeuser Company is investigating intercropped switchgrass (*Panicum virgatum* L.) within intensively managed loblolly pine (*Pinus taeda*) stands as a biofuels crop. Changes to understory composition and structure may affect ecologically important rodent communities. Therefore, we surveyed rodent populations using mark-recapture techniques to determine their responses to switchgrass intercropping. We captured rodents on experimental plots within newly established pine plantations subjected to five different intercropping treatments (pine with woody biomass in place, pine with woody biomass removed, pine and switchgrass with woody biomass in place, pine and switchgrass with woody biomass removed, and switchgrass only with woody biomass removed). We trapped each plot for 24 nights from July-December 2009, resulting in 1,832 rodent captures during 13,428 trap nights. We captured *Peromyscus leucopus* (n=390 tagged individuals), *Mus musculus* (n=278 tagged individuals), *Sigmodon hispidus* (n=149 tagged individuals), and *Reithrodontomys humulis* (n=12 tagged individuals). Preliminary examination of the effect of intercropping treatment on the number of individuals and total captures revealed that only *Mus musculus* was influenced by treatment type (number of individuals: c^2=11.01, d.f.=4, p=0.03,; total captures: c^2=13.55, 4 d.f.=4, p<0.01), with more *Mus musculus* in treatments containing switchgrass. Ongoing analyses will be discussed.

STATUS OF THE ALLEGHENY WOODRAT (*NEOTOMA MAGISTER*) IN VIRGINIA BLUE RIDGE MOUNTAINS

T. Menken *, M. T. Mengak, and S. B. Castleberry. D.B.Warnell *School of Forestry & Natural Resources, University of Georgia, Athens, GA 30602*

The Allegheny woodrat is one of the 24 identified species in the Virginia Comprehensive Wildlife Conservation Strategy (CWCS) and is defined as having a moderate conservation need. Allegheny woodrats occupy isolated rocky habitat and share habitat with other CWCS mammalian species of conservation need including rock voles and spotted skunks. The species is known to be declining or is extirpated from several states within its range. Woodrats are no longer present at previously occupied sites in Maryland, Indiana, Pennsylvania, and West Virginia. Because their status in Virginia is thought to be declining, we surveyed 57 previously known or newly discovered sites along Virginia's Blue Ridge Mountains using traps and remote cameras to determine the current status. Sites were trapped 2-4 nights and cameras operated similarly. We detected (capture or camera) woodrats at 70% (N=40) of the sites. Of 34 sites trapped between 1990 and 2000, 62% (N=21) were occupied in 2009. Although site occupancy appears to have declined over the past 10 years, occupancy of rocky habitats by woodrats can be ephemeral and may function within a metapopulation framework with sites experiencing local extirpations and subsequent recolonizations.

COMPARISON OF INDIANA BAT (*MYOTIS SODALIS*) MATERNITY COLONY HOME RANGES AMONG THREE SITES

Melanie L. Michaels* and Timothy C. Carter, *Ball State University, Muncie, Indiana 47306-0440*

The Indiana bat (*Myotis sodalis*) is currently listed as an endangered species by US Fish and Wildlife Service with populations that only recently began to rebound. The objective of this study was to examine the foraging home range for female Indiana bats living in both Southern Illinois and East-Central Indiana. Two-station telemetry was used to triangulate the signal from bats fitted with radio transmitters to determine home range. Foraging points were determined using Locate III and overlaid onto habitat maps using ArcMap® GIS. Both minimum convex polygon and adaptive kernel methods were used to determine home range size. This multi-site analysis of female Indiana bat foraging home ranges will give wildlife managers a better understanding of how much foraging area female Indiana bats require to be successful.

MITOCHONDRIAL DNA VARIATION IN THE EASTERN FOX SQUIRREL (*SCIURUS NIGER*)

Nancy D. Moncrief and Ronald A. Van Den Bussche. *Virginia Museum of Natural History, Martinsville, VA 24112, and Department of Zoology, Oklahoma State University, Stillwater, OK 74078.*

The eastern fox squirrel (*Sciurus niger*) occurs naturally over most of eastern North America. This species displays striking patterns of geographic variation in size and coat color. These patterns of morphologic variation are consistent with a hypothesis of southward range contraction and isolation in two refugia (in Texas and Florida) during the Last Glacial Maximum, followed by northward range expansion after the glaciers receded. Similar hypotheses have been proposed to explain the patterns in phylogeographic structure exhibited by many plants and animals in eastern North America. As part of a more comprehensive study of geographic variation in *Sciurus niger*, we analyzed a 402 bp segment of the cytochrome b (cyt b) mtDNA gene in populations throughout the species' range. Despite the broad geographic sampling in our study, there was no phylogeographic structure in our data. Unique haplotypes differed from high-frequency haplotypes by only one or two base pairs, producing a star-like phylogeny of haplotypes. Bootstrap analysis of neighbor-joining trees revealed a lack of phylogeographic structure among haplotypes. Variation within populations and within the species as a whole was characterized by high haplotype diversity and low nucleotide diversity. Taken together, our data indicate that the eastern fox squirrel underwent a rapid range expansion and rapid morphological divergence within the past 20,000 years.

REVIEW OF THE ECOLOGY OF EASTERN SMALL-FOOTED BATS (*MYOTIS LEIBII*) IN THE SOUTHEASTERN UNITED STATES

Moosman, Paul R., Jr., Jacques P. Veilleux, M. Erin Hawes, & Timothy J. Brust; *Department of Biology, Virginia Military Institute, Lexington, VA 24450 (PRM, MEH & TJB); Department of Biology, Franklin Pierce University, Rindge, NH 03461 (JPV)*

The eastern small footed bat (*Myotis leibii*) is one of the least studied species of bats in the southeastern U.S. Distribution during the non-hibernation period likely is restricted to areas with exposed rock outcrops, including cliff faces and talus slopes, although, colonies have occurred in expansion joints of bridges in the Southeast and in talus-like rip rap of dams in the Northeast. Limited data suggest maternity sites may be associated with south-facing slopes. Males have been documented in a greater variety of roosting habitats, including shaded outcrops and buildings. During summer, most *M. leibii* have been captured < 600m from roosts and radio-telemetry suggests they forage within a 2.5 km radius of their roosts, making captures unlikely unless suitable habitats are intentionally targeted. Most encounters with *M. leibii* have been during winter surveys, typically in the coldest parts of hibernacula,

including under rocks, in crevices, and on walls near entrances. Duration of hibernation appears shorter than that of most co-occurring species of bats in eastern North America, suggesting *M. leibii* may have greater cold tolerance. White-nose Syndrome (WNS) is causing ongoing declines in *M. leibii* populations in the Northeast. Whether the unique winter ecology of *M. leibii* will affect mortality rates from WNS in the Southeast remains unknown. However, ecology of *M. leibii* makes it difficult to monitor populations with traditional hibernacula surveys. Efforts are needed to identify summer roost sites to 1) provide alternative means to detect population declines, and 2) improve knowledge of their ecology.

EFFECTS OF SUPPLEMENTAL FEEDING, MAMMALIAN PREDATOR EXCLUSION, AND PRESCRIBED FIRE ON TWO SPECIES OF *PEROMYSCUS* MICE IN A LONGLEAF PINE ECOSYSTEM

G. Morris,* L.M. Conner, M.K. Oli. *Joseph W. Jones Ecological Research Center, Newton, GA 39870 (GM and LMC); Department of Wildlife Ecology and Conservation, University of Florida, Gainesville, FL 32611 (GM and MKO).*

Predation and availability of food resources impact population dynamics of prey species such as small mammals. Ample food resources may cause increases in abundance and may be associated with behavioral responses such as changes in space use or aggression. Predation may affect populations through the direct removal of individuals and through sub-lethal mechanisms; for example, individuals may restrict movement to minimize predation risk. This may limit access to food and reproductive opportunities. *Peromyscus* mice have been observed to exhibit a positive response to prescribed fire but mechanisms behind this response are poorly understood. Fire-caused changes in food resources and cover, which may increase risk of predation, may be important. The objective of this study was to experimentally examine how supplemental feeding, mammalian predator exclusion, and prescribed fire, individually and in combination, affect survival of oldfield (*Peromyscus polionotus*) and cotton mice (*P. gossypinus*). Oldfield mice showed a positive response to mammalian predator exclusion, but no response to feeding or fire treatments alone or in combination with other treatments. Cotton mice had no strong response to any treatment individually, but showed an interactive response to the predation and fire treatments. Specifically, survival in predator exclosure grids increased following prescribed fire while fire had no effect on survival in predator access grids. Further examination determined that this increased post-fire survival occurred only on feeding grids; survival in all other study areas was similar before and after burning.

TOWARDS A BETTER UNDERSTANDING OF THE ECOLOGY OF *MYOTIS LEIBII, MYOTIS LUCIFUGUS*, AND *MYOTIS SEPTENTRIONALIS*

J. M. O'Keefe and M. C. Kalcounis-Rueppell. *USDA Forest Service, Southern Research Station, Clemson, SC, 29634 (JMO), University of North Carolina at Greensboro, Greensboro, NC 27402 (MCKR)*

Hundreds of thousands of *Myotis* bats in the northeastern U.S. have died due to White-nose Syndrome and biologists have predicted that some *Myotis* species may be extirpated in the northeast. White-nose Syndrome also threatens populations of cave-associated bats in the Southeast, including five species of cave-wintering *Myotis*. Historically, more attention and funding have gone towards the study of the endangered *M. grisescens* and *M. sodalis*, but few data are available to guide conservation and recovery of three more common cave wintering *Myotis* species (*M. leibii, M. lucifugus*, and *M. septentrionalis*). Until recently, *M. leibii* was considered vulnerable across its range, but *M. lucifugus* and *M. septentrionalis* were considered secure. However, White-nose Syndrome has the potential to be dire for populations of these three species in the Southeast. Summarizing data on summer roosting and foraging habitat requirements and winter roosting ecology for *M. leibii, M. lucifugus*, and *M. septentrionalis* is necessary for informing policy and management decisions and will give us a better understanding of the potential impacts of White-nose Ayndrome on these species. Further, some of the information that we have for these species in the Southeast is in the gray literature and it is important that these data be combined with published findings. Finally, we hope that summarizing what is known about *M. leibii, M. lucifugus*, and *M. septentrionalis* in the Southeast will allow us to identify critical gaps in our knowledge.

SNAG POPULATION DYNAMICS RELATIVE TO INDIANA BAT ROOST HABITAT SELECTION IN THE SOUTHERN APPALACHIAN MOUNTAINS

Joy M. O'Keefe, Heather L. Stewart, and Susan C. Loeb. *USDA Forest Service, Southern Research Station, Clemson, SC 29634*

Little information exists about the roost ecology of Indiana bats *(Myotis sodalis*) at the southern extent of their range. From 1999–2009, biologists have gathered data on roosts in the southern Appalachians, where Indiana bats primarily use beetle-killed yellow pines, but occasionally roost in white pine or hemlock snags. Multiple studies in the region have shown that Indiana bats selectively roost under sloughing bark in tall, low decay conifers that receive greater solar exposure than random trees. In fall 2009, we measured snag characteristics in the Cherokee and Nantahala National Forests and the Great Smoky Mountains National Park in NC and TN. We located mature stands with a conifer component, searched stands for dense snag patches, and measured ≥40 snags in variable size plots on lower, middle, and upper slopes. For snags ≥18.4 cm dbh, we recorded species or genus, height, dbh, and overall decay status (1–4). To evaluate decay, we recorded branch state (e.g., size and number), bark tightness, percent remaining bark, and surface wood

hardness. We measured 1063 snags in 23 plots; 75.3% were yellow pine, 12.2% were white pine, 6.4% were hemlock, and 6.1% were hardwoods. Hemlock snags were taller and less decayed than known roosts (mainly yellow pines), while yellow and white pine snags were shorter and more decayed than known roosts ($P < 0.0001$). Known roosts and yellow pines had 25–28% bark remaining, while white pines and hemlocks had significantly more bark remaining (58–96%). Although yellow pine snags are abundant in pine-hardwood forests, most will soon be too decayed to be suitable for roosting and recruitment of yellow pine snags is very low. In the near future, white pines with ≥30% bark and hemlocks recently killed by adelgids may be significant roost structures for Indiana bats in the southern Appalachians.

ECOLOGY OF *MYOTIS SEPTENTRIONALIS* IN THE SOUTHEASTERN U. S.

R. W. Perry and D. A. Saugey. *Southern Research Station, Forest Service, United States Department of Agriculture, Hot Springs, AR (RWP), Ouachita National Forest, Forest Service, United States Department of Agriculture, Jessieville, AR (DAS)*

The northern long-eared bat (*Myotis septentrionalis*) is primarily distributed east of the Rocky Mountains in the northern U.S and Canada. Often considered rare in the southeastern U.S., it may be locally common, particularly where upland forested conditions occur. Caves and mines are often used as winter hibernacula, where males and females roost alone or in small mixed groups (generally <30 individuals). Within these hibernacula, cooler locations are often selected where one or more individuals may occupy cracks or crevices. Temperature, air flow, humidity, and disturbance periodicity affect use of hibernacula. However, studies on winter selection of hibernacula and microclimate associations are often conflicting and additional research is warranted. The rarity of mines and caves in areas where these bats are common implies other features may be used as hibernacula, but common use of other types of hibernacula is currently unknown. Recent studies have contributed a wealth of information on summer roosting. During summer, both sexes roost beneath loose bark or in cavities of live trees or snags; males and non-reproductive females roost alone, whereas reproducing females often roost in small colonies (10-70 individuals). Reproductive females tend to select mature trees (>20 cm diameter) that are tall and in relatively open forests with reduced canopy coverage and less structural clutter. Males often roost in small (<10 cm) understory trees and in shady, relatively dense forests. In general, long-eared bats are flexible in selection of tree species during summer and appear to have regional preferences based on availability of tree species and historical disturbance in an area. Long-eared bats often return to the same hibernacula each year during fall and to the same forest areas to roost and forage during summer. Nevertheless, spatial relationships between hibernacula and summer use areas are unknown. This bat's habit of roosting in small numbers, in inaccessible portions of caves and mines, and foraging beneath the canopy in relative dense forests may all contribute to underestimated abundance in portions of its range.

Contact Information for Officers and Board of Directors

OFFICERS

President:
Darren Miller
Southern Wildlife Program Manager
Southern Timberlands Research/
Weyerhaeuser Co.
PO Box 2288
Columbus, MS 39704
(662) 245-5249
darren.miller@weyerhaeuser.com

Secretary:
Joy O'Keefe *****
Research Wildlife Biologist
USDA Forest Service
Clemson University
233 Lehotsky Hall
Clemson, SC 29634
(864) 653-0101
joyokeefe@gmail.com

President Elect:
Mike Lacki
Professor
Wildlife Ecology and Management
214 Thomas Poe Cooper Building
Lexington, KY 40546-0073
(859) 257-8571
mlacki@uky.edu

Treasurer:
Timothy Carter *****
Assistant Professor
Department of Biology
Ball State University
Muncie, IN 47306-0440
Office: 765.285.8842
tccarter@bsu.edu

BOARD OF DIRECTORS

Michael D. Baker, Ph.D
Indiana Myotis Program Coordinator
Bat Conservation International
P.O. Box 162603
Austin, Texas 78746
KY field office 859-402-8597
mbaker@batcon.org

Timothy Carter - Assistant Professor
Department of Biology
Ball State University
Muncie, IN 47306-0440
Office: 765.285.8842
tccarter@bsu.edu

Nikki Castleberry
Natural Resource Biologist
Georgia DNR
Wildlife Resources Division
Nongame Conservation Section
2065 US Hwy 278 SE
Social Circle, GA 30025-4743
770-918-6411
nikki.castleberry@dnr.state.ga.us

James Kiser - Senior Biologist
FMSM Engineers, Inc.
1901 Nelson Miller Parkway
Louisville, KY 40223
Office: (502) 212-5000
jkiser@fmsm.com

Dennis Krusac
Endangered Species Specialist
USDA Forest Service
Room 816N
1720 Peachtree Rd. NW
Atlanta, GA 30309
(404) 347-4338
dkrusac@fs.fed.us

Bree McMurray
Threatened and Endangered Species Biologist
Design Division, Environmental Section
Missouri Dept of Transportation
PO BOX 270
Jefferson City, Missouri 65102
(573) 639-0876
bree.mcmurray@modot.mo.gov

Trina Morris - Wildlife Biologist
Georgia Dept. of Natural Resources
Nongame Conservation Section
2065 U.S. Hwy. 278 S.E.
Social Circle, GA 30025-4743
(770) 918-6411
katrina.morris@dnr.state.ga.us

Joy O'Keefe
Forestry and Natural Resources
Clemson University
261 Lehotsky Hall
Clemson, SC 29634
(864) 653-0101
joyokeefe@gmail.com

Dr. Thomas Risch
Associate Professor of Wildlife Ecology
Department of Biological Sciences
Arkansas State University
P.S. Box 599
State University, AR 72467-0599
(870) 972-3082
trisch@astate.edu

Brian Carver
Assistant Professor of Biology
Freed-Hardeman University
158 E. Main Street
Henderson, TN 38340
731.989.6640
bcarver@fhu.edu

*** Also Board Members.**

Contact Information for Committees

BAT BLITZ COMMITTEE

Member	Affiliation	E-Mail
Joy O'Keefe (Chair)	Clemson University	jokeefe@gmail.com
Tim Carter	Ball State University	tccarter@bsu.edu
Dennis Krusac	U.S. Forest Service	dkrusac@fs.fed.us
Bree McMurray	Missouri Dept. of Transportation	Bree.McMurray@modot.mo.gov
Katrina Morris	GA Dept. Natural Resources	Katrina_Morris@dnr.state.ga.us
Blake Sasse	AR Game and Fish Commission	dbsasse@agfc.state.ar.us
David Saugey	U.S. Forest Service	dsaugey@fs.fed.us

AWARDS COMMITTEE

Member	Affiliation	E-Mail
Susan Loeb (Chair)	Clemson University	sloeb@clemson.edu *or* sloeb@fs.fed.us
Steven Burnett	Clayton College & State University	StephenBurnett@mail.clayton.edu
Lisa Gatens	NC Museum of Natural Sciences	lisa.gatens@ncmail.net

BAT DATABASE

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

SOUTHEASTERN BAT COORDINATOR POSITION

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

WHITE-NOSE SYNDROME COMMITTEE

Member	Affiliation	E-Mail
Thomas Risch (Chair)	Arkansas State University	Trisch@astate.edu
Mike Armstrong	U.S. Fish and Wildlife Service	Mike_Armstrong@fws.gov
Mylea Bayless	Bat Conservation International	mbayless@batcon.org
Eric Britzke	U.S. Army Corps of Engineers	Eric.R.Britzke@usace.army.mil
Janet Ertel	U.S. Fish and Wildlife Service	janet_ertel@fws.gov
Dennis Krusac	U.S. Forest Service	dkrusac@fs.fed.us
James Kiser	Stantec	James.Kiser@stantec.com
Brook Slack	Kentucky Department of Fish and Wildlife Resources	Brooke.Slack@ky.gov

BYLAWS COMMITTEE

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

"Red bat and Prescribed Fire"

Painting by Kathy Dickson, Park Ranger, U.S. Army Corps of Engineers,
Wappapello Lake, Missouri.

This image was created for the 2009 Missouri Bat Blitz t-shirt with Ms. Dickson graciously donating the original for silent auction.
This artwork appears with permission of the artist and the painting's owner, James Gracey.

North Carolina Bridge Netting

Lisa Gatens

It is not always practical, or even desirable, to net a waterway beneath or near a bridge. The physical characteristics of a site may render netting in the more traditional sense futile, at best. Also, as was the case recently, it may be desirable to target bats known to roost in bridge expansion joints.

Mary Frazer (NCDOT) has been monitoring a large colony of Big Brown Bats, *Eptesicus fuscus*, roosting in the expansion joints of the Cole Mill Road Bridge in western Durham County, NC. After accompanying her to conduct an emergence count, I realized the opportunity that this location presented for a current research project of mine. If even a percentage of the bats using this bridge could be captured, then a large number of hair and guano samples could be obtained in a single night. The majority of the bats

roosting in the Cole Mill Road Bridge seem to do so on the northern end of the bridge. So a plan was established to net both sides at the expansion joint on that end of the bridge. We knew the bridge was used by Big Browns, but did not realize that Free-tailed Bats, *Tadarida brasiliensis*, also roosted there.

Developed from a design used by a consultant, Steve Mitchell (NCDOT) made a PVC framed mist net to suspend over a bridge at an expansion joint to catch bats as they emerge. It was from this design that two similar styles were constructed to use at the Cole Mill Road Bridge in Durham County, NC. Two nets of each design were made. The idea was to have two nets to use on each side of the bridge; a total of four nets was constructed for this project. One design was a simple 5' square of 0.5" PVC. The advantages of this design are in its simplicity: ease of construction and low cost (each PVC joint adds to the cost of the frame). The second design was a 5.5' square with a 12" shelf on the bottom, making the net L-shaped. On the back side of the frame, about 1/3 of the way from the bottom, 1' Quikrete® filled spurs were inserted at a 45° angle. Both the shelf and the weighted spurs were added in an attempt to bring the net in closer to the expansion joint opening. As shown in Figure 1., the bats exit from an opening that is recessed ~24" from the vertical edge of the bridge. The concern was that the further the net rests from this opening during deployment, the greater the chance that bats could avoid it.

Figure 1. Expansion joint on Cole Mill Road Bridge over the Eno River, Durham County, NC. Arrow indicates location of emergence.

Figure 2. Looking downstream from the Cole Mill Road Bridge on the Eno River.

To prepare for net opening shower curtain rings were attached to the top of the net frames. Clips were attached to an end of the ropes to quickly be attached or detached from the ring. Once suspended over the bridge at the expansion joint, the free ends of the ropes were secured to a weight (5 gallon bucket ½ filled with Quikrete®). Because netting was occurring at the bridge, there was no real concern for the unintentional capturing of birds, so they were suspended over the side well before sunset. Once the emergence started the 25 volunteers recruited for this project were poised to act quickly. When it was determined that the first nets deployed were ready to be hauled up, it was easy to unclip the ropes so that net could be carried off the bridge where bat handlers waited to process them. The second nets were then lowered in place. Unlike with traditional netting, the netting activity was finished by 9:00 p.m.

Figure 3. Simple 5' square design. The net is cut to size and attached to the frame with zip ties. Arrows indicate "hinge"; one side of the coupling should be left unglued so frame can be collapsed.

Figure 4. Net with bottom shelf and weighted spurs suspended over the bridge at the expansion joint. Note that the shelf effectively brought the bottom of the net closer to the opening, though the spurs did not provide the desired effect.

We found that the nets were effective. There aren't adequate data to indicate whether the shelf significantly increased capture success. However, bats were caught in that part of the structure. The spurs did not have the desired effect of causing the net to tilt in toward the bridge. Perhaps a greater weight would work. However, swinging the net in toward the opening can more easily and effectively be accomplished by tying ropes to the bottom before the net is lowered over the side of the bridge. Holding on to the loose end, the bottom of the net can then be pulled toward the bridge and the loose end secured to hold it in place until the net needs to be raised. This is the method used by Mary Frazer (NCDOT), Dotty Brown and Gabrielle Graeter (NCWRC) and others on a bridge netting endeavor on Route 28 over Fontana Lake in Macon County, NC.

There are obvious safety issues to consider when planning to net from a bridge. All personnel on the bridge were required to wear reflective safety vests. Cones were placed along the roadside to indicate the need for extra caution by passersby. All participants

had the use of a headlamp or flashlight, not only to provide adequate light for the tasks at hand, but also to make them more visible to traffic. Because of the extensive parking area along the roadside, a safe bat processing area was established using parked vehicles as a buffer between workers and traffic.

Once nets were brought to the processing area, bats were removed, placed in paper bags and hung on a line in the order in which they were removed. The brief period that the bats were allowed to remain in the bags provided the opportunity for the collection of guano from most individuals. In addition to usual data collected on each individual, hair and guano were collected and each bat was banded before being released.

Figure 5. Nets were carried off the bridge to a safe place where bats could be removed and processed. Bats were held temporarily in paper bags and hung on a line (background) in the order in which they were removed from the nets. Note reflective safety vests worn by net carriers.

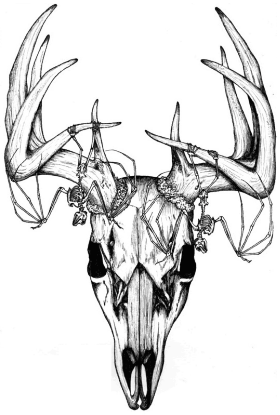
Figure 6. One of the Free-tailed Bats captured. It is not likely that this species would have been captured in nets placed over the waterway below.

Bridge netting is an effective way to sample bats using expansion joints. The flurry of bat activity was over within an hour of emergence. And, though some of the individuals captured in the specially constructed nets may have been successfully trapped in a traditional net, it is less likely that Free-tailed Bats would have been.

David Saugey, longtime wildlife biologist on the Ouachita National Forest is retiring from the Forest Service at the end of 2010. David has been and I'm sure will continue to be a mainstay of the bat research community in Arkansas. Enjoy!! Your right, you can have your cake and eat it too!

UPCOMMING MEETINGS

Mississippi Bat Working Group
Annual Meeting –
January 19, 2011
Mississippi State University.
Call for Papers - deadline Dec 17, 2010.



23-25 February 2011
2011 SBDN-MWBWG-NEBWG
JOINT MEETING AND
COLLOQUIUM
Louisville, KY

The 16th Annual Meeting of the Southeastern Bat Diversity Network, 2nd Joint Meeting with the Northeastern Bat Working Group, Midwest Bat Working Group and 21th Colloquium on Conservation Of Mammals in The Southeastern United States will be held at the Seelbach Hilton Hotel in downtown Louisville, KY.

American Society of Mammalogists
Portland State University, Portland, Oregon
24-29 June 2011.

10th SBDN Bat Blitz –
July 31 - August 4, 2011
Pisgah National Forest, Crossnore, NC.

41th North American Symposium of Bat Research
Annual meeting
October 26-29, 2011
Toronto, ON

18th Annual Conference of The Wildlife Society
Waikoloa, Hawaii (The Big Island)
November 5 -10, 2011

Send all your interesting bits to J.D. Wilhide (jd_wilhide@cmli.net)

I would like to send out a very special

"**Thank You!!**"

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

From all of us to all of you:

Merry Christmas and a most Happy New Year!!!