



# NC Wildlifer



## A Conversation with Chris Moorman

### Fall Migration Demystified



### Urban Bears in Asheville



**And more!**

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# NE Wildlife On the Cover --



## American Woodcock (*Scolopax minor*)

On a crisp fall morning, I am crashing through a mixed stand of quaking aspen, American hazelnut, balsam fir and lowland brush and watching my young golden retriever, Casey, running through the brush. Suddenly she snaps her head around, nose to the ground, tail vigorously wagging, and suddenly a small rust colored blur bursts through the underbrush, wings “twittering” as it disappears behind a balsam fir a second later. Casey quickly gives an inquisitive look and resumes her searches for more birds. We spend the morning walking through an amazing matrix of regenerating quaking aspen forests, lowland brush, tamarack and spruce bogs, paper birch and balsam fir – deep in the heart of woodcock country.

You probably would have trouble finding a similar forest throughout most of North Carolina, but in my home state of Minnesota, they are fairly common. These early successional forests provide nesting habitat, brood rearing habitat and migratory stopover sites for American Woodcock.

The American Woodcock (*Scolopax minor*), which actually belongs to the shorebird family, gave up its beach view for a more cryptic lifestyle, hiding in the forests of eastern North America. American Woodcock (AMWO), are most commonly associated with early successional habitat and have exhibited large scale population declines in response to forest maturation and conversion from early successional ecosystems. The majority of AMWO populations are highly migratory, breed in northern latitudes, and overwinter in the southeastern US, with the largest densities occurring in Louisiana. Recently, a pilot study succeeded in attaching GPS transmitters (backpacks) to overwintering AMWO to study their migration biology. They successfully tracked AMWO from their wintering grounds back to Kansas, Minnesota and Maine. With such a successful pilot season, the research team is going to attach more GPS collars over the next two years, providing unique insight into population-wide movement.







AMWO are most commonly found in North Carolina during spring and fall migration, but they also overwinter and have even been documented breeding here. AMWO are most commonly observed near dusk flying from day-time roosting locations (in early successional forest patches) to adjacent open pastures and fields to forage and loaf at night. In late winter and early spring, males begin displaying in preparation for the breeding season.

Like many other shorebirds, AMWO males lek, selecting small clearings in which to call (or “peent”). They then fly from the ground in a large spiral pattern and create auditory noises with their three outermost wing feathers. After a minute or two in the air, they return to the exact same spot on the ground and call, repeating the process until well after sunset. This is amazing to watch and you can usually sneak up on males for a great view.

Before I forget, American Woodcock are a popular game species and amazing table fair! They make amazing poppers and are even better slightly sautéed.

-- Alex Fish



*Alex is a graduate student in Fisheries, Wildlife, and Conservation Biology at NC State University.*



# Greenberg's Greetings



Greetings, members of the NCTWS and wildlife community! I hope your summer was both relaxing and productive, and you're finding time to enjoy the cooler weather and beauty of autumn.

The NCTWS Executive Board is now in the early stages of planning for The Wildlife Society's Annual Conference, to be held in Raleigh in 2016! Ed Thompson, TWS Chief of Operations in Washington, DC, attended our August meeting to discuss plans for the upcoming conference. John Ann Shearer (USFWS) attended as head of the Arrangements Committee for the 2016 conference. Our discussion touched on a few logistical topics, but also included discussion of broader issues including coordination between the state and regional chapter conservation committees and National TWS in providing science-based information and positions on conservation issues, and how to foster greater communication among National, Section, and local chapters of TWS.

The 2015 annual meeting of NCTWS will be held April 7-9 at Lake Logan in the beautiful mountains of western North Carolina. The program committee, co-chaired by wildlife faculty members Shannon Rabby and Josh Parris from Haywood Community College, are planning the meeting around a "Partnerships to Recovery" theme and soon plan to put out a call for presentations. The Partnerships theme seems especially appropriate for our state because of the many active partnerships among students and faculty of North Carolina colleges and Universities, NGOs, the Eastern Band of Cherokee Indians, and state and federal agencies in wildlife research and habitat conservation.

Other NCTWS committees continue to be active, as well. For example, the Membership Committee is working on a welcome email and information package for new members, to help them feel more connected to the wildlife community and NCTWS activities. In fact, Ed Thompson said that National TWS is very supportive of this and may even use our "template" as a model for other chapters! The Communications Committee has come up with a jazzier, "eye-catching" design for the newsletter (take a look!). The Conservation Affairs Committee has provided guidance on several conservation issues and, as always, is seeking members who are willing to actively serve. And, the Professional Development Committee continues to plan workshops and alert members of educational opportunities.





# Greenberg's Greetings

As always, I want to thank every member for your contributions to the wildlife profession, and - if you aren't yet involved - encourage you to become active in the NCTWS "inner workings" by serving on the Executive Board or on one of our committees.

Have a wonderful fall!

Sincerely,

*Katie Greenberg*

NCTWS Chapter President



NCTWS Executive Board meets with Ed Thompson to discuss TWS Raleigh 2016. Pictured from left to right: Colleen Olfenbittel, Sue Cameron, John Ann Shearer, Ed Thompson, Gary Marshall, Susan Miller, Kelly Douglass, Joe Tomcho, and Katie Greenberg. Not pictured: Steve Grodsky.





**The National Meeting of  
The Wildlife Society is coming  
to the *City of Oaks* in 2016!**

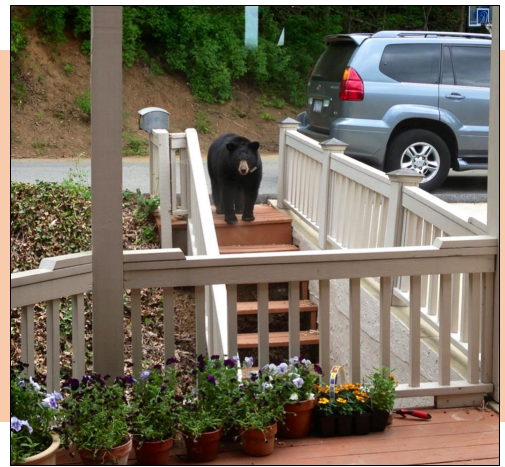


*John Ann Shearer* has generously agreed to take on the position of Arrangements Committee Chair. The Arrangement Committee is the primary workhorse for the conference at the state level.

**There are opportunities for all chapter members to help with the national meeting in 2016. If you have a keen interest in serving as a leader, please contact John Ann ([johnann\\_shearer@fws.gov](mailto:johnann_shearer@fws.gov) or [919-856-4520 ext. 17](tel:919-856-4520)).**



# Urban Bears in Asheville



*Nicholas P. Gould<sup>1</sup>, Christopher S. DePerno<sup>1</sup>, and Colleen Olfenbittel<sup>2</sup>*  
North Carolina State University<sup>1</sup>  
North Carolina Wildlife Resources Commission<sup>2</sup>

## **Movements, Population Ecology, and Harvest Vulnerability of Black Bears in Urban/Suburban Habitats within the Asheville Watershed**

### **Introduction**

In North Carolina, black bear populations occupy 60% of the state and their range continues to expand. Additionally, the human population in North Carolina has increased and growth continues unabated. Humans and black bears are now living in close proximity and some areas of North Carolina may have reached or exceeded the social carrying capacity. In several areas, population management options appear limited, as hunting is often restricted in residential and urban developments. Additionally, no data exists on whether urban/suburban environments serve as source or sink populations for surrounding areas, if mortality rates differ between hunted and unhunted bear populations in North Carolina, if bears in urban/suburban areas are vulnerable to harvest, or if hunting strategies can manage bear populations and human-bear interactions in and near residential developments.

Due to the long-term nature of a bear's life history, we will be collecting information over the next four years, on the ecology of black bears in urban/suburban areas. Specifically, we will collect data on survival rates, causes of mortalities, and movements of bears in urban/suburban areas, determine features of, and model, travel corridors, and determine location and characteristics of den sites. We will compare these data between bears in hunted and unhunted populations as well as between bears in urban/suburban areas and bears in rural areas. Ultimately, the results will be used to assist the North Carolina Wildlife Resources Commission (NCWRC) in developing science-based management strategies for urban-suburban bear populations in North Carolina. This project addresses and builds upon modern applications for managing large carnivores in urban areas and will be valuable to the larger scientific community.

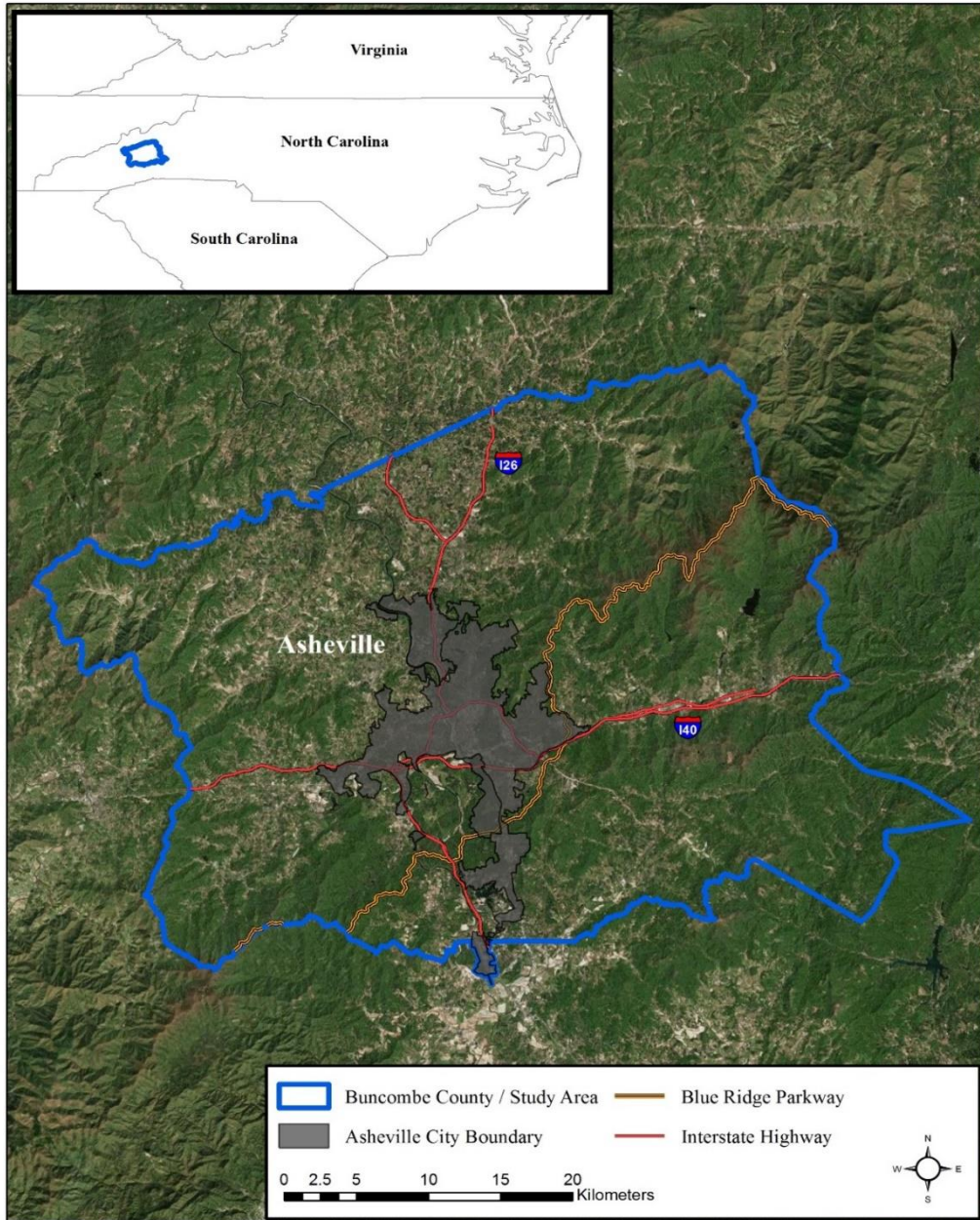
### **Study Area and Methods**

Our study is centered on the urban/suburban habitats in and around the city of Asheville, North Carolina. Asheville is a medium-sized city (117.2 km<sup>2</sup>) with approximately 83,000 people, located in Buncombe County in the southern Appalachian Mountain range, and is part of the southern Blue Ridge physiographic province of the Southern Appalachian region (Fig. 1).





# Urban Bears in Asheville



**Figure 1.** North Carolina State University/North Carolina Wildlife Resources Commission urban/suburban black bear (*Ursus americanus*) study area, Asheville, North Carolina, USA, 2014.



# Urban Bears in Asheville

In addition, a plurality of human-bear interactions occur in Buncombe County; for example in 2012, 40% of all phone calls received by the NCWRC occurred in Buncombe County. In this particular area of North Carolina, bears are seen in urban-suburban settings (e.g., subdivisions, downtown) on a daily basis.

We used landowner reports of black bears and public outreach (e.g., Facebook, presentations) to target amenable homeowners to establish trap lines on/near their property. We attempted to obtain a spatially balanced sample of 40 bears (25 females, 15 males), within, or adjacent to, the city of Asheville. Bears were captured in culvert traps baited with day old pastries. Once captured, bears were immobilized, and we placed uniquely numbered eartags in both ears, applied a tattoo to the inside of the upper lip, and inserted a Passive Integrated Transponder tag (PIT tag) between the shoulder blades. Bears were fitted with a GPS radiocollar (Vectronics, Berlin, Germany) that did not exceed 2-3% of the animal's body weight. We used the virtual fence application built in to the GPS collars to obtain locational data every 15 minutes (i.e., fine scale data) for when bears are inside Asheville city limits (i.e., inside the virtual fence) and every hour when bears are outside the city limits.



Working with bears in an urban/suburban setting can attract a large audience. Photo credit: NCSU



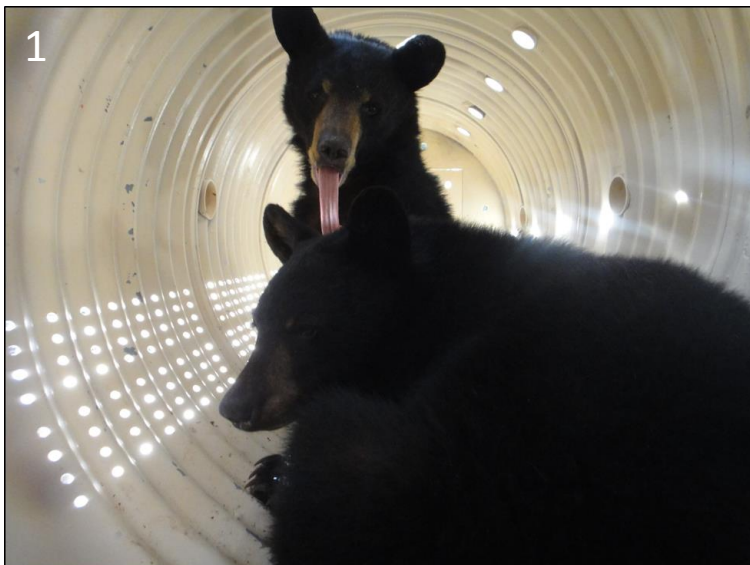


# Urban Bears in Asheville

## From Trap to Map - Tracking bears in Asheville



Processing two yearlings in the company of a media crew. Photo credit: Colleen Olfenbuttel/NCWRC



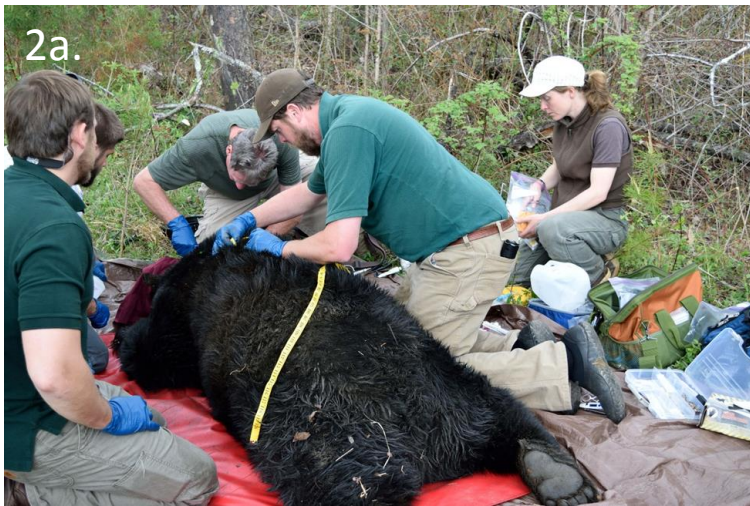
**1. Culvert trapping** – *In this picture:* Two male yearlings captured together and collared along with their mother in late April, 2014.

Photo credit: Colleen Olfenbuttel/NCWRC



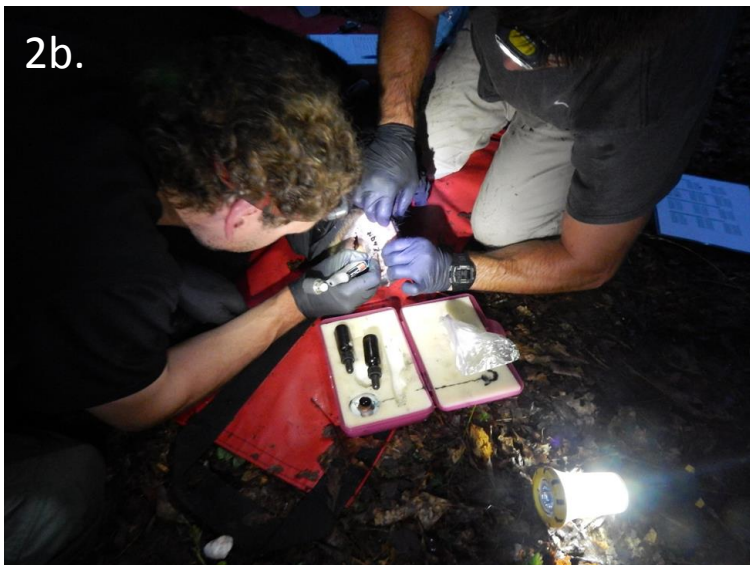
# Urban Bears in Asheville

## From Trap to Map - Tracking bears in Asheville



**2a. Taking measurements** – *In this picture:* NCSU and NCWRC personnel obtaining measurements on an adult male bear (571.5 lbs).

Photo credit: NCSU



**2b. Lip tattoo** – *In this picture:* Adult male getting a lip tattoo identifier.

Photo credit: Colleen Olfenbuttel/NCWRC



# Urban Bears in Asheville

## From Trap to Map - Tracking bears in Asheville



2c. **Collar**– *In this picture: A young bear fitted with a Vectronics GPS collar.*

Photo credit: NCSU



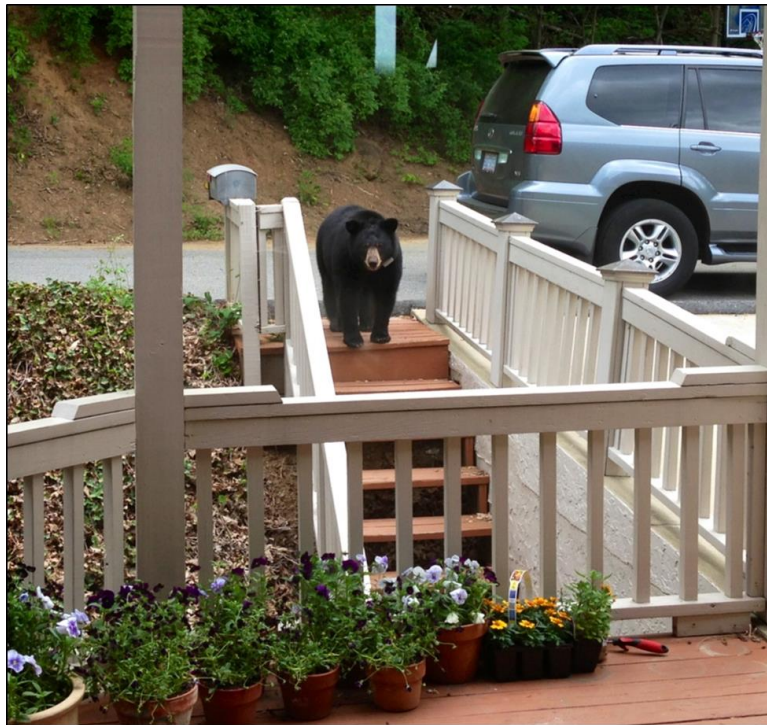
3. **Release** – *In this picture: A collared female released in northeast Asheville.*

Photo credit: NCSU

# Urban Bears in Asheville

## Preliminary results

This past summer was our first trapping season and from April through September, we captured 65 bears, including 10 recaptures, and collared 44 bears (24 adult females, 9 adult males, 5 yearling/subadult females, 6 yearling/subadult males). We identified 11 family groups among the captured bears; 3 family groups with yearlings, 8 groups with cubs. The average adult male ( $n = 10$ ) and female ( $n = 24$ ) bear weighed 316 lbs and 202 lbs, respectively. The average male ( $n = 13$ ) and female ( $n = 8$ ) yearling/subadult weighed 119 lbs and 103 lbs, respectively. The largest yearling we captured was a 163 lbs male. While it is too early in the study to make any conclusions, we were impressed by the size and health of the yearling bears we handled. Their large size enabled us to place GPS collars on them, which allowed us to monitor the movements of entire family groups shortly before and after family-breakup. In comparison, in a long-term NCSU bear study on Pisgah National Forest, the average yearling weight was 65 lbs. Our largest bear captured was a 571.5 lbs adult male. We have collected approximately 150,000 GPS locations on bears ( $n = 44$ ; Fig. 2), with 34 (77%) bears having locations inside Asheville city limits.



A collared female bear visits a residence in Asheville, North Carolina, 2014.

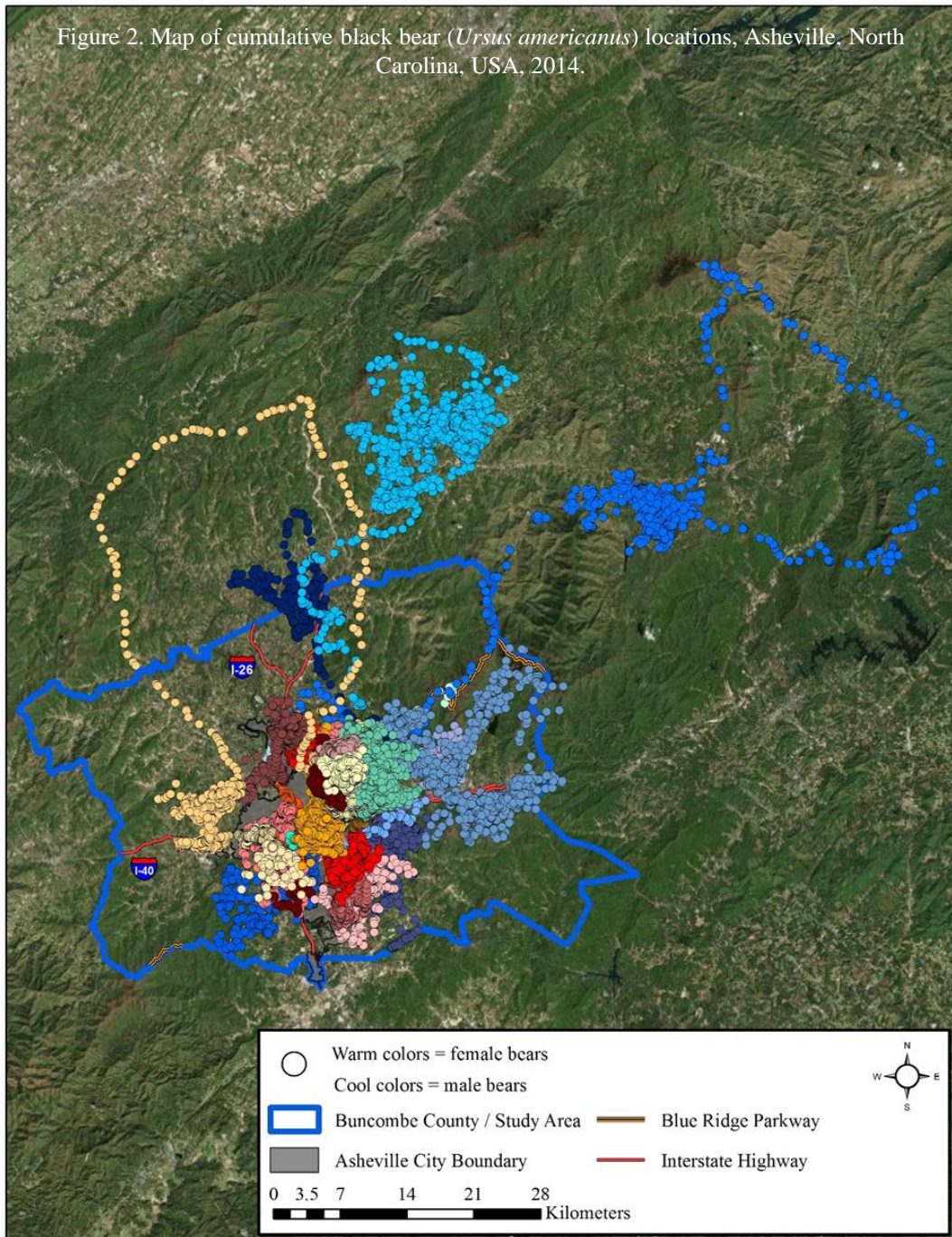
Photo credit: M. Lock





# Urban Bears in Asheville

Figure 2. Map of cumulative black bear (*Ursus americanus*) locations, Asheville, North Carolina, USA, 2014.



# Urban Bears in Asheville

The bears we have monitored are showing vulnerability to mortality; 4 GPS-collared bears (9%) were found dead during this reporting period; two were killed by vehicles on Interstate 26, and two were shot and killed illegally.

## More to come...check us out!

Field work will continue for three more seasons and will be followed by data analysis in 2017-2018. We encourage you to visit our project website for pictures, videos and project details:

<https://www.facebook.com/urbanbearstudy>.



Photo credit: NCSU





# Call for Presentations

## 2015 Meeting of the North Carolina Chapter of the Wildlife Society April 7-9, 2014 Lake Logan, Canton, North Carolina

### Theme: Partnerships to Recovery

**Deadline:** December 1, 2014

Presentations should be approximately 30 minutes in length (20-25 min to present and the remainder for questions) and should be related to the overall theme of the event. Please submit an abstract as a word document which includes title, author, affiliations, and the abstract itself to **Dr. Josh Parris - [jdparris@haywood.edu](mailto:jdparris@haywood.edu)**. Abstracts should be no more than 250 words including the title, author, and affiliation. Additionally, presenters should include a short bio to be used as part of the introductions during the event.

**Sample:** Please follow this format for submission

#### **Gray Bat (*Myotis Grisescens*) Winter Activity in Southern Missouri**

Joshua D. Parris. Department of Biology, Missouri State University, Springfield Missouri, USA.

The arrival of white-nose syndrome (WNS) has stimulated interest in winter activity of multiple bat species. Data from a bat activity study in southern Missouri indicated that gray bats (*Myotis grisescens*) were active all winter above expected levels. Study objectives were to assess gray bat winter activity including investigating winter feeding, the need for water, whether winter activity occurs at foraging areas as well as caves, and whether gray bats are more active relative to other species. Acoustic monitoring occurred over three winters at caves and foraging areas in Laclede, Shannon, and Washington counties Missouri and captures occurred during the 2012-13 winter at Coffin Cave in Laclede County and Bat Cave in Shannon County. Gray bats were captured on 24 of 26 attempts, at temperatures as low as -1.7oC. Gray bat captures did not correlate with temperature. Of 350 bats captured, three provided a feeding fecal sample during mid-winter. Urinating was recorded in >50% of gray bats. Those at Coffin Cave, with available water, urinated earlier than at Bat Cave, with no available water. Acoustic data indicated that gray bats were active all winter at caves and foraging areas and at higher proportions than expected based on cave populations. Bat activity at Bat Cave was higher than at Coffin Cave at both the cave entrance and nearby foraging area. Gray bat activity appears driven by the need for water.

**Speaker Bio:** Please enter any information that you wish to serve as a means of introduction.



# Connecting the Dots:



By Paul  
Taillie

## Challenges and Progress in Understanding the Annual Cycle of Migratory Birds

Most people don't think twice when they hear the familiar sounds of chickadees and titmice. These ubiquitous birds can be heard just about anywhere at any time of year. But in fall, when I can finally turn off the AC and feel the cool morning air blowing through my office window, a few distant Chickadee calls are enough to have me scrambling for my binoculars and rushing outside. By the time I get out there, my normally quiet backyard is chaotic. The scolding titmice and Chickadees have gotten the Towhees, Thrashers, and Bluebirds all excited as well, and there seem to be dozens of birds hopping around the dense vine tangles. In addition to these resident birds that share my yard year round, October is a great time for neo-tropical migrants to be passing through. Departing their temperate breeding grounds, these migrants are heading south to spend the winter in the tropics, but they can often be found associating with flocks of resident birds when they stop to refuel.

After the breeding season is over, many birds no longer spend their much-needed energy on defending territories, and instead form loose flocks with other species. As a group, they ravenously search for insects, seeds, and fruit to store up fat for the long trip south. It's not uncommon to walk through the woods for a half-hour without finding so much as a Cardinal, then stumbling upon a flock of dozens of small birds all at once.

As I start to pick through the flock in my backyard, hoping for a migrant or two, I find mostly Chickadees and Cardinals. But then, out of the corner of my eye up in the tops of the trees, I find a small bird with a thick bill and a dark eye-stripe. This Red-eyed Vireo is normally one of the more vocal species during the breeding season, but in fall they are often silent and only spotted after systematically sorting through a flock for something different. Though Red-eyed Vireos breed in hardwood forests throughout the state, it is difficult to know whether this individual is a local getting ready to leave or a migrant from up north just passing through.





Because my yard is just a small suburban lot on the edge of the Triangle, there isn't a great deal of bird diversity most of the year. But the few weeks of migration in spring and fall offer up the chance for something new. Species that breed up in the far north such as Cape May Warbler and Philadelphia Vireo can only really be found in North Carolina when they happen to stop to refuel for a day or two. But this additional diversity can also cause headaches when trying to identify some species, because unlike in winter when the only thrushes most of us find lurking around the forest understory are Hermit Thrushes, in fall we have to consider Veery, Swainson's, and even Gray-cheeked Thrushes as well (photo). But like anything, with a little practice and patience, identifying all the new faces of fall can become much more manageable.



*During migration, the thrushes can be a source of frustration for many birders. These three were just a few of the dozens of thrushes caught on a particularly busy day at a constant-effort banding station in Costa Rica in early October. From left, Gray-cheeked Thrush, Veery, Swainson's Thrush.*

Just as I get ready to head back inside and get back to work, I pick out a drab yellowish-green bird back in the trees that would be difficult to ID if it were not for the small, but distinctive, white patch on its wings: a Black-throated Blue Warbler likely not more than 6 months old (photo). In fact, most of the migrants heading south are doing so for their first time, having just hatched during the previous spring or summer. As such, many get lost, eaten, or starve along the way. Despite being the season of highest mortality for many of these migrants, migration is the stage of their lives we know the least about. However, with the help of some technological advances, how we think about and study migration has been changing rapidly in recent years.





*In North Carolina, Black-throated Blue Warblers don't breed outside of the mountains, but they can often be found across the state in spring and fall. This female doesn't have the bold colors of the male behind her, but can still be reliably ID'ed by the white "checkmark" on her wings. These individuals were captured on the southern shore of Lake Ontario in September, 2008. Many migrants stopover here after making the long flight across the lake during the night.*

Until recently, our ability to connect the regions where Neotropical migrants breed, spend the winter, and migrate was limited to band recovery/recapture and isotope analysis. Unfortunately, sample sizes of recovered bands are exceedingly low, and the isotope signatures of feathers can only give a very coarse idea of where the feather was grown. Similarly, GPS tags are not yet small enough for most of these migrants and have limited battery life, preventing us from tracking individuals across seasons. On the other hand, a new type of tag, called a geolocator, allows individual birds to be tracked from their breeding grounds, along their migration routes, on their wintering grounds, and back over the course of the year with relative precision. These tags simply record the length of day and the time at sunrise, and with a little computational magic, one can use just these two pieces of information to derive latitude and longitude with an accuracy of ~40 km. To avoid issues of battery life, these tags do not transmit data and thus, need to be recovered from the bird the following year. As such, they are typically attached to adult birds on the breeding grounds to maximize the probability that the bird will return to the same territory the following spring.





*This Kentucky Warbler was originally banded in the winter of 2009 in the Caribbean lowlands of Costa Rica. It is pictured here shortly after being recaptured in the fall of 2010, not far from where it was originally banded. Of the more than 400 North American migrants captured at this banding station in the fall of 2010, this was the only bird that had been previously banded.*

In the few years this technology has been used, our understanding of migration has increased exponentially. Most notably, the concept of migratory connectivity has developed, which refers to the relationship between populations throughout the year at different life stages for a given species. For species with high migratory connectivity, individuals breeding in a particular region of the species' breeding range all winter together in a specific area in the tropics. On the other hand, species with low migratory connectivity may spend the winter with individuals that breed in a completely different part of the breeding range. Furthermore, geolocators allow us to track the routes individuals take between breeding and wintering areas. For example, both Ovenbird and Gray Catbirds have completely distinct eastern and western populations that remain isolated from each other over the course of the year, using different migration paths and wintering grounds, in addition to different breeding grounds. Interestingly, Veery and Bobolinks have been found to winter in multiple locations in the tropics, with short migration periods in between, a phenomenon that was largely unknown for these species. Understanding the links between the areas used by migratory birds at various life stages is essential to effectively address the global conservation challenges faced by these species.

In addition to addressing the question of where birds migrate, the use of geolocators has also led to a more detailed understanding of when they migrate. Previously, most scientists expected birds to adjust migration departures in response to climate change. Specifically, as summers become longer, birds will head south to the wintering grounds later. However, recent research has shown that departure times are relatively static, despite measurable changes in seasonality. Continued shifts in seasonality could intensify this discrepancy between when birds migrate and the climatic conditions they face, having potentially significant implications for migration success. In addition to affecting survival during migration, climate-related conditions such as temperature, food availability, and even wind speeds during migration can also affect reproduction and survival in successive life stages. This idea that conditions in a given life stage and geographic location can affect the success of an individual in successive life stages in different geographic regions emphasizes the global scale of migratory bird conservation. If we are to appropriately address the issues affecting migratory birds, we need to better understand the factors limiting these populations. Specifically, in what life stage and which geographical regions are species most limited, and then how are those effects carried over to other life stages. Lastly, we need to consider how best to coordinate conservation efforts among the many countries in which these birds spend at least part of their life cycle. While these are no small tasks, the rapid pace of migration science in recent years has been an impressive start.

While fall migration has always been an exciting time for novice and expert birders alike, it is becoming an increasingly exciting time for ornithologists. As technologies continue to improve and datasets continue to grow, so will our ability to answer new and pressing questions about where these birds go, how they get there, and ultimately, how best to ensure they continue to make these same trips in the future. So when you stumble upon a flock of chickadees this fall, keep an eye out for any migrants that may be tagging along.

More information on any of the research described above can be found at the [Migratory Connectivity Project](#).



Paul is a Piedmont Wildlife Diversity Technician with the NC Wildlife Resources Commission.



# A CONVERSATION WITH CHRIS MOORMAN

Steve: I'd like to ask you a few questions...

**Chris:** You might learn something about me.

Steve: I already know about you.

**Chris:** *\*laughter\**

Steve: Tell me about your childhood. Any influences that pushed you towards working with wildlife?

**Chris:** I grew up in south Georgia in a fairly rural place. It was a small town. My father enjoyed hunting and fishing, and he often would take me along. I hunted and fished quite a bit when I was younger. I fished in farm ponds. I started out hunting for squirrel with my father and then doves...hunted a few deer. But, when I was a kid, which was a long time ago now, there were very few deer or other big game around. There weren't many quail either; they mostly petered out. So, we mostly hunted squirrels and doves when I was a kid. I enjoyed the outdoors. I was a Boy Scout. I remember my Boy Scout leader, at some point, acknowledged my passion for birds. I hadn't even recognized that passion. He recommended I pursue a career working in wildlife conservation working with birds.

Steve: What do you do for your job?

**Chris:** Right now, I am a Professor of Wildlife Ecology at NC State University. I am in the Department of Forestry and Environmental Resources, and I coordinate the Fisheries, Wildlife, and Conservation Biology program. My role as the coordinator of that program is to facilitate communication amongst faculty across a bunch of administrative units on campus, with special emphasis on the graduate side of things. I build linkages between students, faculty, and their programs and external stakeholders including members of NCTWS, private landowners, non-profit organizations and other agencies, especially the state agencies.



Steve: If you weren't a wildlife professor, what would you be?

**Chris:** Architect

Steve: Architect? Why is that?

**Chris:** In high school, I realized my aptitudes were in quantitative work...paying attention to detail. I really enjoyed sketching. I did some drawings. Actually, I did wildlife art...pencil sketching. And I was pretty good, but I would have never made a living at it. I also did some drafting in wood working class. I really enjoyed it and did well at it. So, I think I would have been a good architect...The architecture school in GA was at GA Tech and the wildlife/natural resources program was at UGA. I was definitely going to UGA, no matter what I did, so that was the deciding factor. If UGA had an architecture school, I might be an architect now. But, I am glad things worked out the way they did. It was the right choice for me to do what I do.

## *Chris Moorman's TWS Service Highlights*

- Certified Wildlife Biologist
- Associate Editor – Wildlife Society Bulletin
  - NCTWS President
- NCSU Student Chapter Co-Chair

# A CONVERSATION WITH CHRIS MOORMAN

Steve: You recently won an award – Natural Resources Scientist of the Year from the North Carolina Wildlife Federation. It's even signed by the governor. How do you feel after receiving the award?

**Chris:** It feels great. I think anybody feels like it's nice to be acknowledged for their efforts. I am in this profession not to get awards, but because I enjoy it. I enjoy what I do. I have a great job. I work hard. I work exceptionally hard. Long hours. Sometimes it can wear me down significantly. But, I have a good job. I may work 60 hours a week, but to some degree those are hours I choose to work. But, I mean, it felt great. The NCWF has long history. They're well recognized. I have seen the people that have been awarded...it's very nice.

Steve: Any fun stories from graduate school you can share?

**Chris:** Um...ones that I can share? So, the first day of my PhD fieldwork I had two technicians in the field with me...one of them actually just finished his Master's degree and he was a good friend of mine at Clemson University. So, we were in the field the first day and my study involved capturing birds with mist nets. We had to clear net lanes, and we had to clear the lanes through these experimental forest openings. We were clearing these net lanes along the margins of the openings, the interior of the openings, and the woods adjacent to the openings. And this young woman came over to us...she just walked right up to us...I mean we were in a very remote place here. She said "I don't think you're supposed to be doing that." I immediately looked at my tech and said "We're in big trouble". Turns out we were mowing down their trillium research plots unknowingly and that evening within 30 minutes after returning home, I got a call from the PI of the overall project. He lived in Alaska. So, word had travelled all the way to Alaska. So...that was a good start. Things got better from there.

Steve: What do you think is the biggest threat to wildlife conservation we currently face in North Carolina?

**Chris:** I acknowledge the pending implications of climate change. I think it is important for us to consider those. But to me, in the shorter term, the area we should be focusing a substantial portion of our resources on is urbanization – urban development, urban sprawl, localized increases in human population, and both the direct and indirect effects it has on wildlife populations. One indirect effect is that in these urban areas, kids are increasingly removed from the natural environment. I think our long term risk is that if the kids aren't connected to the environment, they aren't going to be interested in conservation policy or the profession moving forward. These urban kids are quite bright. They have a lot of potential, but they aren't going to go into conservation fields if they don't have any connection to the environment.

Steve: As a family man and a wildlife professor, do you have any plans for getting your own kids into the outdoors?

**Chris:** I love to hunt. I have a three-year-old son and a five-year-old son. I look forward to the opportunity to bring them along on hunting trips and get them involved in hunting. Really for personal reasons...because it's a way to connect to them and it's the way I connected with my father. I do look forward to being able to hunt with my little boys...they're a little young right now.

Steve: Any advice for young wildlife professionals?

**Chris:** I would encourage people to become engaged with NCTWS. Volunteer their time. For every hour of effort I put into the state chapter of The Wildlife Society, especially when I was new to NC and a young professional, I got threefold return in terms of benefits, making new friends, growing professionally and learning...building potential future collaborations, So, I'd say get involved.





# A CONVERSATION WITH CHRIS MOORMAN

Steve: What have been some of your past roles with NCTWS?

**Chris:** I was the co-chair of the Conservation Review Committee, which is a really important committee in the Wildlife Society. It's one that's difficult to maintain because it depends on voluntary contributions to influence policy – which wildlife biologists hate. So, that's a real tough challenge, but it's an important challenge. I also was on the Executive Board for a couple years. And then I was elected to be President, so I am now a Past President of NCTWS.

Steve: What's your favorite and least favorite part about working and living in North Carolina?

**Chris:** North Carolina is great because it has a diversity of plant communities...a wide range of habitat types across the state...a wide range of animal species because of the elevational gradient from the coasts to the mountains. It's a beautiful state for some of those same reasons. I think North Carolina is cool because it has some of the great traditions of the South, but also has a bit of the progressive nature of some of our more northern states. I've enjoyed all the people I have worked with. I think the individuals that work with the agencies and other groups of folks in conservation are great...

...My least favorite...It's hard to find a place to kill ducks.

Steve: Not getting drawn for Mattamuskeet?

**Chris:** No, I'm on my 15th year straight of not getting drawn for Mattamuskeet.

Steve: Describe your expertise at NC State.

**Chris:** At NC State, I perceive that I am the faculty member that's focused on wildlife-habitat relationships, specifically how global change affects wildlife and potentially how any negative effects could be mitigated. I study how we manipulate the way we manage the landscape to foster more positive effects on wildlife populations.

→

I teach a habitat management course to foresters, students in our wildlife science concentration, and also the students in Natural Resources. I also conduct research on a wide range of taxa and questions ranging from the effects of timber harvest and prescribed burning on wildlife to potential of Farm Bill programs to conserve animals.

Steve: Have you ever had any interesting names assigned to you by students in your classes?

**Chris:** I once had a student who called me coach. I really enjoyed being called coach. It made me feel more important than I really was.

Steve: NC State and UGA playing in a football game...who do you root for?

**Chris:** Georgia Dawgs. I'll take the Clemson Tigers over NC State. NC State is third.

Learn more about Chris Moorman's research in North Carolina [here](#).



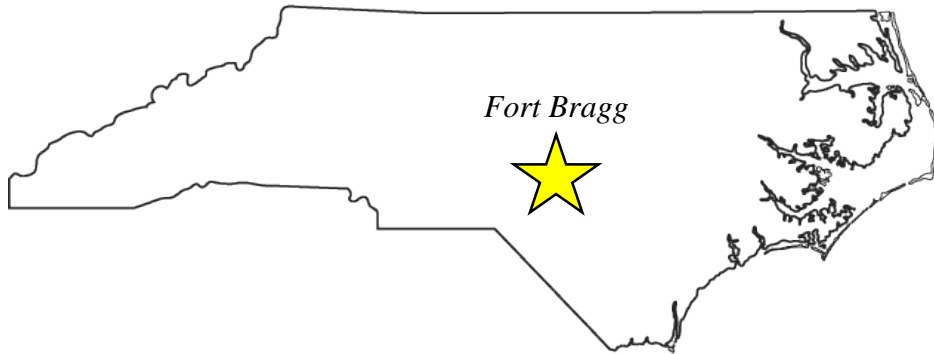
-- Steve Grodsky

Steve Grodsky interviewed Chris Moorman on 7 October 2014 at Sammy's Pub and Grill – Raleigh, NC.



# Research in our state...

## Venison...It's What's for Dinner



*M. Colter Chitwood, Marcus A. Lashley, Christopher E. Moorman, and Christopher S. DePerno*  
North Carolina State University

We recently completed our study of neonatal white-tailed deer survival at Fort Bragg Military Installation. Using expandable, breakaway radiocollars on hours-old fawns (Fig. 1), we tracked survival and causes of mortality through 16 weeks of age.



Photo courtesy of Colter Chitwood



# Research in our state...

## Venison...It's What's for Dinner

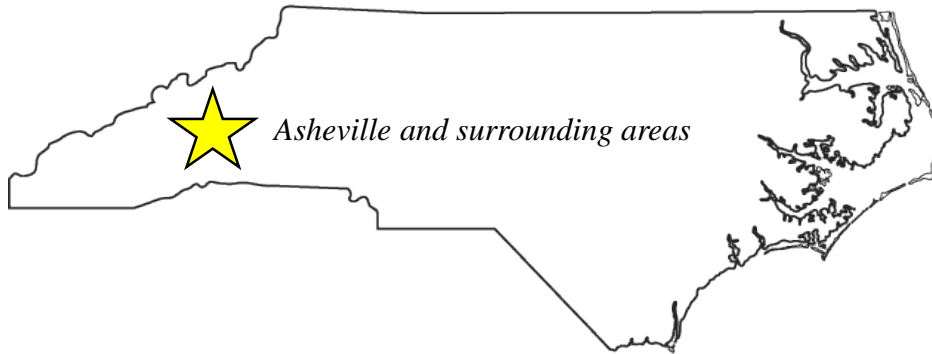
We used field evidence (Figure 2) and DNA swabs of fawn remains and collars to assign predators to mortalities. We radiocollared 65 fawns in May and June of 2011 and 2012, and the 16-week survival rate was 14% (i.e., 9 survivors out of 65). Of 55 mortalities, the leading cause of death was predation (35), followed by starvation (16), unknown (non-predatory, non-starvation; 3), and vehicle collision (1). Of the 35 predation events, coyotes were responsible for 30 (86%) and bobcats were responsible for 5 (14%). Additionally, we documented 4 adult females that were killed by coyotes (Figure 3), a previously undocumented occurrence in the region. We do not believe the substantial predation levels we documented are cause for concern in all areas. In fact, in areas where deer are overabundant and hunting cannot reduce numbers to low enough levels, coyotes will be a deer manager's best friend. However, low rates of fawn survival coupled with the potential for coyotes to kill adult females could represent a scenario of concern. For more details about the results, please see the most recent issue of the *Upland Gazette* [Fall 2014 (Volume 19, Issue 2)].



Photos courtesy of Brendan Sherrill

# Research in our state...

## Team Mountain



*Amanda Heh – NC State University*

Many historically fire-reliant forests in the U.S. have an unnatural build-up of vegetation and fuel loads due to fire exclusion. Hence, there is growing interest in restoring these communities either by reintroducing fire or by using surrogate treatments like mechanical thinning to reduce fuel loads where prescribed burning isn't safe or practical. However, fairly little is known about the long-term effects of these management practices on the plant communities and their associated wildlife. To address the potential effects on ground-dwelling wildlife, the US Forest Service, the NC Wildlife Resources Commission, and NC State University are collaborating on a study on Green River Gameland in Polk County, North Carolina.

I spent the summer at the Green River site studying the long-term response of amphibian and reptile communities to prescribed fire, chainsaw felling of small trees and shrubs, and a combination of both treatments. The upland hardwood forest had not been thinned or burned at least 60 years before the study began in 2001. Earlier studies on this site, soon after the initial fuel reduction treatments, showed that lizard abundance increased and salamander species richness decreased as a response to fire in the short-term (<6 years). My project is focused on the longer term (>12 years) effects of repeated applications of the fire and mechanical treatments. Findings may be different than short-term results due to a delayed response of vegetation to treatments and the long, complex life cycles of the wildlife species. Results will inform land managers of the long-term ecological and economic trade-offs of managing fuels with fire or fire surrogate treatments.



# Research in our state...

## Team Mountain



A young eastern box turtle (*Terrapene carolina carolina*)

I am looking forward to returning to this site the next 2 summers after a 4th burn early next year. Anyone interested in learning study design, drift fence trap installation, herpetofauna capture and handling methods, or vegetation sampling is welcome to come along with me as a volunteer. Last summer I had 58 enthusiastic volunteers from Haywood Community College, North Carolina State University, and University of North Carolina at Asheville, as well as the help of staff from several state, federal, and academic agencies.

Amanda is co-advised by Dr. Chris Moorman (NC State) and Dr. Katie Greenberg (US Forest Service).

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*Tyler Seiboldt – University of Texas at San Antonio*

As a Nebraskan now living and working on my M.S. at the University of Texas at San Antonio, conducting research in western North Carolina has been a true learning experience. Over the past year and a half, I have had the pleasure of working in the Bent Creek Experimental Forest just outside of Asheville, studying the response of herpetofauna and small mammal populations to the season of prescribed burning. With this study we hope to determine what correlation, if any, there might be between the effects of dormant season prescribed burning and growing season prescribed burning on ground dwelling wildlife. Fire severity may differ between dormant and growing season application because of differences in ambient temperature, humidity, and fuel condition. In turn, differences in post-fire forest structure (tree mortality) between dormant and growing season burns could differently affect ground dwelling wildlife.



# Research in our state...

## Team Mountain



*Peromyscus* spp.

The study site used for this project contains a total of nine units (2 treatments and control, 3 replicates each), each approximately 3 hectares in size, and separated by fire lines as needed. From May to August in 2013 and 2014 reptiles and amphibians were captured using drift fence arrays, and small mammals (predominately rodents) were captured using Sherman live traps over a period of seven consecutive days for each unit sampled. Habitat variables (e.g. ground cover, canopy cover, litter depth) were also measured during both years in order to determine significant differences created by the season of burn treatment applications. Since returning from this last field season we are still in the early stages of data analysis, but I am truly excited to begin seeing the results of all the hard work from everyone involved.

Tyler is advised in North Carolina by Dr. Katie Greenberg (US Forest Service).



Eastern tiger swallowtail (*Papilio glaucus*)



# Research in our state...

## Team Mountain

*Chad Sundol – University of Texas at San Antonio*

Largely due to the cessation of human caused disturbance in the twentieth century, oak species in the Southern Appalachians have experienced widespread regeneration failure. Oak species are slow to mature and require a great amount of sunlight while growing into maturity. Many species rely either directly or indirectly on oaks due to their acorn (mast) production. With the loss of American Chestnut to blight, oak is now considered a keystone species in the Southern Appalachian ecosystem.

My study is the second phase that will examine the longer term effects that three types of silviculture treatments designed for oak regeneration have on herpetofauna (reptiles and amphibians) that dwell in this ecosystem. The first treatment, implemented in 2009-10 and scheduled to be repeated in 2014-15, was a prescribed burning to eradicate fire-sensitive species that compete with new oak growth. The second treatment was an herbicide removal of most of the midstory trees in 2008. The goal of this is to increase light on the forest floor. The third treatment was a reduction of the overstory to 30 to 40 percent of the original basal area in 2010 followed by a prescribed fire scheduled for fall 2014. The goal of this treatment is to let in great amounts of sunlight while also removing competing fire sensitive species. Each treatment consists of five hectare plots with four replicates of each treatment. Control plots were also implemented for this study. The study took place at the Cold Mountain Gamelands managed by the North Carolina Wildlife Resources Commission in Haywood County, NC.

This is just one part off a multi-disciplinary study known as the Regional Oak Study (ROS) which is directed by the USFS Southern Research Station Upland Hardwoods Ecology and Management Research Work Unit (RWU-4157). Advisors on this project are Cathryn Greenberg, PhD, Project Leader and Research Ecologist at RWU-4157 and Christopher Moorman, PhD, Professor and Coordinator of the Fisheries, Wildlife, and Conservation Biology Program at North Carolina State University, Janis Bush, PhD, Director of Environmental Science academics programs at the University of Texas at San Antonio and Jerry Jacka, PhD, Associate Professor of Cultural Anthropology also at the University of Texas at San Antonio.



A young northern watersnake (*Nerodia sipedon*)

# Research in our state...

## Team Mountain

In 2013 and 2014, the second phase of surveying herpetofauna populations took place. Myself, an undergraduate crew from the University of Texas at San Antonio, local volunteers and help from technicians and staff at the US Forest Service Bent Creek Experimental Forest installed 128 drift fences with pitfall and funnel traps and checked them daily. All animals were identified, recorded, and released. This data will be analyzed for species abundance before and after treatment, changes in physiological condition, and age and sex measures of populations. The first phase of studying the effects on herpetofauna took place in 2008, 2010, and 2011.

Chad is advised in North Carolina by Dr. Katie Greenberg (US Forest Service).



Northern black racers (*Coluber constrictor constrictor*) mating





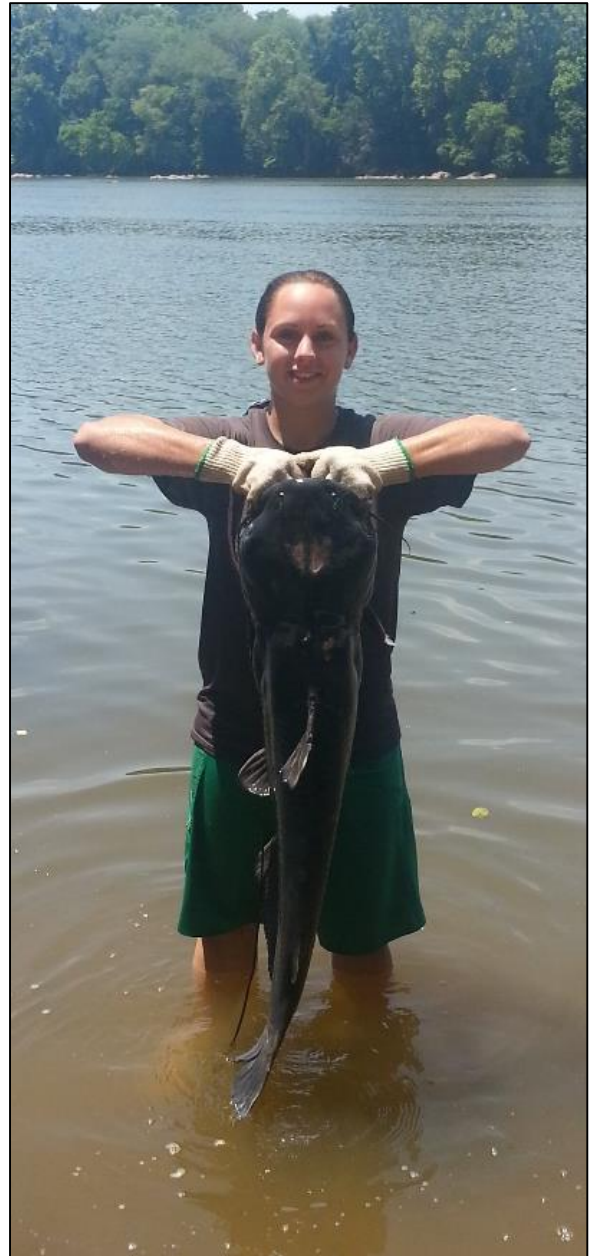
# In your chapter...

## Top Ticket Seller Rewarded with Oodles of Noodles

At the annual conference, the North Carolina Chapter of the Wildlife Society raffled tickets for outdoor expeditions to benefit the student scholarship program. These trips included turkey hunts, river paddling, and other exciting outdoor activities. Lucky for me, I sold the most tickets and got to choose a trip to go on myself. For me the choice was easy... Catfish Noodlin'!

So there I was one Saturday morning in June at the Diggs Boat Landing at the Pee Dee River with several other brave souls, including my friend and younger sister, and Lincoln Sadler as the trip leader, a biologist with the North Carolina Wildlife Resources Commission. About twelve of us total wade out into the rocky river, and finally get to the first large rock with a catfish hole underneath. After we find the hole and cover the opening with our feet, Lincoln calls me over with a big grin on his face. I was first up. His instructions were simple: take a deep breath, swim down and reach your arm in as far as you can while waving your hand around, once you feel the catfish bite (and you'll know when it does), grab it with both hands and hold on tight. Easy enough, right? Well, the catfish was a bit stubborn. After everyone had tried a few times, Lincoln went in for a final time. After being down for about ten seconds he began thrashing about under water, and pulled up a 40 pound blue catfish. Two other guys and I jump onto the fish with Lincoln to secure it. It was such a rush and the fish was much more powerful than I imagined. Now I'm hooked! I will definitely be going noodlin' again this summer, and I encourage anyone who has never done it before to give it a try.

-- Meredith Grady  
Wildlife Specialist  
USDA APHIS NC Wildlife Services



# In your chapter...

## Become a Mentor Today!

The NC TWS Mentoring Program aims to pair wildlife professionals with college and university students interested in learning more about careers in wildlife ecology, management, and conservation. A successful mentoring relationship will benefit students in providing them insight to the profession and hands on experience. Mentors will benefit by gaining service experience and leadership as a role model as well as assistance on wildlife conservation projects.

The mentoring program is designed to be beneficial and convenient for both parties. The frequency of contact and duration of the relationship is determined jointly by the mentor and mentee, but contact is required a minimum of once per semester. Mentors are matched with students based on location and interests.

Please consider serving as a mentor, and email Lara Pacifici ([lara\\_pacifici@ncsu.edu](mailto:lara_pacifici@ncsu.edu)) for a link to the online mentor application form to begin the process of being matched with a student. Thank you for considering this opportunity.

Sincerely,  
Lara Pacifici  
NC TWS Mentoring Committee Chair



Brendan Sherrill of the NC WRC helps NC State student April Boggs remove a bird from a mist net.



# In your chapter...

## **Another Successful NCTWS Professional Development Workshop**

The North Carolina Chapter of the Wildlife Society's professional development committee organized a Bird Identification and Habitat Management Workshop in Raleigh on June 25, 2014. The workshop was led by Jimmy Dodson, the piedmont region biologist with NC DENR Division of Parks and Recreation, and a total of four attendees participated. We started the morning off at Carl A. Schenck Memorial Forest and ended at the North Carolina Museum of Natural Science Prairie Ridge Ecostation. Both locations offered a wide range of habitat types that varied in successional stages. Thanks to the habitat variation in the locations and Jimmy's expert birding skills, we were able to observe a wide variety of avian species. A total of 42 birds were identified throughout the workshop, with 31 species at the Schenck Forest and 11 additional species at Prairie Ridge. The avian species ranged from great crested flycatchers and brown-headed nuthatches to green herons and orchard orioles. We even stumbled upon a couple reptiles, including a young copperhead and a large black rat snake! We were able to catch the black rat snake and get a closer look thanks to Kevin Durso's quick reaction, a NC museum employee and workshop attendee.

-- *Meredith Grady*  
Wildlife Specialist  
USDA APHIS NC Wildlife Services





## Chapter Vision Statement

To guide and promote the conservation and management of wildlife resources throughout North Carolina



Visit us online at:  
[www.nctws.org](http://www.nctws.org)

