



*North Carolina  
Wildlife Resources Commission*



# Wildlife Diversity Program Quarterly Update

First Quarter 2016



Cold-stunned turtles on Cape Lookout (Photo by Matthew Godfrey)



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January-March 2016  
N.C. Wildlife Resources Commission



## Waterbird Surveys Conducted Along North Carolina Coast

Biologists, technicians and volunteers with the Wildlife Commission's Waterbird Investigations and Management Project surveyed 33 sites along the North Carolina coast, from Oregon Inlet to Bird Island and the South Carolina border, as part of the collaborative Atlantic Coast Piping Plover Winter Census.

This census is conducted every five years and is coordinated by the U.S. Fish and Wildlife Service. Wintering habitat from North Carolina south to the Caribbean and Bahamas was surveyed between Jan. 18 and Feb. 1. Partners who participate in the census include state and federal agencies, Audubon and other non-governmental organizations, and citizen volunteers. Despite the fact that the weather in North Carolina during the census was cold and windy, all sites were surveyed.

Preliminary census data showed 16 wintering piping plovers, two Wilson's plovers, two red knots and eight American oystercatchers on Wildlife Commission islands, shoals in the Pamlico

Sound and inlet areas of the southern coast. Data from National Seashores and Audubon North Carolina islands are not compiled yet. More piping plovers were detected in North Carolina this year than during the last census in 2011. This increase could be attributed to snow and very cold temperatures along the North Carolina coast in 2011, which may have pushed the birds farther south or made detecting them more difficult.



Roosting piping plover on Cora June Island (Photo by Annika Andersson)

## Gopher Frog Surveys on Sandhills Game Land

During the first quarter of 2016, Wildlife Commission biologists conducted intense survey and monitoring efforts for the gopher frog on the Sandhills Game Land in Scotland County. Staff conducted egg mass surveys by wading and/or canoeing ponds, collecting several eggs from each mass for an ongoing genetics study. Biologists detected three isolated wetlands where gopher frogs

bred in February and March. In 17 Frog Pond, they detected 36 egg masses, which is a typical number when compared to surveys conducted in 2009 and 2010. They found one egg mass in an isolated wetland where gopher frogs have not been known to breed since 2003.

The most interesting find was gopher frogs using a pond that was constructed several years ago spe-

cifically to augment breeding habitat for this species. Biologists also found four egg masses in this new pond, indicating at least a small number of frogs are beginning to find and use the wetland for breeding.

They are continuing to monitor wetlands using automated frog call recorders and will analyze that information in the upcoming months.



17 Frog Pond: Supporting the best population of gopher frogs on the Sandhills Game Land.



Gopher frog



Gopher frog egg mass (Photo by Jeff Hall)

## Loggerhead Shrike Surveys Conducted in Coastal Plain

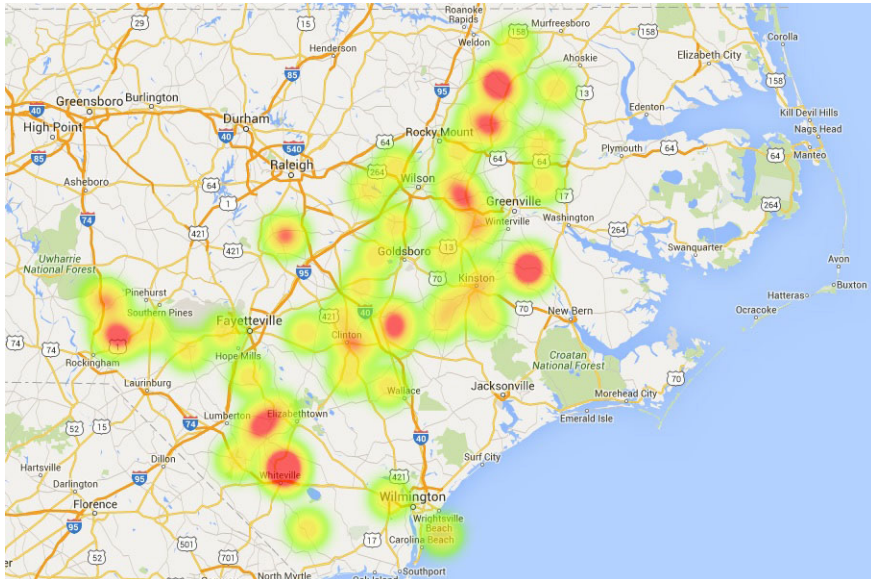
Wildlife Diversity Program staff conducted a comprehensive road-side survey of wintering loggerhead shrikes throughout much of the Coastal Plain in early 2016.

The loggerhead shrike is an 8-inch songbird with an appetite and hunting skills more reminiscent of a raptor. Since 1966, the loggerhead shrike has experienced a 79 percent population decline – the seventh largest for a North American landbird.

Loggerheads breed and winter in North Carolina, pro-

viding biologists with a unique opportunity to study them year-round. Despite the bird’s proclivity for using conspicuous perches along roads, detectability for this species was quite low. Nonetheless, results from the survey still establish a baseline to compare with future surveys.

Surveys are currently planned for the breeding season, as is territory mapping, which will further biologists’ understanding of loggerhead shrike habitat and space use requirements in North Carolina.



Heat map of loggerhead shrike detections from winter surveys, February-March 2016.



Loggerhead shrike (Photo by John Carpenter)



On Jan. 7, 2016, over 450 cold-stunned sea turtles were recorded along inshore beaches of Cape Lookout National Seashore. (Photo by Matthew Godfrey) See page 5 for details.

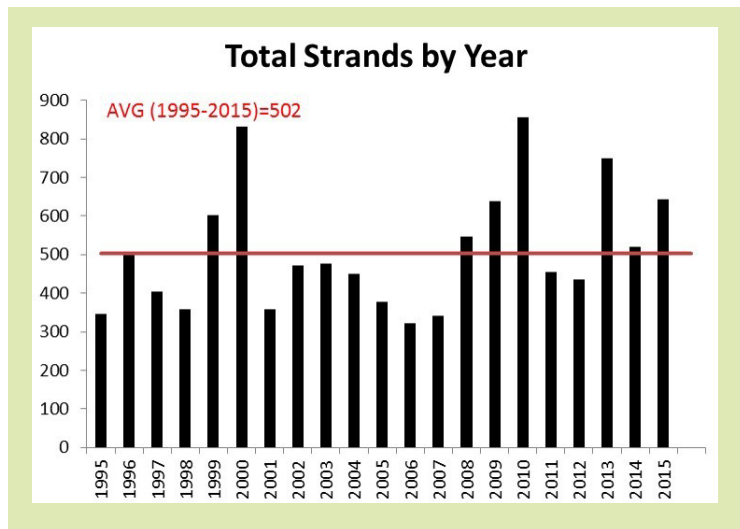
## Sea Turtle Stranding Record Set This Winter

The N.C. Stranding and Salvage Network, coordinated by Wildlife Commission biologists, responds to sea turtle strandings in North Carolina throughout the year. During the winter, sea turtles can become cold-stunned (hypothermic) if they are exposed to water that is colder than 50 degrees Fahrenheit. In North Carolina, this situation is most likely to occur in late fall and winter, in shallow estuarine waters of Albemarle, Pamlico and Core sounds. These waters are commonly used as foraging grounds by juvenile sea turtles.

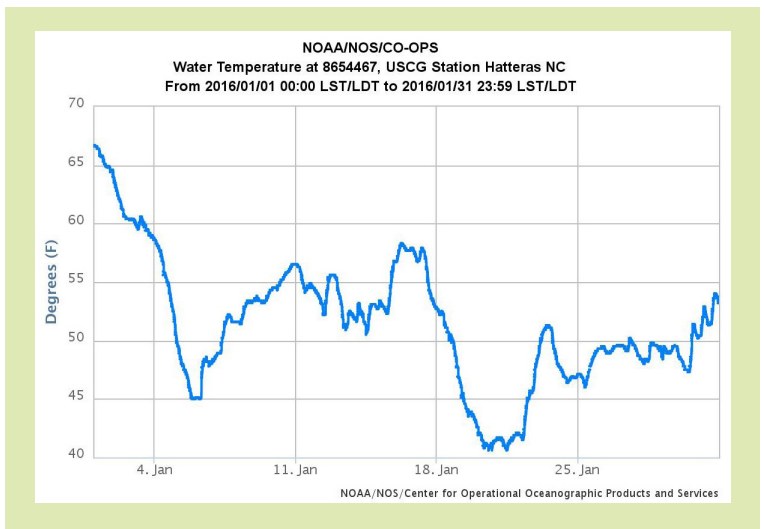
Due to a record warm December, coastal water temperatures remained above 60 degrees Fahrenheit and many sea turtles remained in the state’s estuarine waters into 2016. A rapid drop in temperatures in January led to nearly 2,000 cold-stunned sea turtles washing up on soundside beaches in January.

Around 1,200 of these cold-stunned turtles were alive

and 95 percent were juvenile green sea turtles. To date, 1,050 have been released successfully. This level of cold-stunning has not been recorded previously in North Carolina. The successful response to this large number of cold-stunned sea turtles was dependent on extraordinary efforts by many partners and cooperators of the N.C. Sea Turtle Project. They include the U.S. Coast Guard, National Park Service, National Marine Fisheries Service, the U.S. Fish and Wildlife Service, NCSU College of Veterinary Medicine, N.C. Aquariums and Sea Turtle Assistance and Rehabilitation Center, as well as volunteers with the Northern Outerbanks Endangered Sea Turtle Network, the Karen Beasley Sea Turtle Rescue and Rehabilitation Center, the Departments of Natural Resources of South Carolina and Georgia, the Florida Fish and Wildlife Commission, and many others.



Inshore water temperatures dropped more than 20 degrees Fahrenheit during the first 5 days of January, leading to mass cold-stunning of sea turtles, beginning on Jan. 5.



The average number of sea turtle strandings per year in North Carolina is 502. With nearly 2,000 sea turtles found just in the first month of 2016, the year is already much above average.

## Emerging Amphibian Diseases and Pathogens Update

Western region amphibian conservation projects continue to rely on in-state and regional partnerships to address objectives outlined in the [N.C. Wildlife Action Plan](#). Recently, at the forefront of these collaborations is a growing concern for emerging amphibian diseases and fungal or viral pathogens, such as such as *Ranavirus* and *Batrachochytrium dendrobatidis* (*Bd*), a type of “chytrid” fungus contributing to global amphibian declines.

A newly identified strain of chytrid fungus that only affects salamanders, *Batrachochytrium salamandrivorans*, or *Bsal*, is the latest, and perhaps one of the greatest, threats to salamanders in modern times. Unlike *Bd*, which may be widespread in the United States and is known to occur in several North Carolina “Species of Greatest Conservation Need like Eastern hellbender, green salamander and spotted salamander to name a few, *Bsal* does not appear to be in North America yet. However, *Bsal* does appear to be making its way westward across Europe, primarily through the pet trade.

Wildlife Diversity Program staff are participating in regional task force coordination efforts, and state-wide amphibian disease surveillance

projects are now underway. In winter 2016, staff helped coordinate plans with researchers at the University of Tennessee’s Institute of Agriculture for a multi-year lab project investigating *Bsal* susceptibility for six of our native North Carolina salamanders, including state endangered green salamanders, state special concern four-toed salamanders, and state significantly rare seepage salamanders.

Understanding the risk and potential transmission pathways of *Bsal* to individual species or genera will help us gauge threats and target future conservation actions for North Carolina’s salamanders.



State special concern four-toed salamander is one of six North Carolina species to be included in a multi-year study to examine susceptibility to the newly identified salamander pathogen, *Batrachochytrium salamandrivorans* (*Bsal*). (Photo by Jonathan Mays)



Staff collects a skin swab from state special concern Eastern hellbender to study prevalence of *Batrachochytrium dendrobatidis* (*Bd*), a widespread fungal pathogen contributing to global amphibian declines. (Photo by John Groves)

## Carolina Northern Flying Squirrel Update

Winter flying squirrel work included annual surveys and partner coordination. Wildlife Diversity Program staff checked 266 flying squirrel boxes and captured 48 Carolina northern flying squirrels in the Black Mountains, Great Balsams and Unicoi Mountains.

Following years of low captures and re-captures, staff stopped ear-tagging this season. Staff continues to collect data on body mass, hind foot length, sex, reproductive condition and age. Flying squirrel age can be determined by examining the shape and coloring of tail. This and more capture and handling tips were updated in the Wildlife Commission’s Procedure Manual for Carolina Northern Flying Squirrels.

Partners representing three universities and four government agencies from North Carolina, Tennessee and Virginia met in January to discuss surveys and research. University of Memphis researchers reported the capture of a Carolina northern flying squirrel on the Tennessee side of Unaka Mountain. Biologists suspected the occurrence of the species on Unaka Mountain based on positive acoustic and camera data collected by Wildlife Commission staff in 2012.

This capture confirms their suspicions and is significant in that it indicates the occurrence of the species outside of its known range of nine high-elevation massifs in the Southern Appalachians.



Aging northern flying squirrels by tail shape and color (from left to right): juvenile, sub-adult, and adult. (Juvenile photo by Leo Miranda)



Wildlife Diversity Program Technicians Sam McCoy and Clifton Avery work up a northern flying squirrel in Graham County. (Photo by Christine Kelly)



Mountain Wildlife Diversity Program Technician Clifton Avery returns a northern flying squirrel to its box. (Photo by Christine Kelly)

## Mountain Birds Update

Area birders are drawn to Green River in the spring for its breeding season specialties, such as Kentucky warbler and red-headed woodpecker. But there are birding opportunities throughout the year on this 14,331-acre game land in Polk and Henderson counties. Wildlife Commission staff is developing a four-season bird checklist for Green River Game Land that will be available for birders to download from the Wildlife Commission's website, much like the checklist for Sandy Mush Game Land.

Breeding season bird data are plentiful, but observations for the remainder of the year are scarce. In January, staff began collecting winter bird data and logging observations into eBird. Staff found that the game land supports an abundance of wintering sparrows, including the hard-to-find Lincoln's, savannah and fox sparrows.

To promote birding opportunities on the game land, staff hosted the first morning bird walk in March. Ten birders explored the mosaic of fields and thickets on the Walcott tract. Their future excursions will help staff develop this four-season checklist.

Peregrine falcons are once again nesting on Devil's Courthouse after a 5-year absence. In March, a pair of falcons was in residence and tending a nest in the historic eyrie. Last autumn, the mountain bird biologist met with National Park Service resource managers to provide technical guidance aimed at reducing disturbance from Blue



Peregrine falcon (Photo by Wikipedia)

Ridge Parkway visitors who venture too close to the nest. This winter, Parkway staff posted new signs along the trail to the top of the cliff, conducted an outreach campaign via social media, and stepped up enforcement patrols.



A new sign greets Blue Ridge Parkway visitors at Devil's Courthouse. (Photo by Chris Kelly)



Birders explore the Walcott Tract on Green River Game Land in March. (Photo by Chris Kelly)



## Winter Bat Surveys Yield Mixed Results

Wildlife Commission biologists recently completed winter bat surveys at select caves and mines across the North Carolina mountains. Since the discovery of white-nose syndrome (WNS), a deadly fungal disease affecting North American bats, Wildlife Commission staff has increased winter bat survey efforts to understand effects of the disease in the state.

Data from winter bat surveys have been used to track the spread of WNS and to detect population changes associated with the disease. Winter bat counts have dramatically declined in recent years, especially for the little brown bat, northern long-eared

bat, and tri-colored bat. These steep declines may be starting to level off at some sites, according to 2016 counts.

Three sites in which declines have been documented annually since 2012 showed numbers consistent with 2015 counts. Although somewhat stable, these counts are only a small fraction of the counts that occurred before the arrival of WNS.

A cave that had not yet shown declining counts when last surveyed yielded somewhat optimistic results with a count of 67 little brown bats – the highest count of this species in any hibernaculum known in the state. This count is down 74 percent from

the pre-WNS average, but this is not as steep a decline as has been seen at other sites. Tri-colored bat counts at this site were more troubling with a 91 percent decline from the pre-WNS average. Northern long-eared bats were not seen at any site for the second consecutive year.

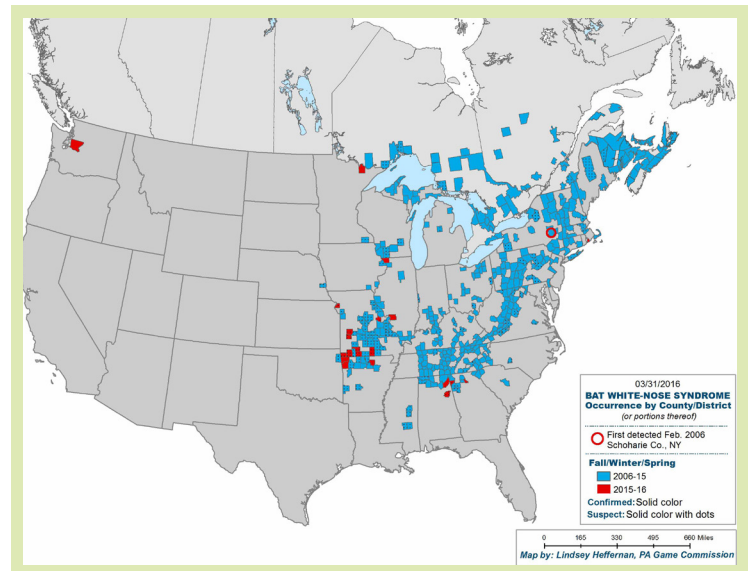
WNS continues to spread with recent confirmations in Minnesota and Washington. Until treatments become available, population monitoring and disease surveillance will continue as Wildlife Commission biologists gear up for summer bat mistnetting, roost monitoring and acoustic monitoring projects.



A tri-colored bat showing visible signs of white-nose syndrome.



Little brown bats found during a 2016 winter bat survey.



Distribution of bat white-nose syndrome occurrence across North America. (Map by: Lindsey Heffernan, Pennsylvania Game Commission)

## Wildlife Diversity Program Activities in the Piedmont

### Hibernacula Surveys

Wildlife Diversity Program staff conducted hibernacula surveys at two mines in the Piedmont. Biologists observed and swabbed 22 tri-colored bats. All of the bats looked healthy. Biologists sent samples from the bats and surrounding substrate to be tested for *Pseudogymnoascus destructans* (Pd). The mine shaft in Stanly county tested positive for the fungus last year, so they are anxious to see if another

positive result occurs. In the future, they hope to get a larger response from private landowners with accessible mines so that they can broaden sampling efforts and find more bats.

**Endangered Species Listing Process.** Wildlife Commission staff completed a study report for the General Assembly regarding the endangered species listing process in North Carolina. The final report was submitted on March 1.

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