



North Carolina Wildlife Resources Commission



Wildlife Diversity Program Quarterly Update

April - June 2014



Green salamander by Austin Patton



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Wildlife Commission Begins Research on Bachman's Sparrows

The N.C. Wildlife Resources Commission and N.C. State University are collaborating on a research project to learn more about Bachman's sparrows. These small birds are considered one of the best indicators of a healthy longleaf pine ecosystem because of their dependence on a diverse plant community associated with exposure to frequent fire.

Biologists want to examine the birds' reproductive success, annual survivorship, territory size, habitat requirements and genetic diversity on both public and private lands.

The nests of most ground-

nesting birds, including Bachman's sparrows, are extremely difficult to find due to their concealment in thick vegetation and the adults' cryptic behaviors.

From early April to late June, biologists discovered 17 nests that will be used to determine the breeding potential in the Coastal Plain. In addition, they captured 76 males, two females and 22 nestlings and banded each bird with a unique color band combination to assist in field identification and estimates of annual survivorship. They plan to continue this research in 2015.



Bachman's Sparrow

John Carpenter



Bachman's Sparrow Nestlings

John Carpenter



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N.C. Wildlife Resources Commission



N.C. Sea Turtle Nest Protection Project Includes Daily Patrols of Sea Turtle Nests

Between May and August, more than 1,000 volunteers and cooperators conduct daily patrols for sea turtle nests along the coast of North Carolina. They also protect nests during incubation and collect information on hatching success after the eggs finish their development. This work is part of the North Carolina Sea Turtle Nest Protection Project, which is coordinated by the Wildlife Commission's Wildlife Diversity Program staff.

The first sea turtle nest laid in the 2014 nesting season was a loggerhead nest found on South Core Banks in early May. Although loggerheads lay the most nests along North Carolina beaches, leatherbacks, green turtles and Kemp's ridleys lay small numbers of nests. Most Kemp's ridleys lay their eggs in the Gulf of Mexico, along beaches spanning in Mexico and Texas. In mid-June this year, a Kemp's ridley was observed nesting on Shackleford Banks, which

was only the 10th known nest laid by this species in North Carolina. Although most species of sea turtles nest at night, Kemp's ridleys are known for nesting during the day.



Kemp's ridley nesting on Shackleford Banks

Uwharrie Bats Test Negative for White-Nose Syndrome

Samples taken this past winter from areas in the Uwharries with hibernating bats, also called hibernacula, came back negative for white-nose syndrome this past quarter. White-nose syndrome is a fungal infection that has been devastating hibernating bat populations across most of the East Coast.

Over the winter, Wildlife Diversity Program staff surveyed and sampled six potential hibernacula in the Uwharries, which is located in the central Piedmont. Of these, four hibernacula had tricolored bats hibernating, and one hibernaculum also had big brown bats. Both of these species are being impacted by white-nose syndrome in the mountains and in other eastern states. It is encouraging to find healthy bat populations, albeit in small numbers, hibernating in the Uwharries. The most bats found in one site were eight individuals. Monitoring of these populations will continue and, biologists hope, expand next winter.



No evidence of white-nose syndrome was found in bats in the Uwharries.



Colonial-Nesting Waterbird Surveys Conducted this Summer

Every three years, the Waterbirds Investigations and Management Program leads a survey of colonial-nesting waterbirds along the North Carolina coast. Colonial waterbird surveys began in the mid-1970s, providing valuable, long-term data that show trends in nesting population

sizes and distribution of colonies.

Wildlife Commission staff and volunteers survey sandy and marsh islands, beaches and forested swamps by land, boat and airplane from early May through June. Wading birds, brown pelicans and large gulls, such as great black-headed

and herring gulls begin nesting in early May, while terns, black skimmers and laughing gulls begin nesting in late-May through June.

Some nesting colonies can be very large, with great densities of birds. One of the royal and sandwich tern colonies had approximately 8,780 nests this year. However, the gull-billed tern population has been declining over time, and preliminary 2014 survey results have not identified large colonies.

Data collected by the Wildlife Commission and partners such as the National Park Service, U.S. Fish and Wildlife Service, U.S. Marine Corps, N.C. Audubon, N.C. State Parks, N.C. National Estuarine Reserves, Bald Head Island Foundation and Figure Eight Island, will be entered into the Colonial Waterbird Online Database.

The Wildlife Commission will maintain the database.

These data are used to focus conservation and management efforts on declining populations and habitats that need enhancement. Because these species are migratory, the Wildlife Commission shares these data with partners along the Atlantic Flyway to estimate flyway-wide populations trends and identify conservation concerns.



Matthew Abraham

Gull-billed terns nested successfully on Tump Island, a small island in Pamlico Sound. It was a crowded colony as they shared space with common terns, Forster's terns, black skimmers, and a pair of American oystercatchers.



Brown pelicans on nest

Jeff Marcus



Black skimmer

USFWS



Pilot Project “Partners for Green Growth” Unveiled

The Wildlife Commission embarked on a pilot project, “Partners for Green Growth,” which offers qualifying local and council of governments financial assistance through state wildlife grants to consider wildlife conservation measures in land-use planning projects. Three qualifying proposals were selected from seven submissions.

The Wildlife Commission will partner with Jackson County, Harnett County and the Cape Fear Council of Governments over the next year as they complete land-use planning projects that will lead to less impacts to sensitive wildlife habitats through land use, transportation and development plans and policies.



New Populations of Rare Salamanders Documented in Rutherford County

In the spring, Wildlife Diversity Program staff, volunteers and partners documented three new populations of salamander species in the Hickory Nut Gorge, which is located in Rutherford County.

These rare species are N.C. Wildlife Action Plan priority species and include the state endangered green salamander, whose population in the gorge is disjunct from that of the Blue Ridge to the southwest. A population of crevice salamanders, a state special concern species endemic to the gorge, also was found.

Two of the new populations are on private land, and the third is on county-owned land. For green salamanders the discoveries extend the known species range in North Carolina more than one mile to the northeast.

Along with inventory surveys for these salamanders, staff continued to collect tissue for a collaborative research project with Warren Wilson College in Asheville. The project investigates species systematics and analyzes meta-population dynamics across the landscape.

A status assessment for the green salamander throughout its range will begin this year, as the U.S. Fish and Wildlife Service considers the species for federal listing.



Crevice salamander

Lori Williams



Green salamander

Austin Patton

Wildlife Commission Collaborates with Davidson College on eDNA Study with Bog Turtles

The Wildlife Commission has teamed up with Davidson College on a study to test the utility of using environmental DNA, or e-DNA, to determine the presence of bog turtles in wetlands in North Carolina.

All organisms shed genetic material into the environment around them through feces, mucus, hair and skin. This genetic material is called e-DNA. Just like forensic scientists can use DNA to prove presence at a crime scene, eDNA can be used to detect the presence of aquatic organisms in their habitat.

So far, this detection method has been used only to test for organisms

that inhabit purely aquatic ecosystems, such as fish, frogs and salamanders. Commission biologists currently are using this method to detect the presence of hellbenders in streams and rivers in western North Carolina.

The advantage of using this type of technique is that it can provide a rapid, cost-effective and standardized way to determine species distribution and, sometimes, relative abundance. For small, rare, secretive and other species that are difficult to detect, eDNA provides a practical alternative for aquatic inventory and monitoring programs.

However, the Southern Appalachian Bog ecosystem that bog turtles inhabit is a muddy environment and the eDNA technique has never been used in water with so much sediment. Given how secretive bog turtles are and how difficult they are to find, the potential benefits of being able to use this technique are immense and worth attempting to work through any challenges presented by muddy samples.

In June, Wildlife Commission staff collected multiple water samples from several locations in North Carolina with known bog turtle populations. They are in the process of testing each water sample for the presence of bog turtle DNA.

The primary objective of the study is to establish a detailed water-sampling protocol that will allow biologists to test the utility of eDNA for determining the presence of bog turtles. Once eDNA protocols are refined, additional objectives will include comparing the effectiveness of detecting bog turtles using eDNA versus other detection methods and determining how that varies with turtle population density.

Biologists hope this study will produce information about the utility of this technique, protocols for sampling in this type of environment, and recommendations about efficiency levels of different survey methods for this secretive species.



Gabrielle Graeter

Dr. Leigh Anne Harden from Davidson College collects water samples from a bog turtle population as part of a collaborative eDNA study with the Wildlife Commission.



Kelly Clampitt

The bog turtle is an elusive species and is very difficult to find via traditional methods. Biologists hope eDNA will prove useful as a more efficient tool for detecting this species.



Bird Surveys Conducted in Western North Carolina

Wildlife Diversity Program staff conducted several bird surveys on game lands and areas throughout western North Carolina this spring. They conducted point count surveys at Green River, Pond Mountain and Cold Mountain game lands and focal species surveys in other areas.

Staff focused its annual cerulean warbler monitoring efforts on core populations in Polk and Graham counties, documenting 10 cerulean warblers across 24 survey points.

Golden-winged warbler surveys included both long-term monitoring of timber units in the southwestern mountains and of Golden-winged Warbler Atlas Protocol points plus surveys of the Roan Highlands and Cranberry area.

Additional focal species surveys documented whip-poor-wills and red-headed woodpeckers in recently altered forest habitat at Green River Game Land, a successful bald eagle nest on Needmore Game Land, seven

successful peregrine falcon nests, and active barn owl and American kestrel nests on Sandy Mush Game Land.

Staff detected Northern saw-whet owls in the Balsam Mountains, Roan Mountain, Black Mountains and Alarka Laurel spruce bog, but all detections were incidental and not in response to a protocol employing an audio lure.

Staff also contributed to monitoring of U.S. Nightjar Survey Network routes in the mountains.



Chris Kelly

A red-headed woodpecker pair inhabiting pine-oak woodland at Green River Game Land



Chris Kelly

A black-throated blue warbler observed during spring bird surveys



Chris Kelly

Technicians Kevin Parker and Charles Lawson conduct a survey for golden-winged warblers above Stecoah Valley in Graham County.

Wildlife Commission and State Parks Staff Find a Flathead Catfish in Lake Waccamaw



Bill Johnstone

Informational signs like the one above are posted at Lake Waccamaw to remind visitors the dangers of invasive species and what they can do to prevent the spread of invasive species.

Wildlife Commission staff, with the assistance of N.C. State Park personnel, collected a large flathead catfish in Lake Waccamaw, a unique Carolina bay lake located in Columbus County that supports 14 species of rare fish and mollusks.

They collected the catfish close to the Commission's boat access area. This is the first official record of this invasive, non-native species in the lake. The flathead catfish is a predatory fish that likely will have negative effects on sunfish populations and possibly other fishes, such as madtoms.

This finding adds to the list of invasive species that are already in Lake Waccamaw, including hydrilla and lyngbya, a black mat algae.

Efforts are underway to treat the hydrilla and options for the treatment of lyngbya are being discussed. Also, outreach programs are underway at Lake Waccamaw State Park to inform the public about the dangers of invasive species and informational signs have been posted at the boat ramps.

Cape Fear Shiner Augmentation Project in Rocky River Continues

The Cape Fear shiner augmentation project continued this spring as biologists with the Wildlife Commission and the U.S. Fish and Wildlife Service collected 61 Cape Fear shiners from the Deep River in Chatham County and they released the fish into the Rocky River.

Biologists moved the shiners to augment the small population of Cape Fear shiners in the Rocky River above a hydropower dam — an area that is currently designated critical habitat by the Service.

A subset of the collected fish was fin-clipped for later genetic analyses of the population. Monitoring efforts suggest that the translocated individuals are surviving in the Rocky River.



Wildlife Commission Biologists Ryan Heise, Brena Jones and Todd Ewing, along with U.S. Fish and Wildlife Biologist Sarah McRae, collect Cape Fear shiners from the Deep River to relocate into the Rocky River.

Biologists Propagate Robust Redhorse for Release in Fall

Wildlife Commission biologists collected 19 robust redhorse in the Pee Dee River this spring. This number was three individuals shy of the record of 22, set in 2008.

This is a collaborative sampling effort with the [Robust Redhorse Conservation Committee](#). Staff continued to collect a few younger individuals this spring and four of the six smaller fish were previously

untagged. The improvement in recruitment, although small, suggests that the increases in minimum flows from Blewett Falls Dam are having positive effects on the population of robust redhorse.

In addition, the Wildlife Commission has begun a long-term augmentation program for this very small population of robust redhorse downstream of Blewett Falls Dam.

Staff spawned three females this year, which far exceeded expectations.

The fertilized eggs were brought to Wildlife Commission and S.C. Department of Natural Resources hatcheries for rearing. Both hatcheries had excellent hatching rates and the fish currently are being grown in outdoor ponds.

Staff plans to stock these fish downstream of Blewett Falls Dam this fall.



Doug Hinshaw and Rick Bradford from McKinney Lake State Fish Hatchery show off robust redhorse eggs collected for propagation (top left). Robust redhorse fry swim in a tank at McKinney Lake State Fish Hatchery (above) before being released into one of the hatchery ponds to grow.



North Carolina Partners in Amphibian and Reptile Conservation (NCPARC) Workshops, training and meetings

Workshops and presentations given by Wildlife Diversity Program staff included topics such as amphibians and reptiles, survey techniques and pond restoration. These sites and groups included the N.C. Museum

Jeff Hall



Barking treefrog found during training workshop at Carolina Beach State Park

of Natural Sciences Teacher Trek in Croatan National Forest, Cool Springs Environmental Education Center, N.C. State University Roots & Shoots Club. Other workshops included a training session at Carolina Beach State Park, the N.C. Herpetological Society spring meeting and the N.C. Forestry Association's Teachers Tour in Croatan National Forest.

The NCPARC biologist participated in a thesis committee meeting for a student at East Carolina University studying larval development of amphibians. Additionally, the NCPARC biologist attended a meeting of the



Board of Directors for the Herpetological Education in Rural Places and Spaces (HERP) group.

One NCPARC working group meeting also took place during the second quarter – the Education & Outreach working group. The NCPARC biologist also met with private landowners at the Wysocking Nature Preserve in Hyde County to give management recommendations for reptiles and amphibians.



Support the Wildlife Diversity Program and Help Keep North Carolina Wild!



Whether you hunt, fish, watch, or just appreciate wildlife, you can help conserve North Carolina's wildlife and their habitats and keep North Carolina wild for future generations to enjoy. To make a direct donation for conservation of North Carolina's wildlife, send this form, along with a check or money order payable to the N.C. Wildlife Resources Commission, to: N.C. Wildlife Resources Commission, 1702 Mail Service Center, Raleigh, N.C. 27699-1702. Or pay by credit card.  

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North Carolina Partners in Amphibian and Reptile Conservation (NCPARC) Surveys and research

Gopher frog survey work continued into early April, primarily with egg mass and larval surveys on Croatan National Forest, Holly Shelter Game Land and Camp Lejeune. Wildlife Diversity Program staff participated in property reviews and on-site visits prior to ongoing efforts by The Nature Conservancy to acquire a tract of land in Brunswick County that is adjacent to the Swain Tract.

This area is one of only a handful of known breeding areas of gopher frogs in the state and the purchase of this additional 441 acres will con-

tinue to provide long-term conservation help for this imperiled frog.

The N.C. Calling Amphibian Survey Program (CASP) wrapped up its 8th field season at the end of June. Volunteers from across the state continue to make this effort possible. Analyses from field work will be available in November.

Staff and volunteers continued various other long-term amphibian and reptile surveys and monitoring at several locations, including Croatan National Forest, Holly Shelter Game Land, Camp Lejeune and several



private landowner properties. Priority species documented from these efforts included: oak toad, four-toed salamander, eastern chicken turtle, spotted turtle, eastern box turtle, northern scarlet snake, southern hognose snake, black swamp snake, glossy crayfish snake, eastern ribbon snake, timber rattlesnake, corn snake and eastern kingsnake.



During recent surveys in eastern North Carolina, Wildlife Diversity Program staff found several priority species, including (clockwise from top left) a chicken turtle, a four-toed salamander, a spotted turtle and a northern scarlet snake. All photos by Jeff Hall





THE WILDLIFE DIVERSITY PROGRAM



The Wildlife Diversity Program was established in North Carolina in 1983 to prevent nongame species from becoming endangered by maintaining viable, self-sustaining populations of all native wildlife, with an emphasis on species in decline.

More than 1,000 nongame animals call North Carolina home. Many nongame species, including mammals, reptiles, birds, amphibians, snails, mussels, and fish, are common and can be seen or heard in your own backyard. Other nongame animals, such as bald eagles and peregrine falcons, were, at one time, considered endangered, but now soar high in the sky, thanks to the work conducted by wildlife diversity biologists.

The men and women who work for the Wildlife Diversity Program are dedicated to conserving and promoting nongame wildlife and their habitats through a variety of survey and monitoring programs, species management, and habitat conservation or restoration projects. These programs and projects target nongame animals and their habitats, but game species — such as deer, turkey, mountain trout, and black bass — also benefit because they share many of these same habitats.

You can learn more about the many projects and programs conducted by wildlife diversity personnel on behalf of nongame and endangered wildlife by visiting www.ncwildlife.org/conserving.



Help a Small Raptor in a Big Way

Purchase our American Kestrel T-shirt and show your support of wildlife diversity in North Carolina. This 100% cotton T-shirt features North Carolina's smallest raptor flying across the Wildlife Commission's official logo on the front and a colorful assortment of wildlife and fish buttons on the back. All proceeds from the Wildlife Commission's sales of these American Kestrel shirts benefit the Commission's Wildlife Diversity Program.

Fabrication of the shirts was paid entirely by Neuse Sport Shop in Kinston, which also agreed to donate the proceeds from the shirt sales to the Commission's Wildlife Diversity Program. Give a hand to wildlife and purchase a T-shirt today. Visit N.C. Wild Store, www.ncwildstore.com.



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