



North Carolina Wildlife Resources Commission



Wildlife Diversity Program Quarterly Update

Third Quarter 2015



Red-cockaded woodpecker field work (Photo by Allison Medford)



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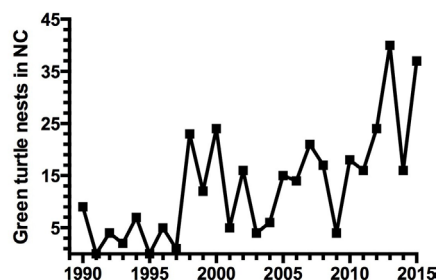
Green Sea Turtle Nests Increase in 2015

Volunteers and cooperators with the N.C. Sea Turtle Monitoring and Protection Project, which is coordinated by the Wildlife Commission, continued their efforts to keep data on all incubating sea turtle eggs found on North Carolina beaches during the nesting and hatching season, which lasts from May through November.

In 2015, volunteers and cooperators documented 37 green sea turtle nests in North Carolina. This is the second highest total on record. In 2013, 40 green sea turtle nests were documented in the state. Based on data from the last three decades, it appears that there has been an increase in numbers

of green sea turtle nests in North Carolina, which mirrors an increase in nest numbers seen in Florida and other nesting locations in the north-west Atlantic.

This increase in numbers may be an early sign of population recovery for the federally protected marine species. Although juvenile green sea turtle are commonly found in North Carolina's coastal and estuarine waters, green sea turtle nests are far less common than those laid by loggerhead sea turtles. Generally, green turtle nests make up less than 5 percent of the total number of nests laid by sea turtles in the state.



Numbers of green sea turtle nests recorded on NC beaches since 1990.



Green sea turtle hatchling rescued from the bottom of a nest, where it was stuck following the emergence of more than 100 other hatchlings from the same nest.



July - September 2015
N.C. Wildlife Resources Commission





Summertime Waterbird Surveys Yield Information on Bird Movements

Although summer 2015 was not a year during which Wildlife Commission staff surveyed all colonial nesting colonies within the Coastal Region, they were busy with partners who banded most royal tern, sandwich tern and brown pelican chicks on the state’s dredge-material island. The banding project is one of the oldest in the United States and is led by Dr. John Weske.

Staff is gaining much information about the birds’ survival, longevity and site selection. For example, brown pelicans abandoned their long-time, large colony on Island MN and moved to Parnell Island where few pelicans had nested previously.

Biologists suspect impacts from mammalian predators precipitated this move, but they will need to study the situation in 2016 to be sure. Further, near Ocracoke Inlet, most brown pelicans left Beacon Island and moved to Big Foot Island. Beacon Island, a natural marsh island, is eroding quickly and is subject to much washover from extreme high tides and storms. It is important to maintain and manage multiple islands for nesting birds, and in 2015, biologists observed the benefits of dredge-material islands directly.

In addition to the Wildlife Commission, partners who volunteered their time to band thousands of terns and

hundreds of pelicans included the U.S. Fish and Wildlife Service, National Park Service, N.C. Audubon, N.C. State University and citizen stewards.



Banding tern and pelican chicks



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NORTH CAROLINA

North Carolina Partners in Amphibian and Reptile Conservation (NCPARC) News

Workshops, training and meetings

Staff presented information on Bsal, Bd, Ranavirus, Snake Fungal Disease, and other reptile and amphibian pathogens at an animal health workshop, held in Kinston. Approximately 50 professionals attended the workshop, which was sponsored by the North Carolina chapter of The Wildlife Society. Bsal, which is short for a long scien-

tific name, is an emerging threat for native salamanders is a new chytrid fungus. Similar to Bd, which primarily affects frogs, Bsal appears to significantly impact certain species of salamanders from other countries. Bsal has not yet been detected in the United States. Several Wildlife Commission staff attended a workshop in Asheville that included partners from many different institutions and organizations to begin to put a plan together to combat this potentially devastating fungus. Read [more information](#) about this emerging issue.



North Carolina Partners in Amphibian and Reptile Conservation (NCPARC) News

Surveys and research

Efforts for head-starting populations of gopher frogs began in the late winter, and continued through the spring, summer, and into the fall. Gopher Frogs were head-started from three different populations: Sandhills and Holly Shelter game lands, and Military Ocean Terminal at Sunny Point (MOTSU). These populations have experienced significant declines in recent years.

Portions of egg masses were collected from the Holly Shelter and MOTSU populations and head-started with help from the N.C. Aquarium at Fort Fisher. Head-start work for the Sandhills population was conducted at the Sandhills Wildlife Commission depot.

Staff surveyed a privately owned tract of land in Granville County for priority species, and for consideration into the Wildlife Conservation Land Program. Staff saw one adult timber rattlesnake adjacent to the property. They discussed management activities at the site that would benefit reptiles and amphibians.

Staff visited rookery sites of timber rattlesnakes in the Uwharries National Forest. Staff found two litters

among known gestational sites. Staff also began fall upland snake surveys by road-cruising areas in the Coastal Plain and Sandhills, as well as continuing to monitor coverboard sites. Species of Greatest Conservation Need (SGCN) detected included: timber rattlesnake, pigmy rattlesnake, and mole kingsnake. Staff also found a roadkilled specimen of mimic glass lizard — a species that is very rare and seldom encountered.



Timber rattlesnake neonate found while road-cruising
(Photo by Jeff Hall)



Pigmy rattlesnake neonate found while road-cruising
(Photo by Jeff Hall)



North Carolina Partners in Amphibian and Reptile Conservation (NCPARC) News

Surveys and research



Tanks used for gopher frog head-starting work (Photo by Jeff Hall)



Wildlife Technician Nathan Shepard checks for gopher frog metamorphs in minnow trap in head-starting tank (Photo by Jeff Hall)



Gopher frog metamorph from head-starting efforts (Photo by Jeff Hall)

Gopher Frog Head-Starting Efforts Continue

During 2015, Wildlife Commission staff began a project to augment the only population of gopher frogs known to occur on the Sandhills Game Land in Scotland County. This population appeared to be at risk of extirpation because of multiple years of drought and other factors related to how isolated the pond is from other populations.

Staff hopes rearing gopher frog juveniles, also known as head-starting, will increase the adult population and therefore increase the stability of this population. Staff raised gopher frogs collected in March, using nine cattle tanks stocked with 675 tadpoles. Tadpoles began metamorphosing into juvenile frogs in June and 210 juveniles were collected as of the end of September. Staff releases all frogs at the pond where eggs were collected.

Biologists mark juveniles by injecting a small amount of fluorescent elastomer into each frog's legs so that they can determine the success of these head-starting efforts af-

ter frogs reach adulthood and return to the pond to breed, which can take several years.

This method of head-starting can be used in the future to continue to augment populations or re-introduce this species to wetlands that have since been restored.



Juvenile gopher frogs reared from eggs on the Sandhills Game Land (Photo by Nathan Shepard)

Staff Conduct Riparian Breeding Bird Surveys

Wildlife Diversity Program staff has completed the third full season of its Riparian Breeding Bird Survey (RBSS) program. In 2015, the effort was divided into several river basins — Cape Fear, Lumber, Neuse, Pamlico, Roanoke, Albemarle-Chowan and Pee Dee. Staff completed surveys on 25 river segments along 213 river miles. Staff also completed four routes more than once and will use the information to estimate species' detectability and produce better estimates of occupancy.

To date, 896 miles of river have been surveyed using this protocol. The main goal is to improve staff understanding of the distribution and relative abundance of several Neotropical migratory bird species, including Swainson's warbler, wood thrush, yellow-billed cuckoo and Northern parula, which have reportedly decreased at an annual average rate of 1.5 percent in North Carolina over the past four decades.



Northern parula (Photo by John Carpenter)

Yellow Lance Augmentation Conducted in the Tar River Basin

In July, Wildlife Diversity Program staff released more than 250 yellow lances, split between two stocking locations, in Sandy Creek, a tributary of the Tar River. The yellow lance is a state-endangered species that is also under review by the U.S. Fish & Wildlife Service to gain federal listing status.

The mussels were propagated by the Wildlife Commission's Conservation Aquaculture Center and by the N.C. State University Aquatic Epidemiology and Conservation Laboratory. This marks the first effort by Commission staff to augment populations of this species. Biologists plan to survey the stocking locations this year and again one year after the augmentation date to assess the survival and growth of the stocked mussels.

Efforts to continue propagating and stocking the yellow lance will continue in upcoming years.



Aquatic Wildlife Diversity Biologist Tom Fox holds up a yellow lance, a state-endangered mussel, stocked into Sandy Creek this summer.

Staff Conducts Surveys of Tar River Spineymussels Stocked in June

Wildlife Diversity Program staff completed surveys of the stocking locations where the Tar River spineymussels were released in June. Biologists snorkeled along transect lines in search of the small and elusive mussels. More than 20 percent of the mussels stocked in Little Fishing Creek were recovered and were alive at the time of the survey. In reality, many more mussels were alive; however, they were buried in the substrate and surveyors were not able to see them.

Given the small size of the mussels stocked and the typical low detection rate associated with mussel surveys, the results are encouraging and suggest that future augmentation efforts will be successful in establishing a viable population. Staff will repeat surveys of the same sites one year after the stocking date to get an estimate of survival and determine how much each mussel has grown.



Priority Fish Surveys Conducted in Dan River Basin

Wildlife Diversity Program staff conducted surveys for priority fish species in the Dan River basin in North Carolina in 2015.

Priority fishes in the Dan River basin include the federally endangered Roanoke logperch, the state-endangered rusty-side sucker, a federal-listing petition species, orangefin madtom, the state-endangered and lower-priority bigeye jumprock and cutlip minnow.

Staff observed priority species at 21 of 34 sites they surveyed. Staff found Roanoke logperch (n=24) at three sites in the Dan, Mayo and

Smith rivers, with a relatively large population in the Mayo River below



Rustyside sucker

Washington Dam (n=19). Staff took fin clips from all individuals. Staff found orangefin madtom (n=10) at four sites in the upper Dan River; a

single rustyside sucker in the Little Dan River, which is a species that had not been found in North Carolina in 23 years. Bigeye jumprock (n=68) were fairly abundant and found at 10 sites. Cutlip minnows (n=44) were found at seven sites in the Upper Dan River and a new record was found in the Smith River.

Additionally, staff observed numerous populations of riverweed darters and Roanoke hogsuckers — two species that are endemic to the Dan River basin. Staff expects to continue this monitoring project in 2016.

Cape Fear Shiner Augmentation Project Continues

In 2013 and 2014, staff with the Wildlife Commission and the U.S. Fish and Wildlife Service translocated 350 Cape Fear shiners into the Rocky River above the Woody's Mill Hydropower Dam, an area which is currently designated Critical Habitat. In three monitoring efforts so far, biologists have collected single individuals in the augmentation reach of the river, but in their latest sampling in September, they collected eight individuals. These results are encouraging and staff is hopeful that catch rates will continue to increase in this reach of the Rocky River.

Robust Redhorse Augmentation Project Continues

The Wildlife Commission, along with partners in the Robust Redhorse Conservation Committee, had a prolific year of robust redhorse production. On Nov. 4, staff stocked over 22,000 individuals into the Pee Dee River, which is a substantial increase from last year's total of 13,000 fish. Fish raised at the Dennis Wildlife Center in South Carolina were stocked at Cheraw, S.C., and fish raised at the Wildlife Commission's McKinney Lake Fish Hatchery in Hoffman, were stocked at Hitchcock Creek Shoal.

In 2014, Wildlife Commission staff and staff with S.C. Department of Natural Resources began propagating Pee Dee River robust redhorse in order to augment this very small population. They collect very few ripe females each spring, so the hatchery program will continue for many years, crossing different individuals to maintain the genetic diversity that exists in the wild. In addition, staff held back roughly 1,500 fish at each hatchery for further grow-out and to stock next fall. Visit www.robustredhorse.com, annual reports, for more information.

Salamander Surveys Conducted in Western North Carolina

Wildlife Diversity Program staff continued to inventory, monitor and research Western Region-priority amphibians, often in partnership with other agencies, non-governmental organizations and universities. An example of a collaborative project started this quarter involved teaming up with advanced undergraduate interns selected for the University of North Carolina's Institute for the Environment at Highlands Biological Station (HBS). In August, staff began mentoring two students on a dwarf black-bellied salamander distribution and habitat ecology study.

The dwarf black-bellied salamander is a rare species and a Species of Greatest Conservation Need in the N.C. Wildlife Action Plan, as well as a Species of Conservation Concern for the U.S. Forest Service. This salamander is known from only two headwater systems in North Carolina within the Tennessee and Savannah River basins. However, biologists suspect that it occupies

additional headwater tributaries in the Savannah River basin, including Chattooga River, Horsepasture River, and possibly Whitewater River in Macon, Jackson and Transylvania counties. Staff worked with the students to design a field project that includes systematically conducting visual encounter surveys in those upper headwater tributaries in search of new locations for the species.

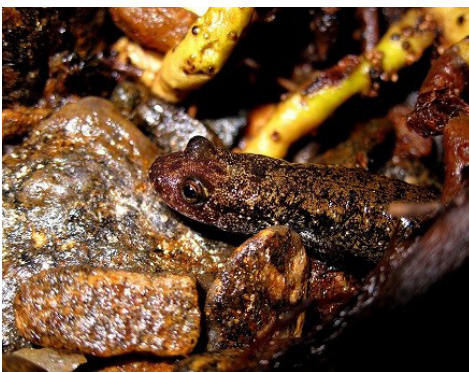
Differentiating in the field between rare dwarf black-bellied salamanders and common black-bellied salamanders can be challenging due to their similar appearance. To confirm field identification, staff and students are collecting small tissue samples from the tail tips of all suspected dwarf black-bellied salamanders for subsequent genetic analysis, and are thoroughly documenting specimens through photographs and body length measurements. In addition, with the advancement of environmental DNA (e-DNA) technology, biologists are collecting stream

water samples that will be tested later for the presence of both dwarf black-bellied salamander and common black-bellied salamander DNA.

Finally, they are characterizing stream habitat and rock cover where possible dwarf black-bellied salamanders are found as well as documenting species richness and relative abundance overall for the salamander community in these sites. Results of this project will help meet N.C. Wildlife Action Plan objectives for this species and help inform U.S. Forest Service management decisions within the Nantahala National Forest.



Typical headwater stream and rocky shoal habitat for semi-aquatic salamanders like the rare dwarf black-bellied salamander and the more widespread common black-bellied salamander (Photo by Lori Williams)



Dwarf black-bellied salamander (Photo by Lori Williams)



Measuring snout-to-vent length of a rare dwarf black-bellied salamander (Photo by Lori Williams)



Dwarf black-bellied salamander (Photo by Lori Williams)

Bat Monitoring Wraps Up with the First Annual Green River Bat Blitz

Wildlife Commission biologists completed annual surveys of bats in western North Carolina. These efforts included mist net capture surveys, roost monitoring and the N.C. Bat Acoustic Monitoring Program. Notable captures from the season included gray bats and an Indiana bat, both federally endangered species, as well as a Northern long-eared bat, a federally threatened species. Conspicuously absent from capture and roost surveys was the little brown bat, a species vulnerable to the fungal disease, white-nose syndrome (WNS). Biologists did not count one

little brown bat, a species that once totaled in the hundreds at one roost alone, at any roost site nor did they capture any during mist net surveys this summer. Biologists survey bats to monitor populations of little brown bats and other species affected by WNS. The most common bat species they observed or captured this season were big brown bats and Eastern red bats.

Wildlife Commission biologists also participated in the Southeastern Bat Diversity Network's National Bat Blitz, held in late August. The National Bat Blitz encouraged biologists

to conduct synchronous mist net surveys to sample bats nationwide and invited volunteers eager to learn about bats. One of the North Carolina events was held at Green River Game Land and was attended by bat enthusiast volunteers. This site was chosen partly because mist netting for bats occurred on the game land in 1990. The highlight of the blitz was the capture of two hoary bats. Although not a rare species, hoary bats can be difficult to encounter during mist net surveys. The Green River Bat Blitz will continue annually as a participating site in the National Bat Blitz.



Hoary bat



Gray bat



Wildlife Commission technician, Emile Travis, releases the only Northern long-eared bat captured this season.



Northern Flying Squirrel Conservation

The Southern Appalachian Spruce Restoration Initiative (SASRI) accomplished numerous tasks during this period and closed out the third quarter by planting red spruce seedlings in the Unicoi Mountains. While not a true restoration project, this effort is a conservation measure to benefit Carolina northern flying squirrels. Spruce seedlings are intended to supplant dying eastern hemlock trees in order to maintain a mixed conifer-hardwood forest for northern flying squirrels.

Wildlife Diversity Program staff, Haywood Community College Forestry and Wildlife students, and War-

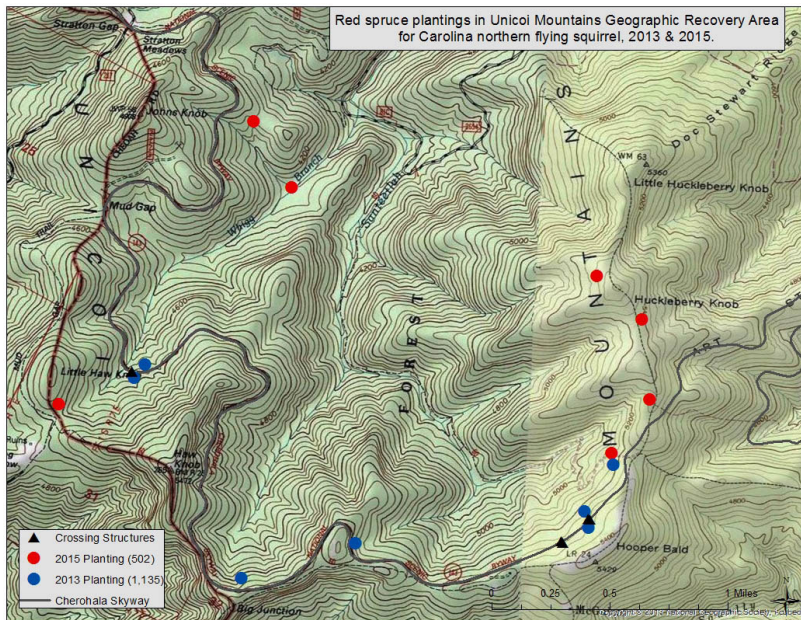
ren Wilson College students planted 502 seedlings grown by the Southern Highlands Reserve.

The next critical step of this project is to “release” the seedlings from the hardwood canopy to allow more light. The U.S. Forest Service silviculturist toured the 2013 planting site with staff to discuss the strategy. Spruce planting in the Unicoi Mountains is part of the broader U.S. Forest Service’s Upper Santeetlah Forest Management Project, which includes prescribed burning and creation of early successional forest across 17 shelterwood units.

The draft Southern Blue Ridge

Spruce Restoration Plan, due for release in December 2015, was reviewed by the SASRI Steering Committee this quarter. Staff has worked closely with the U.S. Fish and Wildlife Service, the Tennessee chapter of The Nature Conservancy, and the North Carolina Natural Heritage Program to develop spatial datasets for the Plan that can be used in a GIS to identify areas that are prime candidates for restoration.

Finally, with several mountain ranges experiencing another bumper crop of red spruce and Fraser fir cones, SASRI partners mobilized a cone collection effort.



Red spruce plantings in Unicoi Mountains (Graphic by Chris Kelly)



Carolina northern flying squirrel (Photo by Melissa McGaw)



Halley McVeigh, a senior at Warren Wilson College, plants a red spruce seedling. (Photo by Chris Kelly)



Western Region Birds Update

The Appalachian Mountains Joint Venture’s Technical Committee convened at Mountain Lake, Va., in August. The committee collaborates on communication, planning, and conservation delivery to ensure the long-term sustainability of native bird populations in the Appalachians. The spotlight of the meeting was a discussion of “whole life cycle conservation.” AMJV partners learned of opportunities to promote conservation of Appalachian birds on their wintering grounds in Central and South America through efforts such as the International Wood Thrush Conservation Alliance and Partners in Flight’s “Conservation

Business Plans.” For example, the Conservation Business Plan being written for the Central and South American Highlands encompasses overwintering grounds for North Carolina’s golden-winged and cerulean warblers.

The Southeast Golden-winged Warbler Partners is a small, focused group that meets twice annually to discuss needs and results of surveys, management and research. At the September meeting, the Western Wildlife Diversity Supervisor described a master golden-winged warbler database that is being developed so that all records in the Southeast are documented.



Golden-winged warbler (Photo by USFWS)

Biologists Conduct Red-Cockaded Woodpecker Field Work

Wildlife Commission biologists worked with the U.S. Fish and Wildlife Service to relocate a cluster of federally listed red-cockaded woodpeckers from private lands to Jones Lake State Park. Biologists actively monitor RCW habitat and clusters, ensuring that private landowners have the support they need to manage their properties for the benefit of RCWs, even if that sometimes means moving the birds off the property completely.



Wildlife Diversity Supervisor David Allen climbs a longleaf pine to inspect an RCW cavity. (Photo Allison Medford)



A red-cockaded woodpecker in net (Photo Allison Medford)



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 species 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.



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