NORTH CAROLINA WILDLIFE RESOURCES COMMISSION

WILDLIFE DIVERSITY PROGRAM QUARTERLY REPORT

November–December 2024

NORTH CAROLINA Wildlife RESOURCES COMMISSION

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On the cover clockwise from top left: The NCWRC reintroduces the Roanoke Logperch, an endangered species, to the upper Mayo River in Rockingham County. Photo by Jonathon Gruenke. NCWRC Coastal Landbird Biologist, John Carpenter, installs artificial cavity boxes. Black Skimmers fly across the water. Photo by Adobestock. An Eastern tiger salamander. photo by Aubrey Greene.
Contents from left: Post-Helene, the fir canopy is gone around this concrete pad, leaving this ecosystem under full sunlight. Photo by Chris Kelly. Volunteer, Frank Wells, prepares to release a Black Skimmer chick after banding. Photo by Carmen Johnson. A Mimic Glass Lizard. Photo by Nathan Vaughan.

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The North Carolina Wildlife Resources Commission's (NCWRC) Wildlife Diversity (WD) Program is housed within the agency's Inland Fisheries (Aquatic Wildlife Diversity) and Wildlife Management divisions. Program responsibilities principally include surveys, research and other projects for nongame and endangered wildlife species. Nongame species are animals without an open hunting, fishing or trapping season.

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Monitoring Species of Greatest Conservation Need

by Aubrey Greene, Wildlife Diversity Biologist/Herpetologist

October 2024 started off with surveys for SGCN snakes on Sandhills Game Lands, particularly Southern Hognose Snakes, as this is a period of peak activity for this species. Hatchling snakes (and the occasional adult) are on the move during this time and often have to cross roads. Their small size and slow movement make them especially vulnerable to being hit in the process, so high road mortality is a major concern for this State Threatened snake. We continue to monitor this species to ensure the population isn't declining over time.

During this quarter we also deployed acoustic recording devices (aka frogloggers) at 11 wetlands across the Sandhills to monitor winter-breeding SGCN frogs and toads like the Carolina Gopher Frog and Ornate Chorus Frog. These devices are set to record for 5 minutes every hour for 6 hours, beginning at sunset each night and will remain in the field until the end of April. That means we will have over 70 hours of recordings for each wetland!

Fall rains often trigger salamanders to begin their trek across the landscape to their breeding wetlands, which triggers us to survey roads on rainy nights and start monitoring wetlands for egg masses. One warm rainy night in November was particularly active for amphibians (15 species documented) in Moore and Lee counties, including State Threatened Eastern Tiger Salamanders. Egg mass surveys on Sandhills Game Lands in late December even revealed Tiger Salamanders have already started laying eggs in wetlands still full from late summer rains. However, more winter rains will be needed to ensure those wetlands stay full long enough for Tiger Salamanders and other SGCN amphibian species to have a successful breeding season.


AUBREY GREENE/NCWRC


AUBREY GREENE/NCWRC

Top: Young Southern Hognose Snake found in Sandhills Game Land. Bottom: A Tiger Salamander egg mass found in Sandhills Game Land.

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Initial assessments of Hurricane Helene on Bog Turtle habitat and wetlands in Western NC

by Gabrielle Graeter, Western Region Herpetologist, and Rosie Ronca, Western Region Technician

The southern lineage of bog turtles (*Glyptemys muhlenbergii)* is federally threatened (S/A) and state threatened in North Carolina. This species occurs in mountain bog habitats in the Southern Appalachian Mountains from Virginia to northern Georgia. At the end of September 2024, Tropical Storm Helene hit western North Carolina, causing historic flooding, many landslides, and thousands of downed trees. It was an unprecedented disaster in terms of both human and ecological impacts.

After the storm, North Carolina Wildlife Resources Commission (NCWRC) Wildlife Diversity staff visited bogs to assess impacts to habitat. Staff developed a standardized questionnaire on Survey123 to quantify overall impact, flood damage, fallen trees, sediment/rock/debris deposits, erosion, and deceased wildlife. In October and November, our team assessed 24 sites across six counties, with a focus on bogs within the areas hit hardest by the storm. Eight of the bogs had impacts across at least 50% of the bog. The main effects we documented were sediment and rock deposits, scoured areas from erosion, and extreme flooding. Of the five best bog turtle populations in NC, the habitat at four of them was significantly impacted by the storm. This damage to bog turtle habitat is a huge setback for conservation of this species.

We are using the information from the assessment survey to create a plan for addressing damages from the storm at these bogs, including immediate needs before turtles are active in spring 2025, and longer-term restoration needs. This planning will be done in partnership with other conservation groups, including the U.S. Fish and Wildlife Service, The Nature Conservancy, the Amphibian and Reptile Conservancy, as well as private landowners. In the short term, we have a number of bogs with sediment, rocks, and other debris deposited on top of the wetland that needs to be removed by mid-March. In the longer term, we have identified areas that need to be stabilized due to scouring and erosion, adjacent stream banks that need attention, and restoration of hydrology. Beginning in Spring 2025, when turtles are active again, we will begin assessing the effects of this storm on the most-impacted populations through various survey methods, including trapping and active searches.


ROSIE RONCA/NCWRC

Top: NCWRC Commission Biologist Gabrielle Graeter walks through an Alleghany Co. bog to assess damages from Hurricane Helene. Debris deposits from flood water flow are evident against fallen logs. Bottom: Evidence of sediment deposits and flood flow in the priority nesting habitat at one of the more stable bog turtle population sites in NC. This sediment will need to be removed due to the amount and location, and potential impacts to bog turtle behaviors and activities in spring 2025.

Data Collection for an Eastern Hellbender Nesting Ecology Study

by Lori Williams, Western Region Conservation Biologist focusing on Amphibians

The Eastern Hellbender *(Cryptobranchus a. alleganiensis)*, a harmless, crayfish-eating, giant, aquatic salamander and bio-indicator of water quality in Appalachia, is a North Carolina state special concern species and now, a proposed federally endangered species. In early September 2024 (and blissfully, pre-Hurricane Helene) for hellbender breeding season work, Wildlife Diversity staff, partners, and volunteers targeted specific sites and streams in the upper French Broad River drainage as part of our collaborative research with Clemson University. The project focuses on hellbender nesting ecology and is led by Wildlife Diversity technician and Ph.D. student, Ben Dalton.

One objective was to examine characteristics of hellbender nest rocks that may contribute to nest success, so we focused on finding "den master" hellbenders, or the resident, adult males who were "posturing" and in defensive mode at the entrance of their nest rock. We then made return visits with an underwater borescope (camera) to try to detect eggs. We carefully extracted animals for workup, including giving them a unique identifier like a microchip, called a PIT-tag (Passive Integrated Transponder), that we can use to keep track of individuals in the future. Not disturbing the valuable nest rocks was a top priority, so surveyors honed their skills with a novel field method to coax or "noodle" animals out into the open so they could be netted, worked up, and quickly returned. For the breeding season in total, 8 sites in 5 streams were surveyed by 26 people. The number of confirmed nests was 26, which was the most ever recorded in a single season! Additionally, 29 posturing, den master males never did have a nest, and another 62 hellbenders were seen roaming around, out and about, on the stream bottom (juveniles, sub-adults, and females).

[Sadly, as we are all too aware, on September 27th, 2024, the world changed in western North Carolina, for people, for animals, for landscapes, and for many of our beloved mountain streams. We have yet to begin to assess the real damage Hurricane Helene caused for things like river habitat and hellbender populations, and will start that work in 2025. However, in the weeks and months since the storm, we have received many reports of a few to several dozen to over 100 dead hellbenders documented in the worst flooded areas, so the outlook may be dire for some streams. Will we see another successful hellbender breeding season like we did in 2024? Maybe…in some places that escaped the brunt of the floods…. but the special places that remain for this species are all the more rare, precious, and in need of protection today than they were a year ago.]

Top: NCWRC Wildlife Diversity technicians, Ben Dalton and Clifton Avery, observing a den master male Eastern Hellbender under a nest rock. Bottom: A happy finish to the day when a very large, very old (~30+ year old) female Eastern Hellbender was found (pictured in measuring board); Ben Dalton (NCWRC, foreground), Ivanna Knox (U.S. Forest Service, left), Lori Williams (NCWRC, center), Clifton Avery (NCWRC, right).

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Hurricane Recovery in the Roan Highlands

by Chris Kelly, Western Region Bird and Carolina Northern Flying Squirrel Biologist

Roan Mountain and its unique inhabitants took a direct hit from Hurricane Helene, and natural resource managers are worried. In early December 2024, forest managers, wildlife biologists, and botanists from the U.S. Forest Service, North Carolina Wildlife Resources Commission, Southern Appalachian Highlands Conservancy, and Appalachian Trail Conservancy visited Roan Mountain to assess the damage. Winds of up to 100 miles per hour had leveled patches of forest, especially on ridge tops and east and south-facing slopes. Unfortunately, high quality older Fraser fir stands toppled in the storm, while younger firs sustained less damage. Numerous federally and state listed animal and plant species inhabit the cool, moist, dark conifer forests at Roan Mountain. The extensive canopy loss could change the face of Roan for centuries. Blowdown areas will be prone to soil desiccation and wildfire. Shaded, mossy rock outcrops inhabited by the endangered spruce-fir moss spider now sit under direct sunlight. Carolina northern flying squirrels lost den trees as well as a reliable food source: the truffles that grow symbiotically with the roots of Roan's conifer trees.

Just how much is too much for an already imperiled species? It is hard to measure, but biologists can conduct bioacoustic or radio-telemetry surveys of the flying squirrels, bioacoustic surveys for northern saw-whet owls, and rock outcrop surveys for the spiders. Initially, the team is focused on abating short-term risk of intense wildfire in this ecosystem. Unlike oak forests, spruce-fir forests are not adapted to fire. In fact, intense fires can inhibit germination of conifer seeds. Managers may enact burn bans around developed and undeveloped camp sites and the Appalachian Trail, construct fire control lines, and manually remove some of the fallen timber. The local land trust, Southern Appalachian Highlands Conservancy, is looking into wildfire risk reduction options on its land holdings and on private lands situated downslope of Roan's conifer forests. Where possible, some fallen trees may be limbed to bring tree trunks into contact with the forest floor, creating coarse woody debris and moist microhabitat for salamanders, small mammals, and invertebrates. Biologists will post artificial dens (wood boxes) for flying squirrels and eventually plant conifer seedlings. Recovery from Helene will be the primary topic of the annual Roan Mountain Stewardship Committee meeting in Asheville in January 2025. Though it will take an enormous amount of work and require novel solutions, partners are committed to the recovery of Roan Mountain's unique forests.

Top: Extensive blowdown in the spruce-fir forest along the trail to Roan High Bluff. Middle: Satellite imagery of Roan Mountain, October 2023. Note extensive conifer forest south/southwest of the "loop road", this image is oriented north. Bottom: Satellite imagery of Roan Mountain, October 2024, post-Helene. Note the patchwork pattern of blowdowns in the conifer forest south/southwest of the "loop road".

Assessing Impacts to Gray Bat Roosts from Hurricane Helene

by Katherine Etchison, Western Region Mammalogist

North Carolina Wildlife Resources Commission (NCWRC) biologists conducted surveys to assess impacts to bats from Hurricane Helene throughout November 2024. Determining effects to bats will be a long-term effort due to the scope and severity of the storm. The first objective in this effort was to visit bridge and culvert roosts used by the federally endangered gray bat to determine how high floodwaters rose. It is unknown whether bats would have left before the storm, so this first step helps us understand what level of risk bats faced if they were present at the time of the storm.

Forty bridges and 8 culverts are known to be used by gray bats throughout western NC. Assessments were made at 39 bridge roosts and all 8 culvert roosts. Two of the three most important bridge roosts, which support between 1,000 and 1,500 gray bats each, were completely flooded from Helene. Additionally, 7 of the 8 culvert roosts were flooded, including a culvert that supports over 200 gray bats. Out of all 47 roosts surveyed, 24 roosts completely flooded, 4 roosts experienced severe flooding but we could not determine if the water reached the roosting area, and 19 roosts did not flood to the area where bats roosted. Based on previous counts near the time of the storm, there could have been as many as 1,200–1,600 gray bats present in roosts that fully flooded during Helene. We will survey gray bat roosts in summer 2025 to compare with pre-Helene counts to better understand impacts to gray bats.

Wildlife Diversity Technician, Joey Weber, surveys a gray bat bridge roost after Hurricane Helene.

KATHERINE ETCHISON/NCWRC

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Learning and Connecting

by Jeff Hall, NC Partners in Amphibian and Reptile Conservation

During this final quarter of 2024, two North Carolina Wildlife Resources Commission (NCWRC) staff held a one-day workshop on herp field techniques for graduate students in the Environmental Sciences field from UNC Wilmington. Participants met at Carolina Beach State Park to learn about minnow and turtle trapping, the use of artificial cover boards, drift fencing, and other sampling methods to increase the probability of detecting various herp species. Many species were found during the workshop with highlights including a juvenile American Alligator, 3 feet in length, a Striped Mud Turtle, several Eastern Newts, and a Barking Treefrog.

MONICA ROTHER

Above: biologist Jeff Hall demonstrating trapping techniques for the herp field techniques workshop for UNCW at Carolina Beach State Park.

Later in the quarter, staff had the opportunity to visit several private lands in Hyde County with conservation targets of the Spotted Salamander, Wood Frog, and Carolina Pigmy Rattlesnake. Several rattlesnakes were seen during visits and although none of the target amphibians were found, staff deployed three automated audio recording units (ARUs). These ARUs will run through the first quarter of 2025 and will hopefully record vocalizations of Wood Frogs in the area.

Finally, NCWRC and Natural Heritage staff met at Halyburton Park in Wilmington to provide wetland management and restoration recommendations to park staff. Several ephemeral wetlands are on-site there and have the potential to support SGCN amphibians and reptiles including Oak Toads and Eastern Chicken Turtles.

From the Field

by Jeff Hall, NC Partners in Amphibian and Reptile Conservation

Focused on upland SGCN snake surveys, staff conducted road-cruising and visual encounter surveys across many counties in the Sandhills and Coastal Plain. Species recorded included the Southern Hognose Snake, Mole Kingsnake, Mimic Glass Lizard, Timber Rattlesnake, and Carolina Pigmy Rattlesnake.

JEFF HALL NCWRC

Above: An adult Carolina Pigmy Rattlesnake from Hyde County

To prepare for the upcoming breeding season and this year's Gopher Frog head-starting efforts, WRC staff and partners from the NC Aquariums and NCSU CMAST participated in collection of plant substrate materials for use in the mesocosms where tadpoles will hatch and develop before release. Three different facilities will assist with head-starting the Gopher Frog from Coastal Plain populations, including the NC Aquarium at Fort Fisher, NCSU CMAST, and the USFWS National Fish Hatchery in Edenton.

Road-cruising during rainy nights in November 2024 yielded a new location for the state threatened Mabee's Salamander in Bladen County as well as sightings from a known population in Pitt County.

During December 2024, staff deployed 18 ARUs at target wetlands across the Coastal Plain. Primary species of interest include the Gopher Frog, Ornate Chorus Frog, Southern Chorus Frog, and coastal populations of Wood Frog. Analyses of these recordings will take place during summer and fall 2025.

Growing Red-cockaded Woodpeckers, one cluster at a time

by John Carpenter, Coastal Landbird Biologist

On a clear November morning, I headed towards Craven County in search of the Bern Preserve, a 923-acre tract owned by the NC Coastal Land Trust (NCCLT) and situated between the northern boundary of the Croatan National Forest and Brice's Creek. Several of the preserve's dense pine stands were recently thinned in the hopes of enticing Red-cockaded Woodpeckers (RCW)—a federally threatened species that lives in family groups called clusters—to excavate a cavity and eventually nest inside. However, it can take a woodpecker several years to do that laborious work manually, so NCCLT staff requested help from North Carolina Wildlife Resources Commission (NCWRC) biologists to install artificial cavity boxes. This process, which usually takes an hour or two, involves using Swedish tree ladders and a chainsaw to cut a rectangular slab out of the tree where the cavity box will be inserted. If all goes as planned, an interested woodpecker could move into its brand-new home that very night!

At a designated meeting spot, I was greeted by former NCWRC eastern Wildlife Diversity Program supervisor David Allen (inventor of the RCW insert cavity technique), several NCCLT staff, and a surprisingly large assortment of volunteers and other folks all curious to learn about our plans for the day. Dave and I quickly found suitable pine trees—ideally mature Longleaf Pines—and scaled the 20-ft. climbing ladders to begin our work. We eventually carved out three new cavities, and as if staged for our audience, a vocal RCW suddenly appeared in the stand! It avoided us and our loud equipment, but its presence was a hopeful sign that it or other RCWs might return to inspect our work once we were gone.

The Croatan National Forest, along with Holly Shelter Game Land and Marine Corps Base Camp Lejeune, collectively represent the Coastal North Carolina Primary Core RCW Recovery Population, which has yet to reach its desired size as outlined in the federal RCW Recovery Plan. The proximity of these populations to the coast and its increased hurricane activity, coupled with continued human population growth and associated development in southeastern NC, represent additional obstacles to reaching the specific goals for recovery.

We will coordinate with NCCLT to access the Bern Preserve again during the next breeding season to determine if any RCWs did officially accept our artificial housing offer as their permanent residence. We are anxious to continue to work with other partners across the state to expedite RCW growth and recovery.

Left: An artificial cavity box ready to be installed. Center: The finished product - an inserted artificial cavity box camouflaged to look as natural as possible. Right: Retired eastern Wildlife Diversity Program supervisor, Dave Allen, high on a pine tree, carving out a cavity with a chainsaw.

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Resighting bird bands provides valuable data on Black Skimmers

by Carmen Johnson and Kacy Cook, Coastal Waterbird Biologists

October is a great time to see Black Skimmers along the North Carolina coast. Large flocks, often numbering in the hundreds, are spotted loafing and foraging on beaches, especially near inlets. North Carolina provides important habitat for these birds during nesting and migration, but the number of skimmer nests documented in the state has declined in recent years, prompting the North Carolina Wildlife Resources Commission (NCWRC) to uplist the species from a species of Special Concern to State Threatened.

To learn more about the birds and why their numbers have been declining, biologists along the Atlantic and Gulf Coasts have begun banding some of the chicks that hatch each year. In summer 2024, staff from Audubon NC banded 225 chicks in the state including 40 at one of NCWRC's Waterbird Islands as part of the effort.

Once the chicks could fly, they began dispersing to new sites. Then, as part of autumn migration surveys, biologists and volunteers used binoculars and scopes to examine the legs of each skimmer hoping to spot one of the plastic bands, known as a field readable band, with an alphanumeric code on it. Any bands identified are reported to the USGS Bird Banding Lab where the data are compiled and shared with biologists. The color of a Black Skimmer's band indicates where the bird was banded. Orange bands are from Massachusetts, yellow are from New York, blue is New Jersey, white is Virginia, green bands mean the bird was banded in Florida, and red is from Texas. Birds banded in North Carolina have black bands with white text and are the most commonly resighted in the state. The next time you are at the beach keep an eye out for banded birds. You can report them to reportband.gov, where you'll learn when and where the bird was banded, as well as receive a certificate of appreciation for providing data that help biologists understand the dispersal, migration, and survival of this species.

CARMEN JOHNSON/NCWRC

Above: A National Park Service staff member carefully holds a young Black Skimmer chick as Audubon NC biologist, Lindsay Addison, fits a black field readable band around the bird's leg. Below: Unbanded Black Skimmers stand in a puddle during a recent survey.

JONATHON GRUENKE/NCWRC

Cold Winter Temperatures Lead to Major Cold-Stunning Season

by Matthew Godfrey, Sea Turtle Biologist, and Sarah Finn, Coastal Diversity Biologist and NC Sea Turtle Stranding Network Coordinator

The North Carolina Sea Turtle Stranding and Salvage Network, coordinated by North Carolina Wildlife Resources Commission (NCWRC) biologists, monitors sea turtle strandings along North Carolina's coast year-round. During winter months, sea turtles can strand in mass numbers due to a condition called cold-stunning. Cold-stunning occurs when water temperatures fall below 10°C (50° F), causing sea turtles to become lethargic and unable to swim. We see some level of cold-stunning in North Carolina every winter, primarily in shallow sounds where the water temperature can drop dramatically with seasonal cold snaps. Though we can predict with some certainty when we may begin to see cold stunned turtles (based on monitoring inshore water temperatures), we can never really know how many turtles we may see in a given season. Winter 2024/2025 has produced the second-highest cold-stun season on record in North Carolina, with nearly 900 live sea turtles recovered since 1 December 2024. NCWRC biologists work closely with rehabilitation partners, including NC Aquariums, the Karen Beasley Sea Turtle Rescue and Rehabilitation Center, and the NC Museum of Natural Sciences, to facilitate successful rehabilitation of live-stranded sea turtles. Thanks to their hard work, by the end of December, more than 600 turtles had already been released to warmer waters in partnership with the U.S. Coast Guard and private charter boats.

Top right:Juvenile green turtles wash in due to cold-stunning on Barden Beach, Cape Lookout National Seashore. Right: A Cape Hatteras National Seashore ranger collects live cold-stunned sea turtles on Ocracoke.

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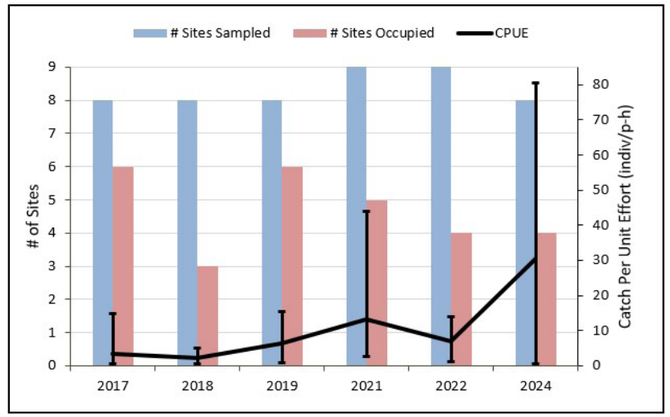
Carolina Pygmy Sunfish Monitoring

by Brena Jones, Central Region Aquatic Wildlife Diversity Coordinator

Staff continued annual monitoring surveys for the Carolina Pygmy Sunfish, a State Threatened species endemic to Columbus and Brunswick counties in NC and small portions of the coastal plain in SC. Of eight previously occupied localities sampled in October, Carolina Pygmy Sunfish were collected at four. Carolina Pygmy Sunfish are persisting and 2024 catch per unit effort (CPUE) ranged from 0.5 to 80.5 individuals per person hour. This maximum CPUE exceeded any previous year's value and was nearly double the former record of 44 individuals per person hour.



Carolina Pygmy Sunfish monitoring results by year. Black line indicates average CPUE values, with vertical black bars indicating maximum and minimum CPUE for each year. 2018 sampling was conducted two months after Hurricane Florence.

Robust Redhorse Population Augmentation

by Brena Jones, Central Region Aquatic Wildlife Diversity Coordinator

In October of 2024, 13,650 Phase I (6 months old) and 24 Phase II (18 months old) Robust Redhorse fingerlings raised at the NCWRC's McKinney Lake Fish Hatchery were stocked into the Pee Dee River in NC. These fish were the progeny of adults collected in the Pee Dee River spawning shoals in NC in the spring of 2023 and 2024. In November of 2024, another 2,702 Phase I fingerlings raised at the SCDNR Dennis Center were stocked in the same location.

Broadtail Madtom Collections

by Emilia Omerberg, Central Region Aquatic Wildlife Diversity Biologist

A few populations of Broadtail Madtom persist in the Lumber River basin, albeit in apparently low abundance. This species has been found in the mainstem Lumber River, Shoe Heel Creek, and Joes Creek. This year biologists added a new locality to the map for these unique catfish. In July 2024, staff located two individuals in Gum Swamp Creek. Also in July, biologists located two individuals in Joes Creek in association with some of our deployed motels (motels described in previous quarterly reports).

In December, biologists located another three individuals from the same site in Gum Swamp Creek. Two of these individuals were brought into the Yates Mill Aquatic Conservation Center in Raleigh to research their life history requirements and hopefully develop a propagation program in the future.


EMILIA OMERBERG/NCWRC


EMILIA OMERBERG/NCWRC

Top Right: Staff from left, Bryn Tracy NCDEQ retired, Laurens Vermeulen NCWRC and Craig Lawson NCSU; collecting Broadtail Madtom using backpack electrofishing and seining. Bottom Right: A Broadtail Madtom from Gum Swamp Creek in the Lumber River basin.

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Uwharrie Mussel and Host Fish Collections

by Emilia Omerberg, Central Region Aquatic Wildlife Diversity Biologist

In order to successfully propagate freshwater mussels, staff must collect host fish for the mussel larvae, called glochidia; the larvae live in the fish's gills as benign parasites until they are ready to transform to juveniles. Host fish trials need to be conducted to discover which species of fish are the prefer host for this rare mussel. Different mussel species use different fishes as hosts. In initial trials last year, none of the species tested showed promising results for hosting this unique mussel. Another round of trials with different fish species is planned for winter 2024–2025.

In November, staff also collected a variety of fish species from Wolf Island Creek in Rockingham County to use in these trials. The species collected for this trial included Bluehead Chub, Crescent Shiner, Eastern Creek Chubsucker, Fantail Darter, Redlip Shiner, Rosyside Dace, and White Sucker. A separate host fish collection effort, targeting Carolina Darters, was completed in December at Johnson Creek and Grassy Creek in Granville County.

EMILIA OMERBERG/NCWRC

An individual of the undescribed mussel species

Host Fish Collection for Greensboro Science Center

by Emilia Omerberg, Central Region Aquatic Wildlife Diversity Biologist

In November of 2024, staff collected 64 Fantail Darters from Wolf Island Creek in Rockingham County. These fish were transported to the Greensboro Science Center to aid in the propagation of the state threatened Notched Rainbow mussel. The goal is to use these animals to repopulate a stream mitigation site after habitat work is completed.


EMILIA OMERBERG/NCWRC

A Fantail Darter from Wolf Island Creek in Rockingham County.

Roanoke Logperch Stocking

by TR Russ, Foothills Region Aquatic Wildlife Diversity Coordinator

The North Carolina Wildlife Resources Commission's (NCWRC) Aquatic Wildlife Diversity program is tasked with conservation, monitoring, and management of nongame fish, mollusks, and crayfish. Since 2015, one primary goal of the program has been to re-establish Roanoke Logperch (RLP), Percina rex, populations in the upper sections of the Dan and Mayo rivers in North Carolina. The "King of the Darters" is worthy of our efforts in NC. Stocking Roanoke Logperch will add to the redundancy of Dan River populations, decrease the chances of extinction, and aid in the federal de-listing of the species.

Since the Fall of 2023, with partnerships through Piedmont Land Conservancy and Mayo River State Park, 485 Roanoke Logperch have been stocked in the Upper Mayo River via the NC Programmatic Safe Harbor Agreement. On November 1, 2024, NCWRC and Mayo River State Park stocked 156 juveniles through accessing state park property. The event was well attended by the public and several folks see and participate in the release of a federally endangered fish. Roanoke Logperch have been absent from the upper Mayo River since the construction of Avalon and Washington Mill dams circa 1890s.

Top Right: A propagated juvenile Roanoke logperch before being released into the Mayo River. Center: Numerous partners joined NCWRC biologist to stock Roanoke Logperch in the Mayo River at Mayo River State Park. Right: NCWRC Biologist TR Russ and Rockingham County Tourism Manager Lindsay Pegg release Roanoke Logperch into the Mayo River.


JONATHON GRUENKE/NCWRC


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Carolina Creekshell Stocking

by Mike Perkins, Foothills Region Aquatic Wildlife Diversity Biologist

The Carolina Creekshell is a small mussel endemic to the Carolinas. It is state listed as Endangered in NC, and since 2019, NCWRC has focused on propagating this mussel and restoring populations where possible. In the Catawba River basin, few remnant populations remain near the SC Stateline. In October of 2024, NCWRC was able to augment existing populations in Waxhaw and Price Mill creeks in Union County. Foothills Region Aquatic Wildlife Diversity biologists and the Marion Conservation Aquaculture Center released 2,641 juveniles to help boost populations.

Top Right: NCWRC Biologist Michael Perkins holds a hand full of propagated Carolina Creekshell. Bottom Right: NCWRC biologists Sierra Benfield and Kelsey Mansell stock Carolina Creekshell in Waxhaw Creek.


MICHAEL PERKINS/NCWRC


MICHAEL PERKINS/NCWRC

Hurricane Helene Updates

Foothills Region Aquatic Wildlife Diversity biologists assessed hurricane impacted reaches throughout the Fall and Winter of 2024. Primary counties impacted in the Foothills Region include: Polk, Rutherford, McDowell, Burke, Avery, and Caldwell. Within these counties certain priority areas with SGCN and state listed aquatic species may be heavily affected. Primary rivers affected in the region include: Green, Broad, Catawba, Linville, Warrior Fork and Wilson Creek.

In order to better understand the impacts of Hurricane Helene on aquatic species and habitats, the Foothills Region Aquatic Wildlife Diversity biologists set out to assess 10 fish and mussel sites in some of the impacted areas, primarily in the Catawba and Broad. Initial observations were somewhat positive for some SGCN fish species, like Seagreen Darter. In order to better understand the impact to aquatic nongame species, a more rigorous, focused survey regime is planned for 2025.

Wilson Creek upstream of Adako Road, Caldwell County, before and after Hurricane Helene.


GOOGLE 2023


MICHAEL PERKINS/NCWRC

Initial Assessments from Hurricane Helene Flood Damage in Portions of Western North Carolina

by Dylan Owensby, Luke Etchison, and Chantelle Rondel, Western Region Aquatic Wildlife Diversity Biologists

Excessive rainfall from Hurricane Helene brought catastrophic flooding to areas of western North Carolina. Biologists with the Western Region of the Aquatic Wildlife Diversity Program surveyed some of the damage during October and November of 2024 to get an initial idea of flooding impacts to the region's fish, mussel, and crayfish species. Although extensive flooding occurred throughout western North Carolina, the most significant flooding occurred in the Broad, Catawba, French Broad, Nolichucky, and Pigeon river basins. Western Region biologists focused their assessment efforts on small streams to larger, mainstem rivers in the Pigeon, French Broad, and Nolichucky basins. Aside from traveling around these basins to see some of the impacts firsthand, biologists also completed semi-quantitative fish surveys at 19 sites and qualitative mussel surveys at 5 sites.

Methods used for the majority of the fish surveys targeted a range of species that might be present, with emphasis placed on catching benthic (bottom dwelling) species. Although results varied widely, biologists found that species richness and abundance was similar to previous surveys at a majority of the sites.

Of the locations surveyed, streams that appeared to fare well included a majority of the upper French Broad basin, the lower French Broad River, most of the Pigeon basin, and the upper North Toe River (Nolichucky basin). Streams that had noticeably fewer species present included the South Toe River (Nolichucky basin), upper and lower Cane River (Nolichucky basin), and Ivy River (French Broad basin).

Although definitive data is lacking for mussel populations, biologists did find surviving mussels in areas of the upper French Broad and Pigeon river basins. No live mussels were seen in the limited surveys within the Nolichucky basin. Biologist are planning to conduct surveys at longterm monitoring sites in impacted areas of western North Carolina for the next several years.

Top Right: North Toe River upstream from Spruce Pine along Bent Rd on 10/23/2024. Although the river far exceeded the banks at this site, the instream habitat was still intact and survey results indicated typical fish abundances. Center: One of several Gilt Darters caught during a survey on the North Toe River outside of Bakersville. Total numbers of fish and number of fish species caught during a quick fish survey were surprisingly high despite extensive flood damage at this site. Bottom: Greenway bridge at Veterans Park along the upper Swannanoa River on 10/29/2024. Although there was extensive damage to the park, survey results indicated typical fish abundances for this site.

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Partners for Green Growth

• Pender County has held a project kick-off meeting and continues to develop a preferred development guide and model ordinances for incorporating wildlife conservation into their land use and development planning process. Partners for Green Growth cost-share funding is being used to evaluate the county's current regulations pertaining to open space, the creation of conservation-based incentives and ordinances, outreach to landowners, developers, and staff, and the drafting of a preferred development guide.

• Union County has selected a steering committee and has held a project kick-off meeting for their rural land use plan project funded through Partners for Green Growth cost-share. The steering committee plans to hold regular monthly meetings throughout the project and Catawba Land Conservancy has begun assessing habitats and land uses.

• Chatham County has held kick-off meetings for the development of their county conservation plan. The plan will provide detailed implementation steps and metrics for guiding action on the numerous conservation goals identified in the Chatham County Comprehensive plan.

Green Growth Toolbox Training

• Due to the devastation caused by Hurricane Helene, the November Green Growth Toolbox Workshop was postponed until February 2025.

• A full-day workshop is planned for the Charlotte area for January.

• Staff presented the Green Growth Toolbox to NC Chapter of the Audubon Society's Urban Forestry Committee.

• Staff are providing technical assistance on land use plans for the town of the towns of Cameron and Southport, and counties of Orange and Harnett, on Durham's Unified Development Ordinance and the development of a conservation zoning overlay, on Brunswick County's Unified Development Ordinance, the Durham-Chapel Hill- Carrboro Metropolitan Planning Organization's Wildlife Crossings Plan, with the City of Durham, Statesville, and Yadkin County on proposed rezonings, and lastly, with a developer (M/I Homes) to integrate Green Growth Toolbox concepts into their planning and site design activities.

• Staff are working with a developer in Orange County to certify a new development as a Wildlife Friendly Development.

Cooperative Land Conservation

• Over the past quarter, staff led and coordinated the Chatham Conservation Partnership (CCP) and Triangle Connectivity Collaborative (TCC). This included providing a presentation on habitat connectivity at the CCP quarterly meeting and coordinating with TCC partners over land use and transportation planning, and land conservation opportunities in Durham and Orange counties.

• Staff contributed to and coordinated NCWRC's additions to the state's Natural and Working Lands Action Plan Progress Report, as required by EO 305.

• Staff continued to coordinate NCWRC's Climate Resiliency Strategy, including updates on progress and preparation for including the Law Enforcement Division, the Communications, Marketing, and Digital Engagement Office, the Office of Conservation Policy and Analysis, and the Conservation Research Office into the updated strategy.

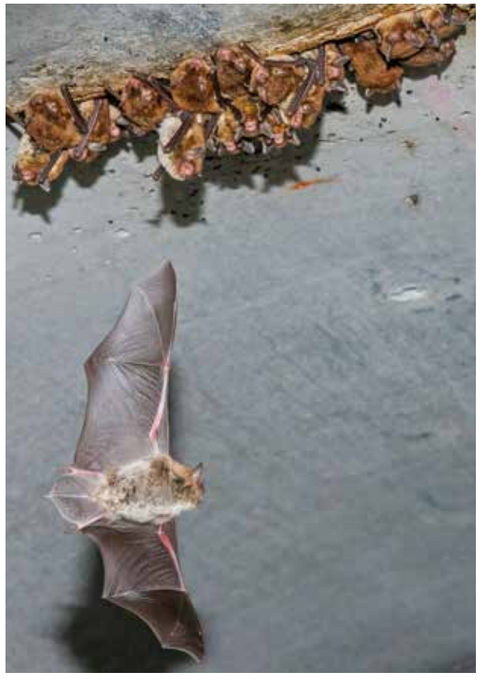
• Staff continue partnering with the Eastern North Carolina Sentinel Landscapes to promote conservation and working land uses in communities adjacent to military installations.

Training for partner agencies

HabCon staff were invited by US Army Corps of Engineers (USACE) - Wilmington District to speak to the USACE South Atlantic Division Regional Leadership Development Program (RLDP) Team during their visit to Wrightsville Beach, NC. USACE Wilmington wanted to emphasize the importance of agency communication, especially with state resource agencies, during large scale Civil Works projects. HabCon staff discussed the importance of pre-project, during, and post project discussions and site visits to ensure necessary project conditions are appropriate and upheld to minimize impacts to environmental resources. The site visit in Wrightsville Beach looked at inlet dredging with beneficial placement of material on the ocean shoreline, problematic shoreline responses, and installation of shoreline management measures. The RLDP team was comprised of representatives from Caribbean, Charleston, Jacksonville, Mobile, Savannah and Wilmington Districts.

Wildlife Surveys

Habitat Conservation staff confirmed the discovery of a large colony of southeastern myotis bats in an underground stormwater system in a Raleigh neighborhood. They were reported to NCWRC by a City of Raleigh Stormwater crew, after staff lifted a manhole cover and observed numerous bats inside. Upon further survey by Habitat Conservation staff, it was discovered to be the largest known colony of southeastern myotis bats in North Carolina, with more than 1000 individuals. Staff will be monitoring the bats to determine the actual size of the colony and to better understand their behavior.



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Hurricane Helene Recovery—Stream Impacts

Hurricane Helene roared into western North Carolina on September 27, 2024, impacting a large area with catastrophic wind damage, flooding, landslides, and debris flows. Winds reached up to 100 miles/hour in some high elevation areas (Figure 1). Many streams (from headwater streams to large rivers, such as the Cane River in Yancey County) have been severely impacted by scour and erosion, and preliminary assessments of aquatic wildlife have demonstrated a range of impacts (see Photos 1-3). In many streams, efforts to rebuild roads and restore access to homes have resulted in additional stream impacts. NCWRC staff will continue to assess stream habitat and aquatic community status over the next year, and they anticipate developing a plan for restoration of habitat and aquatic wildlife for the affected area.

Many large streams and river systems in Ashe, Avery, Buncombe, Haywood, Mitchell, Yancey, and several adjoining counties experienced severe flooding and erosion due to Hurricane Helene. There were numerous debris flows that scoured small streams as well. Western Region NCDOT Habcon staff have been working with NCDOT and regulatory agencies in their responses to Hurricane Helene damage. Extensive repair work has already been undertaken, including stream channel modifications that NCDOT has indicated is temporary and that later may be modified with permanent, more stable and/or bioengineered approaches. For storm repair emergencies, the NCWRC has waived the October 15-April 15 trout moratorium, which is a measure included in US Army Corps Permits to protect developing trout eggs from stream disturbance and siltation.

Current Development Projects

The USACE Wilmington Harbor 403 (WH 403) proposal is progressing through the technical workgroup committees. NCWRC staff from HabCon, Inland Fisheries, and Wildlife Management divisions serve on the Wetlands, Aquatic Habitat, and Beneficial Use of Dredged Material committees. Currently the USACE is considering a No Action Alternative (currently permitted -42' MLLW), Action Alternative 1 (-47' MLLW) and Action Alternative 2 (-46' MLLW). The new action alternatives each have a 9.1-mile channel extension from Bald Head Reach 3 and widened areas identified in the WH 203 process with a +2' overdredge. Workgroup committees are involved to make sure model inputs are appropriate, all necessary wetland classes and species are noted, unique environmental conditions are identified, important model scenarios are considered, and mitigation opportunities are explored. The Draft Report and EIS are expected 2025.