



NORTH CAROLINA WILDLIFE RESOURCES COMMISSION

WILDLIFE DIVERSITY PROGRAM QUARTERLY REPORT

APRIL-JUNE 2023



NORTH
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Wildlife

RESOURCES
COMMISSION



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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Cover photos from top left clockwise: NCWRC Wildlife Diversity technician, Ben Dalton, cradles an adult Eastern Hellbender that was processed for data collection and PIT-tagging (Appalachian State University); Staff carefully walk through a Royal and Sandwich Tern colony counting nests (John Lynch). Below: Approximately 8,000 Royal and Sandwich Tern nests were counted in this colony on a dredge material island in Pamlico Sound. (Carmen Johnson); Jeff Hall, Partners in Amphibian and Reptile Conservation Biologist, holds juvenile Gopher Frogs that were released on the Holly Shelter Game Land (NCWRC); Wildlife Diversity Technician, Joey Weber, records data during a bat roost survey at a Coastal Plain bridge (Katherine Etchison).



NC Bird Atlas Confirms 208 Species Breeding in North Carolina

by Scott Anderson, Science Support Coordinator, John Carpenter, Eastern Landbird Biologist, and the NC Bird Atlas Team

The North Carolina Bird Atlas had many accomplishments during the second quarter of 2023. Trained field staff conducted surveys for Cerulean and Kentucky Warblers along remote stretches of the Lower Roanoke River; discovered breeding Swainson’s Warblers and Loggerhead Shrikes in under-Atlased areas of the Piedmont; and documented high-elevation specialists like Brown Creeper, Least Flycatcher, Vesper Sparrow, Winter Wren

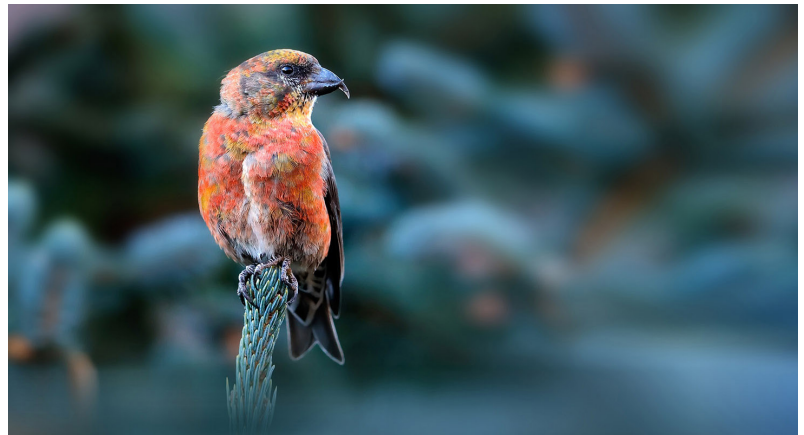
and the nomadic Red Crossbill in the mountains. In addition, North Carolina — along with New York, Maryland/DC, Puerto Rico, and two Canadian provinces (Newfoundland & Ontario) — competed in the 3rd Annual Big Atlas Weekend Competition. During early mornings and evenings from June 23-25, more than 170 North Carolina Atlasers contributed 582 hours and identified 173 species from 1,192 survey checklists. Finally, as of early July, we have data in 96% of our

priority blocks and 208 species confirmed as breeding in our state! These results were only made possible from the 2,156 (mostly volunteer) Atlasers who have submitted 146,174 checklists since the project began in 2020. As the summer winds down, we will remain busy preparing for the atlas’s third winter season, organizing data and engaging with our volunteers to encourage their continued participation in this growing citizen science project.

If you want to stay up-to-date on the progress of this project, visit ncbirdatlas.org or subscribe to our monthly newsletter at news.ncbirdatlas.org.



Hayley Crews



Wang LiQiang



Ray Hennessy



NCWRC

Among the bird species documented by North Carolina Atlasers (left) this quarter were (clockwise from top): Brown Creeper, Red Crossbill and Loggerhead Shrike.



Biologists Work to Reduce Incidental Capture of Sea Turtles

by Dr. Matthew Godfrey, Sea Turtle Biologist and Sarah Finn, Coastal Wildlife Diversity Biologist

Sea turtles and fishing gear regularly interact in North Carolina waters, particularly between April and November, when coastal water temperatures are most suitable for sea turtles. Fishing gear in North Carolina, such as otter trawls and estuarine gill nets, have received much attention in the past few decades because of the relatively high frequency of incidental captures of sea turtles. In response to this issue, changes to gear configuration and time/area restrictions have been established, helping to reduce the likelihood of incidental capture of sea turtles. These changes have also allowed attention to be directed at other types of fishing gear that cause incidental captures, particularly recreational hook-and-line gear.

In partnership with the NOAA-National Marine Fisheries Service, NC Division of Marine Fisheries, NCSU College of Veterinary Medicine and NC Aquariums, N.C. Wildlife Resources Commission (NCWRC) biologists have worked to increase awareness about interactions with sea turtles with recreational fishing gear. This outreach includes talking to fishing pier owners and employees, distributing informational brochures, and putting up signs about what to do if you catch a sea turtle.

Often when a turtle is incidentally captured, the turtle is lightly hooked and the angler can easily remove the hook and release the turtle back to the ocean. In cases where the hook has been swallowed, the turtle is brought to an aquarium or rehabilitation facility so the hook can be removed under more controlled circumstances. In rare cases, the turtle might have other injuries and need further rehabilitation before it can be released.

Overall, the number of reported hook and line interactions has been increasing in the past five years, with 52 reported hook-and-line interactions so far in 2023. Although it is likely that the actual number of sea turtle interactions with recreational anglers is underreported, increasing the overall rate of reporting will help increase our understanding of these interactions and illuminate possible management actions to minimize risk to sea turtles.



A Kemp's ridley sea turtle that was incidentally captured by a hook-and-line recreational angler on a fishing pier. The turtle was raised to the deck of the pier with a hook net to facilitate hook removal, after which the turtle was released. (NC Aquariums)



A radiograph of a Kemp's ridley sea turtle that swallowed a recreational fishing hook at a fishing pier. The turtle was taken to the NC Aquarium on Roanoke Island for hook removal. (NC Aquariums)



Biologists and Partners Conduct Triennial Nesting Waterbird Survey

by Carmen Johnson, Waterbird Biologist, Kacy Cook, Waterbird Biologist, Doug Rouse, Austen Smith Waterbird Technicians

During May and June 2023, the Waterbird Project coordinated the 15th North Carolina coast-wide Colonial Waterbird Survey. This triennial survey, conducted by the NCWRC, National Park Service, U.S. Fish and Wildlife Service, North Carolina Coastal Reserve, North Carolina State Parks, U.S. Marine Corps, Audubon NC, Bald Head Island Conservancy, and numerous researchers and volunteers, monitors populations of nesting waterbirds in the state. The survey was first launched by University of North Carolina Wilmington professor Dr. James F. Parnell in 1977 to determine population sizes of breeding waterbirds along the North Carolina coast relative to concerns over use of pesticides such as DDT in previous decades. This coast-wide survey now tracks 21 species known to nest on the state's coast, 19 of which are Species of Greatest Conservation Need. Data from these surveys are stored in the Colonial

Waterbird database maintained by the NCWRC. For the first time, data will also be entered into the Avian Knowledge Network as part of an effort by states and provinces in the Atlantic Flyway to share data and assess wider population and distribution trends. A report will be completed later this year and will be used to guide management decisions in the state.



Staff carefully walk through a Royal and Sandwich Tern colony counting nests. (John Lynch). Below: Approximately 8,000 Royal and Sandwich Tern nests were counted in this colony on a dredge material island in Pamlico Sound. (Carmen Johnson)





Hellbender Surveys in the Watauga River Sub-basin

by Lori Williams, Western Amphibian Biologist

In the second quarter of 2023, Wildlife Diversity staff teamed up with Appalachian State University (ASU), MountainTrue and other volunteers to conduct snorkel surveys for all age classes of the Eastern Hellbender (State-listed Special Concern) in the Watauga River sub-basin. Despite cold tempera-

tures in May and early June, and challenging river habitat, crews completed surveys and collected habitat data from four 150-meter sites or river transects. We found nearly two dozen hellbenders at three of the four sites, including 14 adults. One goal of this project is to “mark” adult hellbenders with inserted Passive Integrated

Transponder tags (PIT-tags), each with a unique ID number similar to a microchip for a pet, to help monitor hellbender survival and habitat use in subsequent visits. Teams from ASU and others have consistently monitored hellbenders in the drainage for nearly a decade and recently

continue on next page



NCWRC Wildlife Diversity technician, Ben Dalton, cradles an adult Eastern Hellbender that was processed for data collection and PIT-tagging. (Appalachian State University)



An adult Eastern Hellbender in a measuring board for data collection (Doug Hall)



One of many Eastern Hellbender gilled larvae (1 year-old) found in the upper Watauga River drainage. (Doug Hall)



alerted NCWRC staff to noticeable declines in capture numbers and habitat quality at long-term study sites. Declines could be related to land use changes and/or potential impacts from recreational use, including private fish

stocking and feeding operations. Traditionally, the Watauga drainage was thought to have some of the best remaining hellbender populations in North Carolina, so the documented declines are concerning. However, the fact

that we found all age classes of hellbenders at some sites is an encouraging sign. NCWRC staff will continue working with partners in the coming years to assess population trends.

A team of snorkelers searching for Eastern Hellbenders in the Watauga River drainage (Lori Williams)



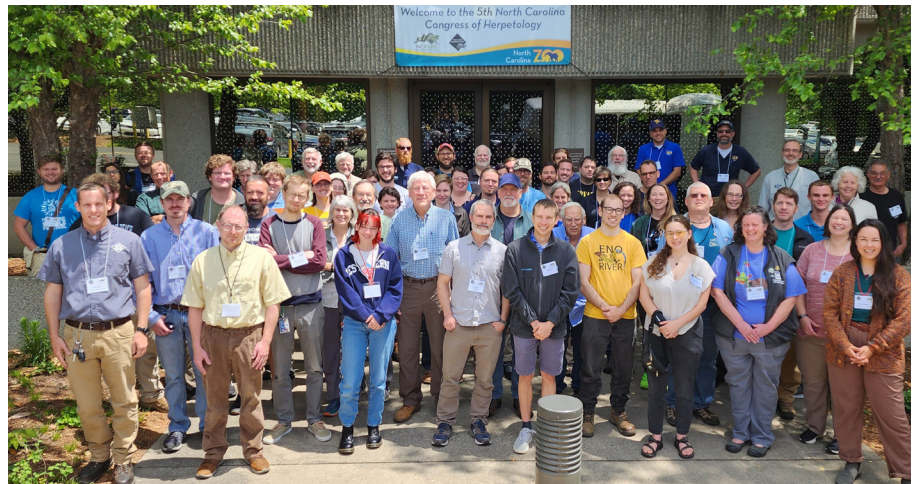


N.C. Partners in Amphibian and Reptile Conservation News

by Jeff Hall, Partners in Amphibian and Reptile Conservation Biologist

The North Carolina Chapter of Partners in Amphibian and Reptile Conservation (NCPARC) held its annual meeting jointly with the North Carolina Herpetological Society (NCHS) from Friday-Sunday, May 5-7, at the North Carolina Zoo in Asheboro. This joint meeting between NCPARC and NCHS was represented as the 5th NC Congress of Herpetology. The meeting had about 95 in-person attendees with an additional dozen online viewers through Zoom. Fifteen presentations over the first two days covered species from American Alligators to Neuse River Waterdogs to Timber Rattlesnakes and many more. The final day of the meeting was devoted to field trips including

sites in the Uwharries and Sandhills. A more detailed account of the meeting can be found in the July issue of the NCHS newsletter (NC HERPS, Volume 46, No. 3).



Attendees gather for a photo during the NCPARC and NCHS joint meeting in May in Asheboro (Jeff Hall)



Spotted Turtle (Jeff Hall)

SPOTTED TURTLES

During this quarter, NCWRC staff continued monitoring efforts as part of a long-term mark/recapture project for Spotted Turtles. This is now year four of the project and more than 300 turtles have been marked in the project area. The results from this project should help USFWS staff more accurately understand abundance of this species in NC as they draft a Species Status Assessment and consider whether this species will receive federal protection.



N.C. Partners in Amphibian and Reptile Conservation News



GOPHER FROGS

Following up on a banner year of reproduction for the Holly Shelter population of Gopher Frogs, with the greatest number of egg masses yet detected, partners made it possible to head-start collected eggs. Partners, including the NC Aquarium at Fort Fisher, NCSU CMAST, Carteret Community College, and the USFWS Edenton National Fish Hatchery, raised eggs through tadpoles to juvenile frogs. Collectively, partners and staff have released nearly 1,000 juvenile Gopher Frogs back to several ponds in Holly Shelter.



Clockwise from top left: Reptile & Amphibian Wildlife Diversity Technician Kabryn Mattison prepares to release juvenile Gopher Frogs; Juvenile Gopher Frogs; Mattison with staff from the NC Aquarium at Fort Fisher release juveniles into one of several ponds on Holly Shelter Game Land. (Jeff Hall)

TIMBER RATTLESNAKES

Continuing a long-term genetics project focused on conservation of the Timber Rattlesnake, NCWRC staff made several visits to known rattlesnake sites. During these visits, tissue samples in the form of shed skins are acquired for future analysis to supplement clipped scales and/or muscle tissues taken from road-killed specimens. Additionally, NCWRC staff continued receiving rattlesnake reports from the public with well over 200 sightings reported to date in 2023. These sightings are used to document important habitats for rattlesnakes.



Timber Rattlesnake (Jeff Hall)



Resighting Returning Golden-wings

by: Christine Kelly, Western Bird and Carolina Northern Flying Squirrel Biologist

Is low survival from one breeding season to the next a factor limiting golden-winged warbler populations in the Appalachian Mountains? The NCWRC, along with nearly a dozen other partners across the golden-winged warbler's breeding range, did its part to answer that question by participating in a study entitled, "Estimating the survival rate of Golden-winged Warblers for a range-wide integrated population model." The study, led by the Roth Lab at the University of Maine, enlisted partners to capture and band golden-winged warblers during the 2022 breeding season, fitting some with coded-radio tags (nanotags) and some with only color bands to serve as study controls. In April and May 2022, the NCWRC mountain bird crew captured and banded 22 golden-winged warblers in the Cheoah Mountains of Graham County. Twelve of these golden-wings were fitted with

nanotags and the remaining 10 were color-banded controls. Thus, the mountain bird crew's task for May 2023 — finding these individuals — was laid out for them a year ago.

Resight surveys kicked off in late April 2023 just as the birds were returning from South America. Biologists completed extensive resight surveys, searching for returning individuals with the aid of visual searches, audiolures, and of course a radio-receiver and Yagi antenna to detect nanotag signals. Although the number of golden-winged warblers on territory in the area was similar to recent years, most individuals were unbanded. Overall, the team found five returning birds, two of which were from the 2022 cohort and the other three from earlier cohorts (two from 2021 and one from 2018). One of the two returning individuals from the survival study was a color-banded control bird, a male. The other was a nanotagged female. These numbers are disappointing, but before jumping to conclusions, NCWRC biologists await the University of Maine's analysis of the full range-wide dataset. The survival data are just one piece of a comprehensive Integrated Population Model that partners hope will highlight the critical factors limiting Appalachian golden-wing populations.



Rain or shine, Christine Kelly, Western Bird and Carolina Northern Flying Squirrel Biologist, scans for nanotagged Golden-winged Warblers in the Cheoah Mountains. (Christine Kelly)



Golden-winged Warbler (Ray Hennessey)



A Second Motus Station and First Detections on the First Motus Station

by: Christine Kelly, Western Bird and Carolina Northern Flying Squirrel Biologist

During second quarter 2023, the NCWRC put another dot on the [Motus map](#), further strengthening this migration tracking network. The Wildlife Diversity team installed the mountain region’s second Motus station at Pond Mountain Game Land (Ashe County) in the very northwest corner of North Carolina. Each Motus receiver station will be a little bit different, customized to fit the site. For this one, the Wilkes wildlife crew from the Land and Water

Access Division installed a 30-foot wood utility pole next to the old airplane hangar. The receiver and battery are sheltered from the elements inside the hangar at Pond Mountain Game Land. This is our first solar-powered station.

Meanwhile, the [first Motus station](#) installed last November at [The Mountain Retreat and Learning Center \(TMRLC\)](#) on Little Scaly Mountain detected some northbound spring migrants! A Northern Waterthrush tagged in

Jamaica on March 11, 2023 by researchers from Georgetown University (DC) was the first detection by the TMRLC Motus station on May 6, 2023. The Northern Waterthrush then traveled 320 miles north at a minimum speed of 13 miles per hour where it was detected on May 7, 2023 at a Motus station in central Ohio managed by the Ohio Division of Wildlife, a fellow partner in the Appalachian Mountains Joint Venture. The TMRLC’s second detection was a White-throated Sparrow tagged on Feb. 10, 2023 in Athens, GA by the Georgia Institute of Technology. It passed by the TMRLC receiver on May 7, then a receiver near Bluefield, WV on May 8, another in western Pennsylvania on May 12, and was last detected by a receiver on the northern shore of Lake Ontario east of Toronto on May 15. Finally, a Blackpoll Warbler passed by the TMRLC receiver station on May 27, 2023. This bird was tagged by NCWRC’s frequent partner, [SELVA Research for Conservation in the Neotropics](#), on April 12, 2023 in the Andes Mountains of central Colombia, South America as part of its project “[SELVA Colombia](#).” NCWRC biologists are delighted to contribute to these migration studies through the collaborative Motus network.



Antennas are mounted on the wood pole and the receiver station is housed inside the hangar, safe from the elements. (Chris Kelly)

Receiver deployment: The Mountain Retreat and Learning Center (ID# 9270)
Receiver ID: CTT-V30B0154DDDE

List of daily tag detections by this receiver deployment.

Show detections in: a table | a timeline

Filter:

100 results per page

| Detection date | Tag deployment | Species | Date deployed | Latitude | Longitude |
|----------------|----------------------------------|------------------------|---------------|----------|-----------|
| 2023-05-06 | Jamaica_Research#16:16.7 M.71798 | Northern Waterthrush | 2023-03-07 | 18.0424 | -77.9411 |
| 2023-05-07 | GatechTower#85:38.9 M.66516 | White-throated Sparrow | 2023-02-10 | 33.9016 | -83.3874 |
| 2023-05-27 | SELVA#277:21.1 M.74999 | Blackpoll Warbler | 2023-04-12 | 3.9733 | -73.799 |

Detections at NCWRC’s first Motus station in the mountains during spring migration 2023 (Motus.org)



20-Year-Old Dataset Guides Efforts to Find Bats in Coastal Plain Bridges

by Katherine Etchison, Mammalogist

During spring 2023, NCWRC staff conducted bat roost surveys of 23 bridges to investigate bat presence in bridges with historic bat roosting records from 1998-2002. Bridges were surveyed in five Coastal Plain counties in May, and bats were found using nine bridges with two additional bridges showing signs of bat

use. Tricolored bats were found roosting under six bridges, Rafinesque’s big-eared bats were found roosting under two bridges, and a big brown bat was found roosting under one bridge. Tricoloreds were in clusters of three to five individuals or roosting singly, and immature bats and adults were observed in the clusters.

This species roosted in four bridges that had not been replaced since the original survey, and two bridges that were replaced since the original survey. Based on the historic and 2023 records, this species appears to rely on bridges as roosts to some degree on the Coastal Plain.

The highest bat count occurred at a bridge that was used as a maternity site during the original survey in 1998, which has not been replaced. Seventy-three (73) adult Rafinesque’s big-eared bats were counted, and a telltale bump could be seen under most adults’ wings, signifying the presence of a bat pup tucked closely to the adults’ bodies.

Because the historic dataset is proving useful in finding current bat roosts, additional follow-up bridge roost surveys are planned for the coming years.



A cluster of tricolored bats roosting under a Coastal Plain bridge (Katherine Etchison)



A cluster of Rafinesque's big-eared bats roosting under a Coastal Plain bridge (Katherine Etchison); Right: Wildlife Diversity Technician, Joey Weber, records data during a bat roost survey at a Coastal Plain bridge. (Katherine Etchison)





NCWRC and Partners Receive New Funding to Address Critical Bog Turtle Conservation Needs

by Gabrielle Graeter, Conservation Biologist/Herpetologist

In spring 2023, the NCWRC and many partners began work on a southern bog turtle (Federally listed Threatened due to similarity of appearance; status review initiated, 2022) conservation project that was funded by a Competitive State Wildlife Grant (C-SWG). This project aims to fill knowledge gaps about the status and viability of bog turtles in the southern population of the species. Partners on this project include the Virginia Department of Wildlife Resources, Amphibian and Reptile Conservancy (ARC), Mainspring Conservation Trust, Tangled Bank Conservation (TBC), Eastern Band of Cherokee Indians Natural Resources, South Carolina Department of Natural Resources, Defenders of Wildlife, North Carolina Chapter of The Nature Conservancy, Bog Learning Network and Catawba Land Conservancy.

During second quarter 2023, NCWRC staff coordinated and set bucket camera traps at 10 sites in North Carolina, and partners set these traps at seven sites in Virginia. The bucket camera trap is the primary method they are using to evaluate the status and viability of historical and understudied bog turtle populations in this project.

With this method, they mount a wildlife camera inside an upside-down 5-gallon bucket that has openings cut out on opposite sides and place it on the ground in the wetland in places they would expect bog turtles to travel (Figure 1). The bucket-camera traps were set for 21 or more days and photos will be evaluated in the coming months.

In the last few months, NCWRC staff have also been involved in collecting genetic tissue swab samples from bog turtles in North Carolina, taking action to manage habitat with non-native invasive species, and surveying for and protecting bog turtle nests to improve nest hatching success (Figure 2).



Figure 1. View of a bucket-camera trap set in a rivulet within a mountain bog (Gabrielle Graeter)



Figure 2. Biologists searching for bog turtle nests in a wetland in summer 2023 (Gabrielle Graeter)

