



Partnerships in Conservation for Central and Eastern North Carolina

2018




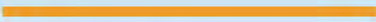





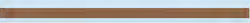

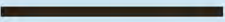


Raleigh Field Office

fws.gov/raleigh

Our 2018 conservation work is in full swing with follow-through from previous years and new conservation ventures. Raleigh Ecological Services Field Office staff are dedicated to using the best available science to further the U.S. Fish and Wildlife Service's (Service) mission. We seek to conserve imperiled species and their habitats, ensuring that sustainable populations of fish, wildlife, and plants continue to thrive for future generations.

We are working with our partners in federal and state agencies, local governments, the business community, and private citizens in [59 counties of central and eastern North Carolina](#). Together, we are protecting important habitat, increasing species' populations, and reducing the threats to their survival. Our partners are pivotal and share in all of the following conservation updates and accomplishments.

Contents

-  **Identifying species on the verge of extinction** 
-  **Helping build the road to recovery to bring them back** 
-  **Providing technical assistance to improve fish and wildlife outcomes** 
-  **Employing scientific excellence to support partners' needs** 
-  **Partnering with others to restore fish and wildlife habitats** 
-  **Developing a workforce of conservation leaders** 

Identifying species on the verge of extinction

The last line of defense...ESA Protection

Providing a plant or animal federal protection under the Endangered Species Act (ESA) is proven to be successful in preventing extinction but it is America's last line of defense. There are tremendous opportunities for voluntary conservation that can preclude the need to protect species and simultaneously improve habitats for other species alike. The Service is keeping a watchful eye on roughly [98 at-risk species that include North Carolina](#) within their distribution. Raleigh Field Office biologists are key contacts in assessing whether [16 of the North Carolina at-risk species](#) need ESA protection.

Before a plant or animal species can receive the protection provided by the ESA, it must first be added to the Federal lists of threatened and endangered wildlife and plants. Listing decisions are informed by our work with other biologists on [Species Status Assessments \(SSA\)](#). We assemble teams of species experts from state and federal agencies, academic institutions, and the private sector to contribute data and analysis. The assessments include a comprehensive review of scientific information, evaluation of current population status, and projection of future conditions.

In 2017, expert teams finalized assessments for the [yellow lance mussel](#), [Atlantic pigtoe mussel](#), the [Carolina madtom catfish](#), and the [Neuse River waterdog salamander](#). Based on the results of the assessment, the Service [proposed to list the yellow lance as a threatened species](#) in April 2017. Threatened species are animals and plants that are likely to become endangered in the foreseeable future. A final decision about granting federal protection to the yellow lance is expected in April 2018. Further consideration will be given to the Carolina madtom, the Neuse

River waterdog and the Atlantic pigtoe in 2018. Simultaneously, we continue to pursue voluntary conservation measures and partnerships for at-risk species. For example, we are working with the National Fish and Wildlife Foundation, the NCWRC, Conservation Fisheries, Inc. and North Carolina State University on captive propagation of the Carolina madtom and Magnificent ramshorn snail. We're building capacity for learning about and managing these species while their status evaluations progress.



Magnificent ramshorn by Andy Wood



Atlantic pigtoe, by Chris Eads, NCSU

Beyond our state borders, other Field Offices are spearheading similar assessments of at-risk species that migrate or have populations in North Carolina. Raleigh staff assisted our sister offices by sharing data and contacts to facilitate the status assessments of the [black-capped petrel](#) and [MacGillivray's seaside sparrow](#). We also look forward to being part of the assessment team that will soon start assessing the status of the [southern hognose snake](#).



Neuse River Waterdog by Jeff Hall, NCWRC

American eel age and growth assessment in the Roanoke River

The Service reviewed the status of [American eels](#) in 2007 and in 2015, finding both times that Endangered Species Act protection for the American eel was not needed. American Eel populations remain stable but much remains to be learned about their complex life history. At a local level, American eels still face mortality from harvest and passage obstruction. In 2017, we partnered with the US Geological Survey, [North Carolina Cooperative Fish and Wildlife Research Unit](#) to study eels in important coastal North Carolina habitat, the Roanoke River. Researchers analyse eels to determine age, sex, and health upstream and downstream of Roanoke Rapids Dam. This research will clarify the needs of populations in NC and help establish standardized methods to determine age and growth measurements to improve effective management and understanding of this ecologically and commercially important species. For more information contact Wilson_Laney@fws.gov

Advancing conservation science for the carnivorous Venus flytrap



Venus Flytrap by Dale Suiter, FWS.

The [Venus flytrap](#) is a carnivorous plant native to boggy areas. It is in 17 counties in southeastern North Carolina and northeastern South Carolina. Even though a lot of its populations are within protected areas, there is reason to believe the species might need federal protection. In 2017, the Service conducted a preliminary evaluation of the Venus flytrap status (a.k.a. a 90 day finding). We found enough information to conduct more in-depth analysis of the plant's status. More research is needed to help us understand some aspects of the species biology. To fill the gap, a team of experts from North Carolina State University, North Carolina Botanical Garden and our office published research on Venus flytrap pollinators and the prey captured in their modified leaves (traps). Results indicate a green sweat bee, a checkered beetle and the notch-tipped flower longhorn beetle are the most important pollinators while spiders, beetles and ants were most commonly found in the traps. You can see the paper in the [American Naturalist](#) and read what others have to say about it at the [Washington Post](#) and [National Geographic](#). The results help us shape recommendations on policies and actions to avoid extinction of this Carolina native and iconic plant.

Helping build the road to recovery to bring them back

Once a species is included in the List of Threatened and Endangered Wildlife, the Service has a robust set of tools to conserve those species. In coordination with our partners in federal and state agencies, local governments, the business community, and private citizens, we protect endangered and threatened plants and animals and pursue their recovery.

Northern long-eared bat ecology

Our biologists co-lead northern long-eared bat research in eastern North Carolina. Due to declines caused by [white-nose syndrome](#), the northern long-eared bat was listed as threatened under the Endangered Species Act on April 2, 2015. So far, northern long-eared bats in the North Carolina coastal plain show no signs of exposure to the fungus that causes white-nose syndrome. It's important to understand better the eastern North Carolina population because the coastal population may contribute to the long-term survival and recovery of the species.

We are well into a five-year research project with the North Carolina Department of Transportation (NCDOT), other agencies, and wildlife consultants. The winter 2017-18 surveys concluded with 32 northern long-eared bat captured this winter, 26 of which had transmitters attached to follow their movements. Tracking yielded extensive winter behavior information. Although the three NCDOT-funded wildlife contractors focused bat capture efforts mainly in counties with previous capture records, Jones and Carteret counties were added to the known range through this season's results. The known range of the species now includes 17 coastal plain counties in eastern NC. The species has yet to be captured in the piedmont region of NC. Summer surveys will resume in mid-April. For more information contact Gary_Jordan@fws.gov.



Northern long-eared bat, FWS.



Gary Jordan, Fish and Wildlife Biologist holding a bat. Photo by FWS.



A big brown bat hanging on a tree.

On-the-ground Seabeach amaranth conservation

In 2017, we planted thousands of [Seabeach amaranth](#) seeds through a Cooperative Recovery Initiative Grant. It was the largest planting effort ever attempted for this threatened species -- a vascular plant that grows on Atlantic Ocean dunes, close to the ocean waves where grasses would be found more easily. Most populations of seabeach amaranth are located in North Carolina but the species is also found from coastal South Carolina to New York. Seabeach amaranth was listed as threatened under the Endangered Species Act on April 7, 1993 and we're leading efforts to help recover this rare plant. For more information contact Dale_Suiter@fws.gov



Seabeach amaranth plants by Dale Suiter, FWS.



Conducting 5-Year reviews to chart progress and focus additional effort

We evaluate species protected by the ESA every five years. We conduct these reviews to ensure that our classification of each species on the lists of Endangered and Threatened Wildlife and Plants is accurate. We account for the projects that help the species, the persistence and severity of threats and determine whether we should change the listing.

On March 12, 2018, we announced [the start of reviews for smooth coneflower and Cooley's meadowrue](#). We request any new information concerning the status of these plants. Information submitted should be supported by documents such as maps,

Cooley's meadow-rue flowers
photo by James Henderson



Waccamaw Silverside,
Wonder with Wild Things.



Saint Francis' satyr, FWS



Smooth coneflowers, FWS

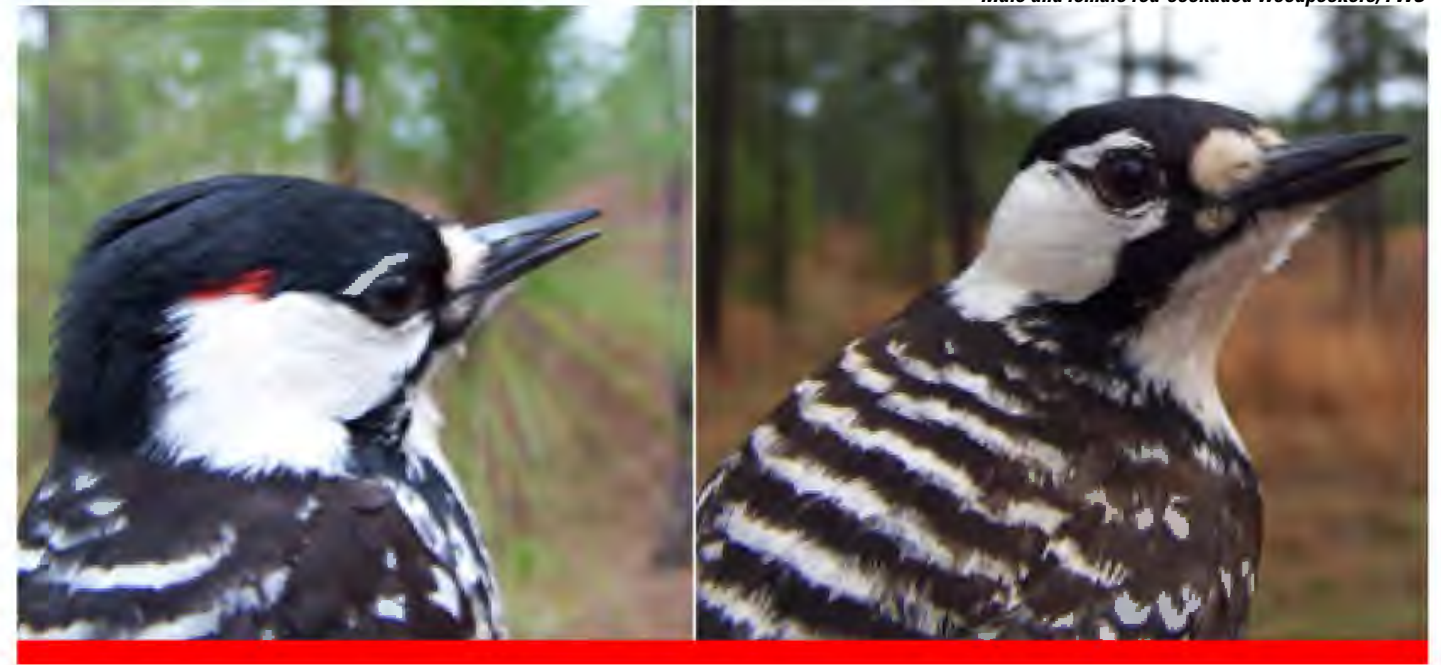
bibliographic references, methods used to gather and analyze the data, and/or copies of any pertinent publications, reports, or letters by knowledgeable sources. Please visit the Federal Register to provide input by May 11, 2018.

Later this year, we expect to initiate a review of the Bermuda petrel. Species for which reviews are expected next year include the Tar River spiny mussel, Michaux's sumac, Waccamaw silverside, and Saint Francis' satyr butterfly.

Tar River spiny mussel by Chris Eads



Male and female red-cockaded woodpeckers, FWS



Red-cockaded woodpecker recovery in the Sandhills

The North Carolina Sandhills region is one of the remaining strongholds of the longleaf pine/wiregrass ecosystem in the entire Southeast and supports the endangered red-cockaded woodpecker. As a longleaf pine habitat specialist, the bird with the large white cheek patches nests exclusively in living pine trees. They live in family groups and cooperate to raise young, often foraging in small groups and excavating nest and roost cavities. Because it can take many years to excavate a single nest hole, the birds pass the nests from generation to generation.

Increasing the acreage of healthy longleaf pine ecosystems in the Sandhills is an important focus of red-cockaded woodpecker recovery. Private property owners are often willing partners. However, some people may be reluctant to undertake activities that support or attract listed species on their properties, due to concern about future use limitations related to the Endangered Species Act. To address this concern, the Service offers the Sandhills Safe Harbor Program providing regulatory assurances if the landowner is willing to undertake management actions that support red-cockaded woodpecker habitat needs.

In 2017, we enrolled five new landowners in the [Sandhills Safe Harbor Program](#). Four pre-existing agreements were renewed under new ownership totaling 277 acres, for a total of 2,763 acres of private lands enrolled in the program. In 2018, we will continue to work with landowners to establish new agreements as well as work with partners to help provide landowners with technical and financial assistance. For more information contact Caroline_Krom@fws.gov.

Informing red-cockaded woodpecker recovery at the national level

The red-cockaded woodpecker is found in AL, AR, FL, GA, LA, NC, MS, OK, SC, VA, and TX, and occurs on federal, state and private lands. Members of our staff have joined experts from across the country to assess the species status. The expert team gathered and reviewed scientific information, evaluated current population status, and developed and ran models to assess their future viability range-wide. This work will be peer reviewed and ultimately give us a better understanding of how much progress has been made and inform future conservation and management decisions. For more information contact John_Hammond@fws.gov.

Providing technical assistance to improve fish and wildlife outcomes

We work collaboratively with other federal agencies, state partner conservation agencies, developers and other stakeholders on design, review and implementation of a wide array of infrastructure and development projects. The Endangered Species Act, Fish and Wildlife Coordination Act and other guidance directs us to apply our biological expertise to help avoid, reduce or mitigate for impacts to fish and wildlife resources.

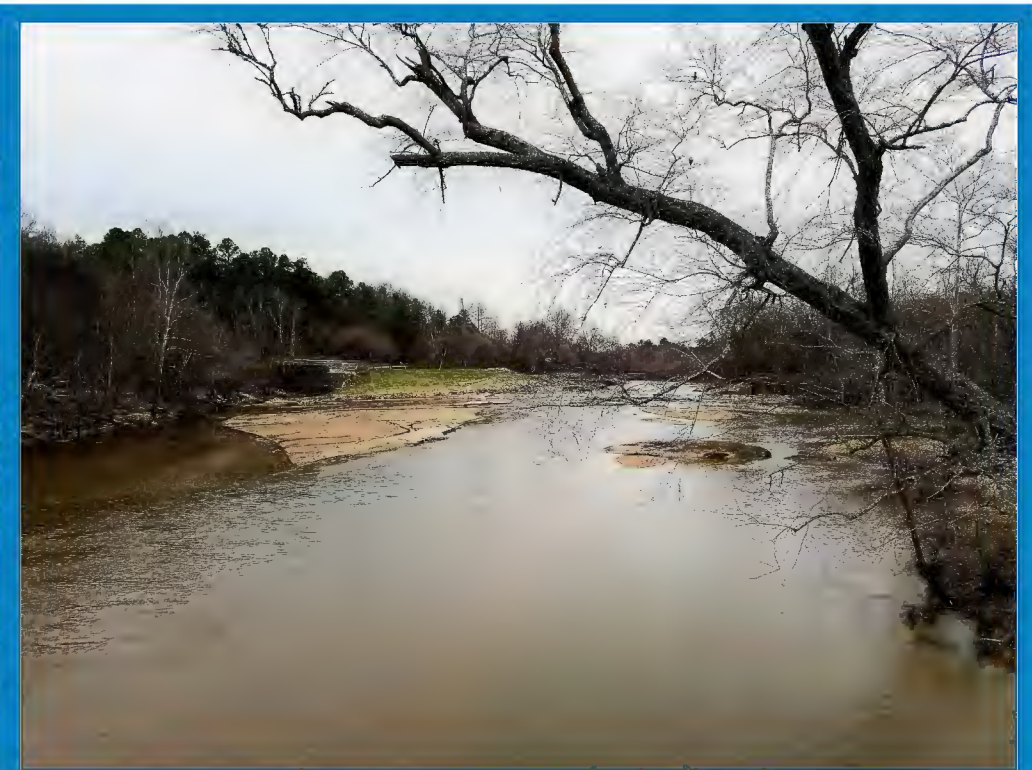
Streamlining review of beach nourishment projects

Storms, high wind, and tidal changes erode beaches and can diminish the area available for recreation, and put homes, businesses and critical infrastructure at risk. Communities on the coast often rely on beach nourishment to overcome beach erosion. To help expedite the evaluation of a beach nourishment project's impacts to threatened and endangered species, our office's Project Planning team worked with the U.S. Army Corps of Engineers to develop an optional streamlined assessment process for sand placement projects.

We created a [Statewide Programmatic Sand Placement Biological Opinion](#) (SPBO) in 2017 to expedite the endangered species consultation for beach nourishment, navigation projects, and other activities involving placement of sand on the beach. This is a big time saver and better means to achieve the seasonal work preferences, monitoring, and implementation of the Best Management Practices that we typically request. Coastal communities may now incorporate the requirements of the SPBO into their permit applications and planning documents. For more information please write to Kathryn_matthews@fws.gov To see what others have to say about this, read the [NCDEQ announcement](#) or listen to a [this story](#).



August 18, 2017 by Restoration Systems



February 13, 2018 by L. Serrano, FWS

Milburnie Dam is gone!

In November 2017, [Restoration Systems](#) removed Milburnie Dam and restored the surrounding shoreline. New seedlings now line-up near the footprint of an old powerhouse that is now reduced to a concrete slab and foundation, a perfect observation deck to enjoy the river. Restoration Systems is planning a community outreach event during the May fish run. We look forward to celebrating the Milburnie

Dam removal with our partners and neighbors by witnessing the fish running upstream. Throughout the project, we providing technical assistance to the land owners and stakeholders. Tearing down the dam revived 6 miles of the Neuse River and benefits water quality and migratory fish. The Neuse River hosts Striped Bass, Atlantic Sturgeon, American and Hickory Shad, and Alewife and Blueback Herring. Diadromous fish eggs need clean shallow waters to develop. Now,

diadromous fish can migrate further up the river to spawn at historic nursery habitats above the dam all the way to Falls Lake. A [video overview](#) of this project is available online. Demolition work was recorded and can be viewed at the site's [public live cam](#). We also recommend reading the [Albemarle-Pamlico National Estuary Program's articles](#) celebrating the culmination of decades of collaboration. For more information, please contact Mike_Wiker@fws.gov.

Mike Wicker at the former Milburnie Dam site, near the Greenway Neuse River Trail in Raleigh. Photo by L. Serrano, FWS, February, 2018



Facilitating operational best practices for transportation planning

We are promoting innovative practices that streamline the environmental review process of transportation projects in coordination with NCDOT, FHWA, USACE, and NCWRC for a programmatic consultation on bridge and culvert replacement projects that may affect federally listed mussel species. Once completed, the programmatic consultation will save substantial staff time and reduce costs.

Embedded arch or pipe-arch culvert at a stream where dwarf wedgemussel occur. Photo by L. Serrano, FWS, February 2018.





Cape Fear shiners were collected and relocated upstream. Photos by Sarah McRae, FWS, 2013

Assisting others in removal of Hoosier Dam

We've provided technical assistance to [partners](#) to advance removal of Hoosier Dam on the Rocky River in Chatham County. Restoring the the natural flow of water in the area, could reconnect habitat for the endangered Cape Fear shiner. At-risk species that share in the benefits include the Atlantic pigtoe, brook floater, and Septima's clubtail dragonfly. For more information contact Emily_Wells@fws.gov

Improving fish passage at the Cape Fear River

We have worked with partners for more than 15 years to take down barriers to fish migration on the Cape Fear River. Our goal is to help restore Atlantic sturgeon, shortnose sturgeon and striped bass. In 2017, we partnered with [Cape Fear River Watch](#) to design improvements to the rock arch fishway at Lock and Dam 1. The changes will increase the likelihood of successful spawning and more fish surviving into maturity. This project supports sustainable fish harvest in the Cape Fear River. Plans are also underway to address fish passage at Lock and Dams 2 and 3. For more information, please contact Mike_Wicker@fws.gov.

Hoosier Dam, Chatham County, NC. Photo by Unique Places.



Fun fact: The Cape Fear shiner is the only minnow with a convoluted gut-kind of like a cow has several stomachs- to help it digest plant material that other minnows can't eat. The shiner was originally thought to be herbivorous, but recent studies have shown that it actually eats a variety of both plant and animal matter. It is known to eat detritus, bacteria, phytoplankton, diatoms, and algae. *Photo by Sarah McRae, FWS.*

Employing scientific excellence to support partners' needs

Eastern North Carolina's 11 National Wildlife Refuges are managed by the Service for wildlife and wildlife-dependent recreation and education. We support and assist the North Carolina National Wildlife Refuges staff in their mission.

Pocosin Lakes NWR weir modification demonstration project

For more than 25 years, we have worked with partners to restore peatlands at Pocosin Lakes National Wildlife Refuge. In a recent project, The Nature Conservancy will put in place and track water control structures designed to restore the natural flow of water unique to pocosins, a wetland bog with sandy peat soil and woody shrubs throughout also known as southeastern shrub bogs. The thick layer of peat soils underlying pocosins are chemical sponges. It locks-up carbon and nitrogen in vegetation and the deepening soil layer over time. Millions of acres of peatlands have been drained and converted to other land uses. The Nature Conservancy will seek to mimic the natural flow of water that is ideal to re-wet soils drained before the refuge was established. The project will inform restoration practices and help us address water management concerns for farmers next to the refuge. Funds for this project cover design, installation, monitoring, and interpretation of demonstration efficacy. For more information, please contact Mike_Wicker@fws.gov.

Continuous Water Quality Monitoring at Lake Mattamuskeet

In 2013, stakeholders were concerned with the declining submerged aquatic vegetation at Lake Mattamuskeet and the associated impacts to other resources such as waterfowl dependent upon the vegetation. We partnered with

the U.S. Geological Survey [NC Water Science Center](#) and establish two automated water-quality monitoring stations at Lake Mattamuskeet to better understand the lake's ecology. We have funded those stations ever since including this year; data are available online at these sites:

- <https://on.doi.gov/2gUA88b>
- <https://on.doi.gov/2zEEvf2>

A 2018 data synthesis documented declining water clarity and loss of aquatic vegetation at the refuge. A watershed management plan is now being developed to help with lake restoration. For more information contact Wilson_Laney@fws.gov.

Assessing nutrient inputs to Greenfield Lake to guide restoration

Having waters rich in phosphates, nitrates, and organic nutrients has promoted a proliferation of plant life, especially algae at the Greenfield Lake in Wilmington. These conditions make the lake inhospitable for sensitive aquatic life. The Service's Coastal Program, [City of Wilmington](#), and University of North Carolina - Wilmington are interested in restoring the lake, and that work begins with an assessment of the extent of contamination. [University of North Carolina, Center for Marine Sciences](#) in Wilmington researchers will collect sediment samples from the lake during dry and rain events to calculate the annual loads of nitrogen and phosphorus entering the lake. The City of Wilmington Stormwater Services and UNCW researchers will determine where to best apply nutrient-reduction management practices and dredge contaminated soils. Improving Greenfield Lake water quality could help the Greenfield Lake Park and Gardens become a suitable re-introduction site for the Magnificent Ramshorn snail, one of only four known historic locations for this at-risk species. For information, contact Mike_Wicker@fws.gov.

Magnificent ramshorn snail crawling over the edge. Photo by L. Serrano, 2018



Partnering with others to restore fish and wildlife habitats

Forestry Outreach and Conservation – Forest Landbird Legacy

The [Forest Landbird Legacy Program](#) is a voluntary wildlife conservation initiative for private landowners in North Carolina who want to manage their mature forests to benefit forest dwelling landbirds. Along with the Service's Partners for Fish and Wildlife Program, [Audubon North Carolina](#) helps landowners develop conservation plans to improve habitat for conservation priority songbirds in key focus areas. Treatments may include snag creation, prescribed burning, tree-release cutting, creation of gaps in the canopy, and habitat improvement plantings. Over the next two years, Audubon will improve 1,200 acres with 10 private landowner cost share agreements through this program. For more information, contact Johnann_Shearer@fws.gov.



Red-cockaded woodpeckers, Susan Miller, FWS



The Prothonotary warbler is a song bird that breeds commonly along the coast and throughout the coastal plain, FWS.



Longleaf pine by Jack Culpepper, FWS

Longleaf Ecosystem Restoration on Private Lands in North Carolina

A Partners for Fish and Wildlife Program agreement with [The Longleaf Alliance, Inc.](#) provides technical and financial assistance to private landowners to restore 1,000 longleaf pine acres on private lands in North Carolina. Improving longleaf habitat will encourage the expansion of rare species such as red-cockaded woodpeckers, rough-leaved loosestrife, southern hognose snake, Carolina gopher frog, Venus flytrap, and Bachmans's sparrow. Practices such as forest site preparation, longleaf planting, native ground cover establishment, fire line establishment, in-stand prescribed burning, and timber stand improvement or mid-story control will create and improve habitat. For more information, contact Johnann_Shearer@fws.gov

Red-cockaded woodpecker in flight. Photo by Martjan Lammertink, U.S. Forest Service.



Developing a workforce of conservation leaders

Even in lean budget times, we strive to maintain staff expertise when vacancies occur, participate in conservation partnerships, be active in fish, wildlife, and ecology professional societies, and train to stay abreast of the latest conservation science and management practices. Some highlights from last year include welcoming of Assistant Field Supervisor Joe Madison to our team in Manteo, where he oversees our Red Wolf Recovery Program.

Fish and Wildlife Biologist, Susan Ladd Miller received the NC Prescribed Fire Council [Burner of the Year Award](#). Sarah McRae received the [Regional Director's Honor Award](#) – People Exhibiting Excellence in Regional Service for her work on at-risk species. The office received an award from the Virginia Field Office's Partners for Fish and Wildlife Program for our coordination role in the [Power Dam removal](#) on the Pigg River just outside the Town of Rocky Mount in Franklin County, Virginia.

We look forward to the remainder of 2018! An update to the Raleigh Field Office [2012-2017 Strategic Plan](#) is currently underway to chart our next tens years in working with others on fish and wildlife conservation. Look for the plan soon on [our website](#).



FWS Eastern NC Ecological Services Field Office staff on November 7, 2017 at the North Carolina Estuarium in Washington, NC. From left to right: Matt Butts, Tom Augspurger, Wilson Laney, Sarah McRae, Susan Miller, Joe, Madison, John Hammond, Ryan Nordsvén, Dale Suiter, Michael Morse, Shaun Olson, Pete Benjamin, Laura Fogo, Lilibeth Serrano, John Ann Shearer, Gary Jordan, Mike Wicker, Kathy Matthews, Sara Ward, Doug Newcomb, and John Ellis. Not pictured are Caroline George, Leigh Mann and Emily Wells.