

## Field Notes

*The newsletter of the U.S. Fish & Wildlife Service's  
North Carolina Ecological Service' Field Office, Raleigh N.C.*



**Photos from top left: Gulf Sturgeon photo by Gabby Saluta; Kemp's Ridley on BonSecour National Wildlife Refuge, USFWS Photo; A pair of Royal Terns on Breton National Wildlife Refuge, photo by Donna Dewhurst; and, an Alabama Beach Mouse, USFWS Photo.**

The photographs on this page depict a few of the wildlife that are being affected by the Deepwater Horizon Oil Spill in the Gulf of Mexico. This spill has the potential to impact 32 wildlife refuges and countless sea life and wildlife for years to come. While the spill is happening on another coast, the staff at the Raleigh Field Office will be called on to assist in this massive environmental effort. The Raleigh Field Office Administrative Officer, Joe Pittman, was called into action the first week of the disaster to help get people and contracts in place. And each week other members of the staff are either returning or going to assist in various areas. However, rest assured that we will continue our mission. For the latest information on the oil spill visit: [www.fws.gov/home/dhoilspill/index.html](http://www.fws.gov/home/dhoilspill/index.html)

As you will see in this addition of Field Notes the USFWS Raleigh Field Office has some exciting news to share. The USFWS has hired a director for the new South Atlantic Landscape Conservation Cooperative. We welcome Ken McDermond and his family to North Carolina and much success to this program. You can read about Ken and the mission of the SALC on page 2.

The Raleigh Field Office continues to support the Department of Interior's initiative to get "Youth in the Great Outdoors." Part of this effort is our "Shad in the Classroom, N.C. Program. With the help of the N.C. Museum of Natural Science along with grants and many other organizations who donated time, money and/or expertise we have expanded this program to other schools throughout the state. We feel it is important for children to understand the importance of their outside world.

In May, we recognized Endangered Species Day through several events with our partners. You can take a look at these and other interesting ways the USFWS is working with partners to support our mission.

**Pete Benjamin, Field Supervisor**

## McDermond to Lead the SALC



**Ken McDermond. Photo by Scott Flaherty, USFWS.**

A veteran wildlife conservation leader will guide the South Atlantic Landscape Conservation Cooperative from big idea to reality. Ken McDermond, the Deputy Regional Director from the U.S. Fish and Wildlife Service's Pacific Southwest Region, is the South Atlantic's first permanent coordinator. He began his job on July 6, 2010 and he will be located on Centennial Campus in the North Carolina Wildlife Resources Commission headquarters.

Ken knows the career swerve will grab some attention. After 26 years with the Service, McDermond is changing roles from leadership at the regional office level to lead an initiative still in its infancy. After 12 years in Regional Offices in Sacramento, Ca. and Lakewood, Co., and two years in the Service's Headquarters in Arlington, Va., McDermond said he wanted to get back in the field, closer to where conservation happens. He's also a believer in LCCs, in working collaboratively with partners to achieve big-time conservation goals.

"If we don't get out there and help private landowners and other agencies and other organizations conserve wildlife and habitats, we're only touching the surface," McDermond, 52, said. "I have this whole concept of bringing the science

together and bringing as many partners together as possible to help set the vision for the landscape. I think that's the right thing to do."

McDermond recently attended the kickoff meeting for the California Landscape Conservation Cooperative, where he heard participants ask a really good question: Why do we need this "extra layer"? His answer is that existing partnerships such as joint ventures, formed around migratory bird conservation, only touch part of the landscape.

"With climate change and other stressors going on, we're going to have to create conservation partnerships that are broader than just joint ventures," McDermond said. "We just can't afford to do it piecemeal any more. We've got to come together, to leverage our resources and our expertise. I believe the LCC approach can provide added value to existing partnerships and conservation organizations by facilitating activities such as data sharing, conservation design, and identification of common goals."

About his new job, McDermond said he's excited and a bit intimidated at the same time. The South Atlantic Landscape Conservation Cooperative is not going to be successful, he said, unless employees and partners "help create the goals and priorities and vision and have some buy-in. . . [The Service is] only stimulating an approach here and bringing some capacity to the table that hopefully everybody else can build upon.

"I'm really excited about the challenge and I appreciate everybody's faith in me. We're investing a lot into this, in terms of our credibility, and I'm thankful for people's support. I look forward to working with everybody I can to build something we can all be proud of in the future."

## What is the SALC?

The South Atlantic Landscape Conservation Cooperative (SALCC) will facilitate conservation planning and design across state boundaries in the South Atlantic Coastal Plain and Piedmont physiographic provinces, from southern Virginia to northern Florida.

The efforts of the SALCC will supplement the State Wildlife Action plans and provide better coverage for wider ranging species. It will also provide a broader geographic scale to address the effects of climate change and other critical challenges such as competition for water, wildlife disease, and exotic species invasion.

The scientific and technical expertise provided by the SALCC will support a landscape-scale, collaborative approach to conservation. This expertise will assist the conservation community as they carry out the functional elements of Strategic Habitat Conservation. These functional elements are: biological planning, conservation design, conservation delivery, monitoring, and research.

The SALCC will work closely with USGS' proposed Southern Region Climate Change Response Center to provide support integral to assessing the impacts related to regional climate change. This will include acquiring the expertise to develop, test, implement, and monitor conservation strategies responsive to the dynamic landscape changes resulting from stressors led by accelerating climate change. These strategies will be model-based and geographically defined allowing us to effectively apply our emerging climate knowledge to predict habitat and species changes and to target our conservation actions to address impacts. The support provided by the SALCC will not be limited to climate change; rather, it will work to address broad-scale changes suspected to affect whole ecosystems (e.g. water quality and quantity, wildlife disease, etc). For further info visit:

[www.fws.gov/southeast/LCC/factsheets.html](http://www.fws.gov/southeast/LCC/factsheets.html)

## Sea Level Rise Project ongoing at ARNWR



**Kayakers paddling at ARNWR. Photo by Steve Hillebrand.**

How to manage wildlife habitat in the face of rising sea levels is in its infancy. Realizing that a vast majority of the acreage comprising Alligator River National Wildlife Refuge may be under water in the next 100 to 50 years made this refuge a prime candidate for study.

Through a partnership with The Nature Conservancy and others along with funding from a grant from Duke Energy the U.S. Fish and Wildlife Service and TNC creating and monitoring wildlife management projects on Alligator River National Wildlife Refuge that pertains to climate change.

Brian Boutin, Albemarle Climate Change Adaptation Project Director for TNC and Dennis Steward, Refuge Biologist, ARNWR, are working together and leading this effort.

“We’ve had a very successful first year,” Boutin said, “And, we’re encouraged by the public support and interest we’ve seen. We have conducted several presentations to local rotary clubs and have had numerous individuals from local universities and state agencies come to eastern North Carolina just to learn about this project.”

The first phase of the project involved experimental plantings of native tree species that show some resistance to salt water. Bald cypress, black gum, and pond pine were planted over 40 acres on the Eastern

edge of the wildlife refuge in March. Some of the planted trees are more salt-tolerant than the existing trees. The hope is that this management strategy will slow the transition of pocosin wetlands to swamp forest, brackish marsh, or even open water.

Oyster reefs will be constructed near shore to dissipate wave energy on the shoreline. These oyster reefs are expected to slow erosion of the shoreline, improve estuarine water quality, provide near-shore aquatic habitat for numerous fishes, and sequester carbon. Monitoring hydrology, water quality, and plant community parameters for response to management actions is an important component of the overall project. Knowledge gained from this initial project will be used to develop adaptive management strategies elsewhere on the refuge and, possibly, other locations in the region or nation.

Another phase of the project is to place water control structures in strategic locations to prevent the jetting of salt water up the canals and into these freshwater systems. After the necessary approvals from Federal and state officials refuge staff will install the water control structures and associated culverts.

For more information about this project, please visit <http://www.nature.org/wherewework/northamerica/states/northcarolina/>

## Vandalism occurring at Sea Level Rise Project

Vandalism has occurred at a sea-level rise project site being used by The Nature Conservancy and the U.S. Fish and Wildlife Service on Alligator River National Wildlife Refuge.

“We’ve always been able to count on our neighbors for help when times get tough,” said Mike Bryant, Refuge manager. “In eastern North Carolina, we all depend on the land and water - whether to put food on our tables, to provide our paychecks, or simply to nourish our souls,” he said. “This project is one way we are attempting to learn new ways to keep our land and water more productive for a longer period of time,” Bryant said. This project has implications reaching far beyond the refuge’s borders and the vandalism is pointless and a setback to the program according to Bryant.

There have been some isolated incidents that have caused setbacks and wasted valuable efforts. On several occasions, buoys marking locations for valuable data-gathering systems and other equipment have been tampered with, destroyed, or stolen. In addition to losing costly equipment, which wastes much needed money, the data that were collected, but not yet downloaded, are lost. This equipment is of no value to anyone, except in the field of research.

“If we cannot appeal to the good nature of folks who use the refuge to show respect for our work and the costly equipment we use, we will have no choice but to close project areas, such as Point Peter Road, to all public use,” Bryant added. “But, certainly, that would be a last resort.”

Anyone with information about any vandalism relating to the Point Peter Road Sea-level rise Project is encouraged to contact Refuge Law Enforcement Officer Jay Eddy at 252-216-8724 or call the refuge office at 252-473-1131.

## NC employees recognized at Regional Director's Awards Ceremony



*Four members representing the Eastern North Carolina/Southeastern Virginia (Strategic Habitat Conservation Team accept the Regional Director's Honors Award from Cindy Dohner, Director, Southeast Region, USFWS. From left to right: Wilson Laney, Pete Benjamin, Dr. Jaime Collazo, Cindy Dohner, and Dr. Ashton Drew.*



*Cindy Dohner presents Patty Matteson with a Regional Director's Honor award. Not pictured and also recognized with an Honor Award was Joe Pittman*

At the U.S. Fish and Wildlife Service's Southeast Director Regional Honor's awards ceremony two Raleigh Ecological Services Field Office employees were recognized along with a team of state, federal, university and refuge employees.

Joe Pittman, Administrative Officer, was recognized for her efforts for leading the Fair Act Inventory for the Ecological Services program in the Southeast Region for the last several years. In addition to performing her normal duties, she reviewed all positions within the field and region for accuracy. She was responsible for entering information for new hires, promotions, step increases and retirements. She completed the project ahead of schedule in addition to performing her normal duties.

Patty Matteson, Public Affairs and Outreach Coordinator, helped connect kids with nature by helping to bring a successful program in the D.C. area to North Carolina. The Shad in the Classroom project highlights anadromous fish habitat restoration efforts of the Service and its partners in North Carolina. Students in 4<sup>th</sup> grade through high school grow shad from egg to fry

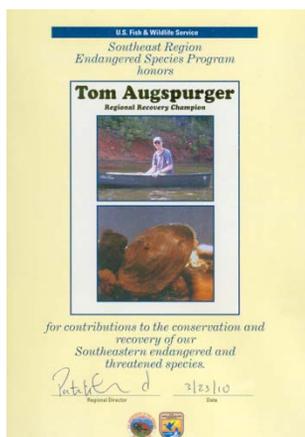
stage and release them into a local waterway.

The following members of the Eastern North Carolina/Southeastern Virginia (ENC/SEVA) Strategic Habitat Conservation Team were recognized for their efforts: Pete Benjamin, Raleigh Field Office, Jared Brandwein, Back Bay NWR, Mike Bryant, Alligator River NWR, Pete Campbell, Raleigh Field Office, Dr. Jaime Collazo, N.C. Cooperative Unit, U.S. Geological Survey, Matt Connolly, Roanoke River NWR, Dr. Ashton Drew, N.C. State University, Mike Hoff, Currituck and Mackay Island NWR, Stephen Jackson, Edenton National Fish Hatchery, Wilson Laney, South Atlantic Fisheries Conservation Office, Chris Lowie, Great Dismal Swamp NWR, Kathryn Owens, Back Bay NWR, Dr. Ed Pendleton, Leetown Science Center, USGS, Howard Phillips, Pocosin Lakes NWR, Cindy Schulz, Virginia Ecological Services Field Office, John Stanton, Columbia Migratory Bird Field Office.

The team was recognized for being leaders in the SHC approach. The certificate reads: "Since the conception of the Strategic Habitat Conservation approach, the members ENC/SEVA Strategic Habitat Conservation Team have worked

diligently, across programs and regions and with partners, to put the principles of SHC into practice. This group of staff and project leaders from the Service's Refuges, Fisheries, Ecological Services, Migratory Birds programs, and USGS Cooperative Fish and Wildlife Research Unit at NC State University and Leetown Science Center, had worked successfully together for many years as an Ecosystem Team prior to the development of the SHC approach. In addition to working to incorporate the principles of SHC into their ongoing conservation activities, the Team has also been active in promoting development of the SHC approach and Landscape Conservation Cooperatives at the Regional and National levels. Landscape Conservation Cooperatives (LCCs) are applied conservation science partnerships focused on a defined geographic area that informs on-the-ground strategic conservation efforts at landscape scales. LCC partners include DOI agencies, other federal agencies, states, tribes, non-governmental organizations, universities and others. These efforts have been accomplished with limited resources, largely through the volunteer efforts of the ENC/SEVA Team."

## Recovery Champions: Tom Augspurger



### Award citation for Tom Augspurger

Tom Augspurger, Contaminants Specialist, Raleigh Field Office was recognized as a Recovery Champion by the USFWS. Augspurger was recognized for his contributions to advancing species recovery goals through his leadership of the office's Tar spiny mussel conservation team.

The Tar spiny mussel is one of the

office's highest conservation priority species. It is known in just five locations in North Carolina and is under threat of becoming extinct. He has led efforts to address key data gaps that are emphasized in the recovery plan. He has secured more than a quarter of a million dollars to investigate the pollutant sensitivity of the species, addressing a key component of biological planning for the Tar spiny mussel. This study provides a boost to recovery efforts through a partnership with the Service, U.S. Geological Survey, N.C. Cooperative Fish and Wildlife Research Unit and N.C. State University School of Veterinary Medicine to identify fish hosts and optimize propagation and culture techniques among other scientific research vital to the species. The project also evaluates the toxicity of effluents discharged into the mussel' current and historic habitat and inventories nonpoint sources of concern. Because little of the species basic biology is presently known, he built a science team and prepared a proposal to develop mussel habitat suitability models. To advance understanding of habitat protection

needs in the interim, Augspurger and partners with the North Carolina Natural Heritage Program convened a workshop. (Further details on this workshop are found on page 12). To further foster conservation action for the mussel, he proactively works through local governments to address Little River corridor protection to mitigate for further reservoir construction impacts. He also led other state efforts by working with the Tar River Land Conservancy to revitalize the Upper Tar River Collaborative and promote species conservation priorities for Tar spiny mussel habitat. He has authored and coauthored numerous peer-reviewed articles on the sensitivity of imperiled mussels to common contaminants. He has built public awareness of pollutant threats on imperiled mussels through the construction of a course in conjunction with the USGS, Missouri State University and Oklahoma Department of Environmental Protection.

## Richard LeBlond and Hervey McIver



**Dale Suiter presents Richard LeBlond (on left) and Hervey McIver with their Recovery Champion awards. photo by Debbie Crane, TNC**

The U.S. Fish and Wildlife Service recently recognized Richard LeBlond and Hervey McIver as Recovery Champions for their work toward the recovery of Golden sedge (*Carex lutea*), Cooley's meadowrue (*Thalictrum cooleyi*) and other rare species.

Richard J. LeBlond, a retired botanist and volunteer with the N.C.

Natural Heritage Program first collected Golden sedge in 1990. Recognizing it as distinct from other sedges known from the southeastern U.S., he described it as a new species in 1994 and it was listed as endangered in 2002. Golden sedge is endemic to the outer coastal plain of North Carolina and is known from only eight populations in Pender and Onslow counties of N.C.

Since determining that Golden sedge is new to science, Richard has led important conservation efforts to educate others about the species and the habitat where it occurs. He has found several new populations and all known locations were found as a direct result of his survey efforts or those he educated about the species. Without his original observations it is likely that this species would have gone unnoticed and likely extinct before anyone even recognized it as a distinct species. LeBlond has worked closely with Hervey McIver protection specialist

with The North Carolina Chapter of The Nature Conservancy to identify parcels of land that are important for the protection of Golden sedge populations. McIver is the key person responsible for permanently protecting 8,439 acres of land (costing \$8,038,025) that contain populations of Golden sedge, Cooley's meadowrue, Red-cockaded woodpeckers and other rare species. Over 80% of the known populations of Golden sedge are permanently protected, thanks to his efforts.

Hervey recently celebrated his 12<sup>th</sup> year with The Nature Conservancy and he has concentrated his land protection efforts in North Carolina's coastal plain since 2000. His appreciation of the land and respect for the people of the state are evident in every aspect of his work. His warm, friendly personality opens many doors and allows him to work with landowners on large-scale conservation projects that many people never dreamed would be possible.

# Governor Declares Prescribed Fire Awareness Week

Fire once occurred regularly across North Carolina. Low-intensity fires burned every few years, fueled by grass, leaves, pine straw, and other forest debris. They kept the forest open, allowing sunlight to penetrate to its floor and reducing buildup of dangerous fuel loads. Fire suppression altered the landscape, allowing fuels to accumulate and putting people and communities in jeopardy. There are many fire-dependent ecosystems across the state from the mountains to the coast, including most oak and pine forests. Without fire, many native plants and animals will disappear due to lack of food, habitat and conditions needed for them to exist.

To help bring awareness to the importance of fire in the North Carolina ecosystem, Governor Bev Perdue proclaimed Feb. 7 through 13 as "Prescribed Fire Awareness Week," North Carolina's first statewide recognition of the importance of prescribed burning. This initiative would not have been possible without the North Carolina Prescribed Fire Council. The council's mission is to "foster cooperation among all parties in North Carolina with an interest or stake in prescribed fire."

The governor's declaration coincided with the 26th year of wildland fire management in North Carolina's state parks and the launch of its 2010 Wildland Fire Management Program. State parks officials conducted prescribed burns on a record 1,879 acres in 2009 and have set a goal to burn 2,500 acres in the state parks to improve habitat and reduce



**From top left: Habitat untouched by fire shows significant growth of underbrush. USFWS conducting a control burn. Bottom left shows a fire managed ecosystem. USFWS Photos.**

wildfire dangers in 2010. The N.C. Division of Forest Resources, N.C. Wildlife Commission, U.S. Department of Agriculture Forest Service, U.S. Fish and Wildlife Service, The Nature Conservancy, and private firms that conduct prescribed burns on private lands burn thousands of acres of state-managed land each year as a way to reduce fuel loads and promote healthy forests.

Prescribed burn participants receive extensive training to ensure that they are careful to protect surrounding communities, themselves and the land they are working to restore. Fire experts do a great deal of work before the first match is lit.

They create a burn plan, which includes smoke management details, fire control measures, acceptable weather parameters, equipment and personnel needs. The plan also details how the

ecosystem will benefit from fire.

The North Carolina Prescribed Fire Council brings together natural resource professionals, public and private land managers and others who support the use of prescribed fire. More information about the council is available at <http://ncprescribedfirecouncil.org>



**Photograph of one of the displays set-up during Prescribed Fire Week in the North Carolina General Assembly Legislative Building.**

## Shad in the Classroom in North Carolina is growing



**Edenton National Fish Hatchery provided this year's eggs for the project. Students keep track of water temperature and quality and remove dead eggs from the shad tank. On the 4<sup>th</sup> or 5<sup>th</sup> Day students release fry into a local waterway.**

The Shad in the Classroom, N.C. project started two years ago with Centennial Middle Magnet School and Leadmine Elementary School in Wake County. This year the program included nine additional schools throughout North Carolina. They are: Bartlett Yancey High School, Chestnut Grove Middle School, Daniels IBMYP Magnet Middle School, East Wake Middle School, Exploris Middle School, Southern Vance High School, Speas Elementary School and Windsor Elementary School.

Students in 4<sup>th</sup> grade through high school grew American shad from egg to fry stage and released them into a local waterway. American shad is a migratory fish that spawns in freshwater and lives most of its adult life in the ocean. American fry used to be plentiful in coastal rivers along the East coast.

"It was a great experience and one I'd love to do again," said Kelly Linhart, Teacher at Speas Elementary, in Winston-Salem. "The program really engaged the students and fit in well with our curriculum," she said. "For students this was a great way to engage them in hands-on learning outside of the classroom

which they so desperately need."

Thanks to a partnership with the North Carolina Museum of Natural Science, funding from the Coastal Program, a U.S. Fish and Wildlife Foundation Grant, and a donation from Dominion Power the program has expanded and includes a web-based component where teachers can find information and activities in reading, writing and math that meet the N.C. Standard Course of Study.

The web-based program was designed by Sandy Burk, author of *"Let the River Run Silver, Again"* and one of the creators of the program in the Washington, D.C. area. In addition to the museum staff from the N.C. State University, N.C. Wildlife Resources Commission, The N.C. Department of Natural Resources, Edenton National Fish Hatchery, Watha State Fish Hatchery, Wake County Public Schools and American Rivers have assisted in developing and enhancing this program.

Through funding from the Albemarle-Pamlico National Estuary program to the Museum, on-line videos that highlight the wise use of our natural resources, careers in fisheries and conservation sciences and details on hatching eggs in school will be added to the web-based activities. Participating teachers attended a

one-day teacher workshop in early spring where they learned about American shad and how to grow them in their classroom. The teachers went home with all the supplies they needed to construct a shad tank in their classroom.

Some of those teachers went on a camping and canoeing adventure with the Museum staff on the Roanoke River in the Roanoke River National Wildlife Refuge. Ten teachers and three museum staff camped on platforms on the river and paddled throughout the day.

Before the eggs arrived and during their time in the classroom, students had to maintain the water quality for the eggs and fry by measuring the pH, temperature and dissolved oxygen in the water and making adjustments when necessary. The eggs were delivered to their classroom on a Monday in late spring where they grew approximately four to five days. The students released their fry on the following Thursday or Friday into the Neuse or Roanoke River or some of its tributaries.

Check out Kelly Linhart's classroom blog at

<http://linhartclass.blogspot.com/to>

## Juvenile Bald Eagle Chooses Alligator River NWR



**Photos: Applying tag to juvenile Bald Eagle. Close-up of eagle tracking device. Photos courtesy of Norfolk Botanical Gardens.**

It's not an unusual occurrence for people from points north to travel to the Outer Banks to avoid the ice and snow of winter. It appears a juvenile bald eagle named Azalea had the same idea. Azalea and her two siblings were hatched at the Norfolk Botanical Garden in Norfolk, Va. on March 22, 2009.

When the birds began to show indications they were ready to fly, they were fitted with satellite transmitters so their movements could be tracked. Azalea fledged on June 13 and left her natal area on August 21.

Azalea made two brief trips into Currituck County, N.C. in mid-August and again in mid-December. Other than that she remained in Virginia until her direct flight Jan. 2, 2010 from Gloucester County, Va. to South Lake in Alligator River NWR. Most recently Azalea is visiting the catfish ponds East of Plymouth, N.C. View Azalea by visiting:

<http://eagletrak.blogs.wm.edu/>

Azalea was first spotted near Sawyer Lake on Alligator River National Wildlife Refuge on January 4 by Tom and Grif Crews. The father and son team were having a day of "play" on the refuge

when they saw the eagle. "She seemed pretty wild as she flew off when we got within 150 yards," said Tom Crews, who is also the Fire Management Officer for ARNWR.

A few days later, the refuge received an email from Reese Lukei, Research Associate with the Center for Conservation Biology at William and Mary alerting them that one of the juvenile bald eagles they were tracking was on the refuge. "

Staff on the refuge were excited to have Azalea visit the refuge.

"Having Azalea here encourages our community to follow her movements" said Bonnie Strawser, Visitor Services Manager. "Once we start to follow even one bird moving across the landscape, it teaches us so much about the importance of wild places and wildlife corridors, and it helps us remember to always look at the big picture," she said. "If we have perfect habitat for bald eagles at Alligator River, but every other place provides them nothing, we will eventually lose bald eagles," Strawser said. "Following Azalea's movements would be a great project for classes in local schools," added Strawser. "If children follow her movements at school, they'll want to visit the refuge to see her in person!"

## Leadmine Elementary School Students Adopt Bald Eagle



**Erin Mulligan, Michael Wade, and Connor Mulligan display a photo, map and certificate of adoption for their class' adopted eagle Azalea.**

A fourth grade class at Leadmine Elementary School in Raleigh N.C. adopted an eagle who was born at Norfolk Botanical gardens last year. That eagle's name is Azalea. At the time the class had no way of knowing that the eagle would end up living in North Carolina.

"It was the students' idea to raise the money and adopt Azalea," said their teacher Anna Brozell." We learned of this web camera as part of the "Shad in the Classroom, N.C." activities, she said. "The students also learned that American shad make-up a large part of many eagles diets."

This spring the students sent in a suggested name for this year's eaglets at the Botanical gardens. "The name they chose was Skylark, but it was not picked," said Brozell. "We were able to watch the eagles being banded last year," she said. "It was really neat to see and the children were so excited," she added.

People can get a glimpse of eagles being raised by visiting a web camera that set-up at the. To visit the Norfolk Botanical Garden webcam go to: [www.wvec.com/marketplace/microsite-content/eagle-cam.html](http://www.wvec.com/marketplace/microsite-content/eagle-cam.html).

Here is a link that will take you to other webcams:

[www.fws.gov/raleigh/sis\\_resources.html](http://www.fws.gov/raleigh/sis_resources.html)

## NCCAT connects teachers with nature in North Carolina



**Oracoke Island was a wonderful backdrop for the NCCAT class and what students did not get to see on the hike he showed them through photos which capture the uniqueness of the Outer Banks. Photos by Dale Suiter**

Dale Suiter, Endangered Species Biologist, Raleigh Field Office, recently conducted a seminar at the North Carolina Center for the Advancement of Teaching on Ocracoke Island. The mission of NCCAT is to keep high-quality teachers in the classroom and advance teaching beyond that of a simple job to an art form and a profession.

Twenty teachers from across North Carolina attended the *"Rivers of Sand: Exploring the Natural History of the Outer Banks"* course at NCCAT's Ocracoke campus from July 12 through the 16. Suiter presented an evening program on invasive species in North Carolina and provided teachers with real-life examples of locally invasive plants.

He also gave a presentation on the flora and plant communities found on North Carolina's barrier islands. Then, the class went in the field and visited living examples of beaches, dunes, grasslands, shrub thickets, maritime forests and salt marsh. Students learned how to identify some of the dominant species in each community and learned about

the importance of each species as part of the greater plant community. They also learned about cultural uses for some of the species such as edible glasswort and sea rocket and the medicinal properties of the toothache tree.

By renewing their love for teaching, and improving the quality and enthusiasm of the teachers themselves, NCCAT ultimately improves student engagement in

learning and academic achievement.

Inspired by Rachel Carson, Suiter challenged each teacher to renew their own "sense of wonder" by experiencing each plant and animal discovered with Carson's advice "What if I had never seen this before? What if I knew I would never see it again?"

To learn more about NCCAT visit [www.nccat.org](http://www.nccat.org)

*"If I had influence with the good fairy who is supposed to preside over the christening of all children, I should ask that her gift to each child in the world be a sense of wonder so indestructible that it would last throughout life."*

Rachel Carson

**NCCAT helps teacher's reconnect with the sense of wonder.**

## Benefits of Peatland Restoration: Attracting Partners to Restore Habitats

When wildlife conservation principles are employed as an integral part of greenhouse gas sequestration, partnerships between the U.S. Fish and Wildlife Service and sequestration investors can reverse past ecosystem damage and restore habitats for fish and wildlife. This approach also ensures that carbon sequestration projects truly benefit our native wildlife populations - an important goal of both the Service and the conservation community.

In eastern North Carolina, the Service's Environmental Contaminants Program partnered with the Service's Refuges and Coastal Programs as well as the North Carolina Department of Environment and Natural Resources in 2006 to restore extensively altered peatlands at Pocosin Lakes National Wildlife Refuge. When the pocosins southeast of Lake Phelps, North Carolina were drained for now defunct farming and peat mining operations, soil and drainage promoted loss of carbon and nutrients to the atmosphere and run-off to sensitive downstream waters. The hydrology restoration at Pocosin Lakes NWR is returning the lands to a more natural state and reduces the impacts of climate change by stopping the loss of carbon dioxide and nitrous oxide.

Cooperatively, we've nearly completed restoring 10,820 acres which will result in retention of conditions in the altered area about 70 million pounds of carbon and 2.2 million pounds of nitrogen per year. Accordingly, restoring drained peatlands is a quantifiable

approach to sequestering greenhouse gas pollutants.

Restoration projects like the successful NCDENR partnership at PLNWR may be attractive source of carbon and nitrogen credits and could attract more partners in the future based on low implementation costs on conservation lands (less than \$350/ac) and high retention benefits. To facilitate new carbon-based partnerships and expand the ongoing restoration, site-specific estimates of sequestration benefits developed by Service staff are currently being verified in a 3 year collaborative study at PLNWR with the Duke University Wetlands Center.

In anticipation of significant annual avoided carbon dioxide emissions and in recognition of the ecological benefits and the scope of peatland restoration needed at the landscape scale, carbon investors have contacted the Service about potential carbon project partnerships on and near refuges. With nearly a half million acres of degraded pocosin wetlands in need of restoration in North Carolina, there is potential to sequester millions of tons of carbon per year....stay tuned! For more information, please visit our website at

[http://www.fws.gov/raleigh/pdfs/FWS\\_PeatlandCS\\_factsheet.pdf](http://www.fws.gov/raleigh/pdfs/FWS_PeatlandCS_factsheet.pdf) or

contact Sara Ward at Sara\_Ward@fws.gov or 919/856-4520 x.30.



**Views of 2008 Fire on Pocosin Lakes National Wildlife Refuge. (USFWS Photos).**

*Catastrophic fires in drained peatlands, like the 2008 fire at Pocosin Lakes NWR, can burn away the entire peat lens. Based on the area and depth (over 5-feet of loss in places) of peat burned, an estimated 6 million tons of carbon were released during the fire. Previously-restored lands on the refuge did not burn in the 2008 fire and helped create an important fire break. Resaturating peatlands limits the potential for intense peat fires while still allowing the above ground vegetation to burn (a necessary process in pocosin ecosystems)*

### **Degraded pocosins: an environmental concern**

- Drained for agriculture and peat mining
- Drainage caused peat decay and carbon and nitrogen loss
- Drainage canals deliver pollutants to sensitive downstream waters

### **Restoration Approach**

- Install water control structures
- Use raised roads along canals as levees to raise water levels
- Re-saturate drained areas by rainfall
- Promote sheet flow by water level management



Photo by S. Ward/USFWS



Photo by E. Hinesley/NCSU

**Water control structures and raised roads shown in the photo (left) allow refuge staff to restore water level to idea conditions.**

## Raleigh Field Office Celebrates Endangered Species Day with Partners



*Girl Scouts Danielle Phillips and Megan Trayes check out some of the pelts on display during Endangered Species Day at Jordan Lake. Top and bottom photos by Simon Smith.*



*Visitors can find many displays of state and federally listed threatened and endangered species at the North Carolina Museum of Natural Science.*



*Girl scouts their leaders and local visitors listen to a presentation about Jordan lake from an Army Corps of Engineer employee.*



*Johnny Randall, Assistant Director for Conservation for the N.C. Botanical Garden leads visitors on a tour of some of the endangered plants found in the Botanical garden*

With the closest wildlife refuge 2 ½ hours away and an office in an industrial park, the staff at the Raleigh Field Office coordinated with partners to help recognize Endangered Species Day in North Carolina.

The Chatham County Conservation partnership took the opportunity to highlight the endangered species found in their county by hosting events at the Jordan Lake Visitors Center.

Gretchen Smith, volunteer outreach coordinator, for the partnership set-up all kinds of wonderful activities for the day that included: displays on local and endangered wildlife; a storyteller who told tales of Native Americans who used to call the area

home; and a presentation by the Corps of Engineers on watersheds and the importance of water quality. Girl scouts who attended the day's events received their Endangered Species badge.

The North Carolina Botanical Gardens set-up three hour-long tours through the gardens that showcased the gardens endangered species. In addition visitors heard how staff at the NCBG is involved in rare-plant research and protection of natural areas and its management. Dale Suiter, Endangered Species Biologist, Raleigh Field Office worked with the NCBG on the printing of a brochure that will provide garden visitors with information about their rare plant programs."

More than 500 children went on an Endangered Species Day scavenger hunt through the N.C. Museum of Natural Science. On each floor of the museum visitors can find a display on endangered species. In addition Patty Matteson, Public Affairs and Outreach Coordinator, Raleigh Field Office gave students who completed the scavenger hunt a silicone wristband that says 'protect endangered species.'

"The students were so excited to learn about the endangered species in our state and learn how they can help protect them," said Matteson.

## 102 years of expertise directed at Tar River Spiny mussel conservation



**From left to right: Dick Biggins, U.S. Fish and Wildlife Service (Ret.), Tim Savidge, Catena Group, Tom Dickinson, Catena Group, Art Bogan, PhD, NC Museum of Natural Science, Chris Eads, N.C. State University School of Veterinarian Medicine.**

The Raleigh Field Office hosted two meetings of 15 experts to gather and synthesize what is known about the Tar River Spiny mussel (*Elliptio steinstansana*), a federally-endangered freshwater mussel and a North Carolina endemic.

Under the leadership of key partners including Sarah McRae, freshwater ecologist, N.C. Natural Heritage Program, Rob Nichols, Eastern Aquatic Wildlife Diversity Coordinator, N.C. Wildlife Resources Commission and John Fridell, lead for Tar River spiny mussel recovery, USFWS Asheville Field Office, the group reviewed Tar River spiny mussel biology, current and historic distribution, and suitable habitat conditions. They also worked towards an expert-based estimate of how much habitat to protect (along with where, and how) to conserve the species.

Future instream and landscape level monitoring and research are expected to allow design refinements. A report on the effort is expected this summer. The group possessed over 100 years of,

combined expertise with this species, including perspectives from biologists with other agencies, consulting firms, and academic institutions. We were particularly fortunate to have Dick Biggins, the biologist who handled listing of this species as endangered in 1985, and a 2002 USFWS Endangered Species Recovery Champion join us from retirement.

The USFWS is grateful to all the participants for devoting their time and energy to fostering the recovery of the Tar River spiny mussel.

For more information, please contact Tom Augspurger (919/856-4520 x21 or [tom\\_augspurger@fws.gov](mailto:tom_augspurger@fws.gov)).



**Tar River spiny mussel. USFWS Photo**



**A red wolf USFWS Photo.**

## Red Wolf Howlings Begin

Every year the USFW Red Wolf Recovery Program and the Red Wolf Coalition jointly sponsor weekly howling experiences for the public.

The 2010 summer schedule began June 9, at 7:30 p.m. and continues each Wednesday evening through Labor Day. Registration is required and there will be a \$7 charge per person.

The highlight of the evening is having the chance to listen for the characteristic “howl” of one or more red wolves as they communicate with each other. While there are no guarantees that red wolf howls will be heard, audiences will definitely get a chance to try their howling skills, learn about red wolves, and experience the wilds of Alligator River National Wildlife Refuge after dark.

Participants meet on ARNWR at Creef Cut Wildlife Trail at the intersection of Milltail Road and Highway 64. A short presentation provides an overview of the Red Wolf Recovery Program and the role of the Red Wolf Coalition, a Friends organization dedicated to the preservation of the red wolf species. Visitors have an opportunity to obtain red wolf literature and to see both red wolf and coyote pelts and skulls, track casts, tracking collars, and field photos.

To register for a howling, contact the RWC office at 252-796-5600 or visit [www.fws.gov/redwolf/rwhowling.html](http://www.fws.gov/redwolf/rwhowling.html)

## North Carolina Prepares for Deadly Bat Malady - WNS



**Bats infected with White Nose Syndrome. Photo by Al Hicks, New York Department of Environmental Education.**

With the recent discovery of a fungus that is associated with deadly bat disease in the Tennessee portion of Great Smoky Mountains National Park, wildlife biologists in North Carolina are keeping a watchful eye on the state's bat populations and preparing for the possible arrival of white nose syndrome.

WNS was first documented in a New York cave in 2006 and has since spread into Canada and as far west as Missouri. It is nearly always fatal to many species of bats, wiping out cave populations within two or three years. Of special concern in North Carolina are the three federally-endangered bats found in the state - the Indiana, gray, and Virginia big-eared bat.

North Carolina is home to a close cadre of bat biologists who annually monitor the state's bat populations. However, this year, in cooperation with the N. C. Wildlife Resources Commission, they're taking extra steps to protect bats and identify possible WNS outbreaks in the state.

"Given the potential impact this syndrome has had upon bat populations and the potential for broader impacts to the natural systems of this country, we are

actively engaged with our conservation partners to monitor the spread of this condition," said Chris McGrath, a biologist and Wildlife Diversity Coordinator for the Wildlife Resources Commission. "We're taking all reasonable measures we can to prevent spreading the fungus, and participating in national efforts to identify the causes and seek solutions before we've lost many of our bat species that serve an absolutely critical function in nature."

The N. C. WRC and the U.S. Fish & Wildlife Service recently finalized the "White Nose Syndrome Surveillance and Response Plan for North Carolina." The plan outlines a number of steps to protect bats while allowing biologists to pinpoint and investigate a possible WNS outbreak as quickly as possible.

Some of the signs biologists are looking for in their monitoring are: white tufts of fungal growth on the bats' muzzle, damaged wings, bats active or clustered outside a cave during cold temperatures, or thin or dehydrated bats. The data collected is compiled by the Commission to track population trends and to gauge impacts should WNS arrive in North Carolina.

In order to protect the bats from possible contamination from biologists, strict decontamination protocols are followed by biologists working with bats. "We don't fully understand all the ways this disease can spread" said Sue Cameron, a biologist with the USFWS. "We know it can spread bat to bat, but we strongly suspect humans can inadvertently carry it from cave to cave on clothing or equipment, she said."

If an outbreak of WNS is suspected, state and federal biologists are prepared to investigate the extent of the possible infection, send suspected bats to be tested, and make the landowner aware of the situation and what he can do to help limit the disease's spread.

### What to do if you suspect WNS?

Contact the NCWRC - Gabrielle Graeter [gabrielle.graeter@ncwildlife.org](mailto:gabrielle.graeter@ncwildlife.org), 828-273-9097) or Susan Cameron, USFWS at [susan\\_cameron@fws.gov](mailto:susan_cameron@fws.gov), 828-258-3939, ext 224). The USFWS has also set up an e-mail address to accept reports from across the nation, [WhiteNoseBats@fws.gov](mailto:WhiteNoseBats@fws.gov).

- If possible, photograph the potentially affected bats
- If you need to dispose of a dead bat found on your property, pick it up with a plastic bag over your hand or use disposable gloves. Place both the bat and the bag into another plastic bag, spray with disinfectant, close the bag securely, and dispose of it with your garbage.
- Thoroughly wash your hands and any clothing that comes into contact with the bat.
- If you see a band on the wing or a small device with an antenna on the back of a bat (living or dead), contact the NCWRC or UFWFS For further information visit: [www.fws.gov/WhiteNoseSyndrome/](http://www.fws.gov/WhiteNoseSyndrome/)

## Creating a Statewide Tree Canopy Height Layer for North Carolina from Lidar Data

It is said that every cloud has a silver lining. In this case, the clouds in question were the rainclouds associated with Hurricanes Dennis and Floyd in the summer of 1999. Hurricane Dennis made landfall on the North Carolina Coast and saturated the ground with 15 inches of rainfall on September 5, and then Hurricane Floyd passed over on September 16, adding another 19 inches of rainfall. This caused several rivers in Eastern North Carolina to exceed 500 year flood levels.

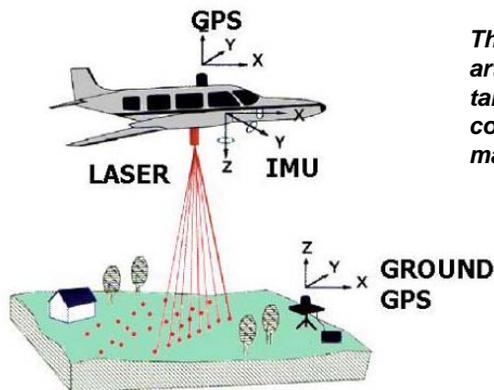
The need to update the paper floodplain maps available at the time soon became apparent. This led to a partnership between Federal Emergency Management Agency and the State of North Carolina to jointly fund a digital floodplain mapping effort based on the newly-emerging LIDAR mapping technology. LIDAR is an acronym for Light Detection and Ranging.

To collect LiDAR data for ground elevation, an airplane with a laser and detection device is flown across a landscape. As the plane flies, the laser sends pulses in a back and forth pattern across the landscape below the airplane. The device records the time that each pulse takes to reach the ground and bounce back to the detector in the airplane and calculates the distance from the ground to the plane.

High-precision GPS data from instruments on the plane is integrated into this calculation to locate the object the laser pulse bounced off of with a vertical accuracy of 6-9 inches. The laser pulses tend to spread as they travel to the ground, so that each pulse can reflect off of several objects on the path to the ground.

This pattern of reflection leads to multiple X,Y,Z point locations that can be generated from each pulse. Houses, radio towers, power lines, or vegetation can be the source of these multiple returns. The endpoint of this data collection called a "point cloud" of X,Y,Z locations that represent every object that the laser pulses contacted. This can lead to very large data sets.

Normally, this data is collected to find the ground surface for flood plain



*The diagram on the left is an artist rendering of what is taking place during data collection used in LIDAR mapping.*

•estimated to represent the ground (ground points) are used and the other points are discarded. As it turns out, these "discarded" points have exactly the information needed to characterize the height and structure of vegetation on a landscape.

"LiDAR gives us another tool or a way to look at habitat," said Doug Newcomb, Information Technology specialist, Raleigh Field Office. "We can look at areas where we know endangered species live, for example the red-cockaded woodpecker, and look at other areas across the state to see if the same parameters apply and they may be found there as well," he said. "We need to know what species like in order to help manage habitat for them," he said.

Many researchers have used individual points from the "point cloud" to determine canopy heights and canopy structures on a site or small area, but canopy height measurement at a landscape scale over a large area using this method requires significantly more time to complete than was available, and half of the available data for North Carolina did not have sufficient attributes to use this method. For the North Carolina data set, a different method was used. A fixed grid size was determined for the state, based on the Density of the data available, and the entire data set for the state was analyzed using a process known as binning. In binning, you statistically analyze the values for the

points which fall within each grid cell, or bin, and return the results of that analysis as the value of that grid cell. This allows you to automate the analysis of large quantities of spatial data very quickly.

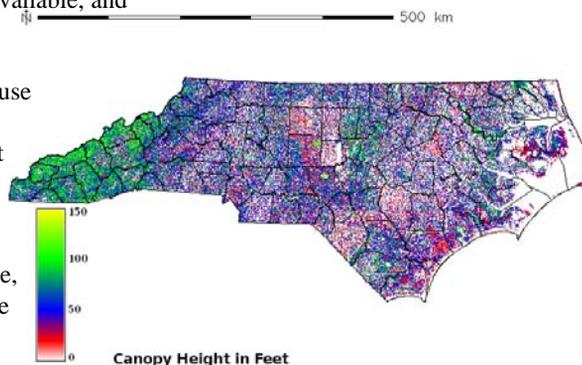
The canopy height dataset is planned to be used, in conjunction with canopy structure datasets also derived from the lidar data, in site specific analysis of species habitat from known locations across the State of North Carolina. For further information on LIDAR mapping activities visit:

[http://www.ncfloodmaps.com/pubdocs/lidar\\_final\\_jan03.pdf](http://www.ncfloodmaps.com/pubdocs/lidar_final_jan03.pdf)

For further information on the flood mapping program visit:

[http://www.ncfloodmaps.com/pubdocs/ncstatusdocument\\_jan03-2pager.pdf](http://www.ncfloodmaps.com/pubdocs/ncstatusdocument_jan03-2pager.pdf)

Or you may contact Doug Newcomb in the Raleigh Field Office at [doug\\_newcomb@fws.gov](mailto:doug_newcomb@fws.gov).



## New tram will now take visitors on a tour of The Alligator River National Wildlife Refuge



**From left to right. Alligator River National Wildlife Refuge open-air Tram trailer. Photo of black bear seen on Maiden voyage of Tram. Tram visitors stop to look through a spotting scope during a tour. USFWS Photos.**

Visitors to Alligator River National Wildlife Refuge can take a drive to enjoy the beauty and the wildlife that are found on the refuge. Wildlife Drive starting at Milltail road is open to the public during daylight hours. And new this year on Alligator River National Wildlife Refuge is a weekly guided free tram trailer tour every Thursday from 1:30 to 3:30 p.m.

The tram is universally accessible and appropriate for the young and young at heart. It is a covered, open-air trailer, so be prepared for the outdoors! The tram is equipped with a speaker system, so everyone can hear the interpretive message along the way. With scheduled stops along the way, riders will learn special tips about observing wildlife, visit the places critters are known to "hang out", and hear about the complex

management activities used on this refuge to make it the perfect place for wildlife!

On a recent Saturday tour, White and Glossy Ibis were "probing" in a field - searching for worms, bugs, and larvae of all sorts. Refuge staff set up a spotting scope and invited riders to stretch their legs and get a close-up view of the beautiful birds. Even folks driving their own vehicles on the Wildlife Drive stopped to get a glimpse of the Ibis and chat with the tram's riders. Each trip brings lots of sightings ranging from butterflies to black bear and a wide variety of turtles and snakes. If you're lucky, you may even see one of our bobcats!

Many locals and visitors travel US Highway 64 through East Lake and Manns Harbor and never realize they are surrounded by all sorts of creatures!

For many years, mysterious tales of wild animals and black swamps have caused a lot of people to avoid turning off Highway 64 and onto Milltail Road. If you've always wondered what lies behind those blue goose signs but were afraid to venture off the highway, now is a great time to find out what you've been missing. So hope on the Tram, or take a drive.

No registration is required, and the tour is free. Meet at Creef Cut Trail parking lot just off Highway 64 at Milltail Road. Please feel free to bring a cushion to sit on and drinking water, or a light blanket, if the weather is cool. To learn more about the tram tour or if you have any questions, call Cindy Heffley at 252-475-4180, or email [cindy\\_heffley@fws.gov](mailto:cindy_heffley@fws.gov).

## What Ecological Services Does

### Endangered and Threatened Species Listing/Recovery/Delisting

The Ecological Services Division is responsible for administering significant parts of the Endangered Species Act. We have programs that work to conserve rare species before they need legal protection, and we determine whether to add a species to the *Federal List of Endangered and Threatened Wildlife and Plants*.

Once a plant or animal is listed as threatened or endangered, we work to coordinate efforts to recover that species. These efforts include providing funding to state agencies to protect these species and working with other government agencies, private companies and individuals to help them protect these plants and animals on their land.

Ultimately, the goal of the Endangered Species Act is to recover species to the point where they no longer need federal protection, and Ecological Services determines which plants and animals have recovered to the point they can be delisted.

### Project Planning

There are a number of federal laws that instruct the U.S. Fish and Wildlife Service, as the nation's wildlife agency, to review various projects that are funded and/or authorized by the federal government. The Service's role is typically to identify impacts to fish, wildlife, and plants and their habitats from these projects and work to minimize or eliminate those impacts. The laws under which the Service reviews projects include: the Endangered Species Act, Fish and Wildlife Coordination Act, Clean Water Act, Federal Power Act, the Migratory Bird Treaty Act, and the National Environmental Policy Act. The project planning program also focuses on large scale planning and conservation efforts; working with others to identify and implement strategies to meet the long term needs of wildlife and people at the landscape level.

### Partners for Fish and Wildlife

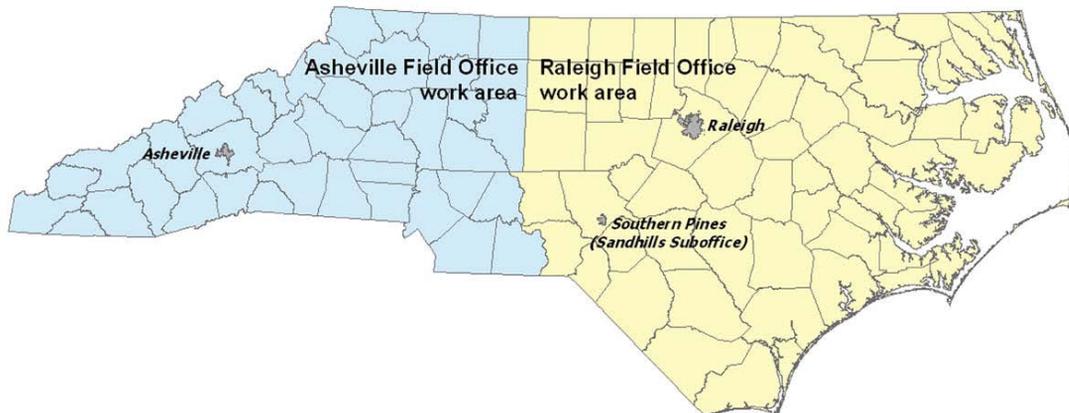
The Partners for Fish and Wildlife Program provides funding and technical assistance to private landowners to help them restore, improve, and protect fish and wildlife habitat while leaving the land in private ownership.

### Environmental Contaminants

This program involves working with partners to prevent environmental contamination and to maintain the health of ecosystems; identifying contamination that adversely affects the health of fish, wildlife, and their ecosystems; serving as the federal trustee for fish and wildlife injured by contamination; and negotiating settlements from polluters to restore lost resources and their benefits to local citizens.

### Coastal Program

This program focuses on restoring ecosystem health to bays, estuaries, and watersheds along the coastlines of the United States. Working with partners, the Coastal Program provides funding and technical assistance for projects to restore wetlands and seagrass beds, control invasive species, acquire rare or exceptionally important habitats, remove dams to allow fish passage to spawning areas, and provide community outreach regarding coastal fish and wildlife resources.



## Raleigh Field Office Staff Listing

Mailing Address: P.O. Box 33726  
Raleigh, NC 27636-3726

Street Address: 551 F Pylon Drive  
Raleigh, NC 27606  
Phone: 919-856-4520 Fax: 919-856-4556

**Pete Benjamin**

*Field Supervisor*  
Ext. 11

**Tom Augspurger**

*Ecologist*  
Wildlife toxicology; environmental  
contaminants/pollution; water quality.  
Ext. 21

**Mark Bowers**

*Fish and Wildlife Biologist*  
Hydroelectric project review; federal  
project review under the Endangered  
Species Act, Clean Water Act.  
Ext. 19

**John Ellis**

*Fish and Wildlife Biologist*  
Hydroelectric project review;  
Endangered Species Act habitat  
conservation planning; federal project  
review under the Endangered Species  
Act.  
Ext. 26

**John Hammond**

*Fish and Wildlife Biologist*  
Endangered species coordinator;  
military projects; Endangered Species  
Act consultation and habitat  
conservation planning.  
Ext. 28

**Howard Hall**

*Fish and Wildlife Biologist*  
U.S. Army Corps of Engineers civil  
works and regulatory projects;  
commercial mitigation banks; and  
Coastal Barrier Resources Act (CBRA)  
determinations.  
Ext. 27

**Gary Jordan**

*Fish and Wildlife Biologist*  
Endangered Species Act consultation,  
Clean Water Act – Section 404  
coordinator for North Carolina  
Department of Transportation projects;  
permit and mitigation bank review.  
Ext. 32

**Patty Matteson**

*Public Affairs and Outreach Coordinator*  
Primary media and congressional contact;  
Federal Junior Duck Stamp State  
coordinator.; and Shad in the Schools,  
N.C. project coordinator.  
Ext. 25

**Leigh Mann**

*Office Automation Clerk*  
Receptionist, Word processing, editing  
and proofreading; time and attendance  
processing.  
Ext. 10

**Doug Newcomb**

*GIS Specialist/Information Technology  
Specialist*  
Computer and GIS support, network  
administrator.  
Ext. 14

**Joe Pittman**

*Administrative Officer*  
Budget Administration; contracting  
Ext. 13

**John Ann Shearer**

*Fish and Wildlife Biologist*  
Partners for Fish and Wildlife state  
coordinator. Farm Bill/private lands  
coordinator.  
Ext. 17

**Dale Suiter**

*Fish and Wildlife Biologist*  
Recovery of threatened and  
endangered plants and invertebrates,  
consultation, national forest  
consultations and invasive species  
control.  
Ext. 18

**Sara Ward**

*Ecologist*  
Wildlife toxicology; environmental  
contaminants/pollution ; water  
quality.  
Ext. 30

**Sandhills Suboffice**

**140 A S.W. Broad Street  
Southern Pines, NC 28388  
910-695-3323**

**Peter Campbell**

*Wildlife Biologist*  
Red-cockaded woodpecker  
recovery biologist; Landscape  
Conservation Planning

**Sara DiBacco**

U.S. Fish and Wildlife  
Service/Army Environmental  
Command ORISE Fellow.

**Laura Fogo**

*Fish and Wildlife Biologist*  
Partners for Fish and Wildlife  
and Farm Bill Programs, Work  
area: Catawba, Yadkin-Pee-Dee,  
Lumber and Waccamaw River  
Basins.

**Susan Miller**

*Fish and Wildlife Biologist*  
Red-cockaded Woodpecker;  
Safe Harbor Program