

# Conserving Georgia's Nongame Wildlife

Georgia is rich in wildlife. Yet more than 1,000 native plant and animal species in our state are species of conservation concern. Of those, 318 are protected by federal or state law.

**Our mission** at the Department of Natural Resources' Nongame Conservation Section is to conserve these and Georgia's other native nongame wildlife, or species not legally fished for or hunted.

We do this through research, surveys, conservation programs, education, land acquisition and habitat management.

The work is critical and wide-ranging. It varies from studying ways to protect American oystercatcher nests on the coast to restoring sandhills habitat with prescribed fire just southwest of Macon and monitoring north Georgia caves where biologists found a disease fatal to bats in early 2013.

**Our guide** is the [State Wildlife Action Plan](#). This comprehensive strategy is focused on keeping native Georgia wildlife from declining to the point of needing federal protection as threatened or endangered species.

We developed the State Wildlife Action Plan in 2005. Now we're working to update it. This effort includes other agencies, conservation groups, businesses and private landowners. All have a stake.

**Our challenge** at the Nongame Conservation Section is that we don't receive state appropriations for nongame work. Instead, we depend on direct donations, fundraising initiatives and grants.

That support has taken a significant hit because of funding formula changes associated with the eagle and hummingbird license plates, our No. 1 fundraiser.

You'll learn more in this report. Please [view or download a copy](#) – there's also a six-page summary – and let me know what you think at [mike.harris@dnr.state.ga.us](mailto:mike.harris@dnr.state.ga.us).

This is a conservation mission that affects all of us, from protecting our drinking water to strengthening our economy and providing places where our children – and their children – can experience nature.

Thank you for your interest in conserving nongame wildlife and natural habitats.

*Mike Harris, Nongame Conservation Section chief*



2013  
FISCAL YEAR REPORT

Georgia Department of Natural Resources  
Wildlife Resources Division  
Nongame Conservation Section

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## Waterbird Conservation Initiative

Georgia's barrier island beaches, coastal salt marshes and freshwater wetlands support 86 species of seabirds, shorebirds and wading birds, collectively known as waterbirds. The Waterbird Conservation Initiative includes:

- Protecting important colonial waterbird nesting habitats.
- Conducting surveys to determine the status and habitat needs of resident, migratory and wintering waterbirds.
- Creating partnerships for long-term conservation of wetland-dependent bird species.

Conservation efforts include protecting and managing five sand islands specifically for beach-nesting and migratory birds. While this effort is especially valuable for seabirds, resident and migratory shorebirds also benefit from protecting critical nesting and resting areas that are free from disturbances. One of the areas, a dredge-spoil island near Brunswick, supports one of the largest colonies of nesting seabirds on the South Atlantic Coast.

For beach-nesting birds, the summer of 2013 proved better than 2012. There were fewer extreme tide events and storms during nesting season, allowing for higher productivity among most beach-nesting birds. Little Egg Island bar had no nesting seabirds. A colony of 300 brown pelicans used a marsh island behind Little Cumberland Island, but numbers of pelicans nesting in the state were low in 2013 –



Seaside sparrow (Todd Schneider/GaDNR)

313 compared to 790 in 2012 and 1,892 in 2011. Nongame staff tracked active seabird colonies on St Catherines Island Bar and Pelican Spit, with the largest colony on the Brunswick dredge-spoil island.

Created by the U.S. Army Corps of Engineers in 2007 and owned by the state, the dredge-spoil island near the Brunswick shipping channel is an important nesting site for waterbirds. In 2013, 5,755 royal tern nests were documented on the island, along with 42 sandwich tern, 40 black skimmer, 39 gull-billed tern, 35 least tern and 200 laughing gull nests. The Nongame Conservation Section is working with the corps to keep the site vegetation-free to promote beach-nesting seabirds and discourage nesting by gulls.

### In other updates:

- DNR and partners including the University of Georgia, St. Catherines Island, Little St. Simons Island and the U.S. Fish and Wildlife Service were awarded a National Fish and Wildlife Foundation grant to control predators at a number of key nesting sites for American oystercatchers. This project not only led to higher nest productivity for oystercatchers than DNR has documented recently, but should provide an adaptive management tool to help managers determine when predator control efforts are needed. The grant allowed the Nongame Conservation Section to hire two trappers. They removed 134 raccoons, 438 feral hogs, two armadillos and 13 opossum from Little St. Simons, Little Egg Island Bar and St. Catherines. Thanks in part to those efforts, most of the 29 oystercatcher chicks documented during 2013 are presumed to have fledged. (Also, while survey efforts have increased, that was the most American oystercatcher chicks confirmed in Georgia.)
- DNR coordinated a major new migratory shorebird survey based on a regional study by shorebird researchers with the Conserve Wildlife Foundation of New Jersey and the U.S. Geological Survey. The first series of surveys was conducted during spring 2013 at 23 sites. A combination of DNR and Fish and Wildlife Service staff, island managers, and volunteers conducted the surveys, which will help generate more accurate population and trend data for a number of Arctic-nesting shorebirds.
- Researchers documented 119 pairs of American oystercatchers on the Georgia coast. DNR and its partners documented 29 chicks and banded 26, most of which fledged.
- Two graduate students completed their second field season working with Wilson's plover during summer 2013. The students studied nesting ecology, including how males and females share

Ruddy turnstone feeding on dead horseshoe crab (Evan Schneider)



# Birds



nest care and how managing for American oystercatchers may benefit Wilson's plover. The hope is the projects lead to specific management guidelines for the species. Wilson's plover productivity was higher in 2013 compared to 2012, and many chicks were seen on almost all of barrier islands, including Jekyll and St. Simons.

- Four whimbrels were radio-tagged for tracking by satellite in spring 2013, thanks to support from The Environmental Resources Network (TERN) and help from other partners. Five whimbrels tagged in Georgia are being tracked. Researchers are learning about whimbrels' use of the Southeast's coast, as well as the tremendous migrations the birds repeat annually. A Georgia-tagged whimbrel nicknamed Wolf flew 3,300 miles without resting, flying from Arctic nesting grounds to the British Virgin Islands. ([Follow the flights.](#))
- DNR and partners continued a sharp-tailed sparrow banding project, providing data on the winter distribution of two species – Nelson's and saltmarsh sparrows – and five subspecies of these little-known birds. Blood samples from seaside sparrows were also collected for an analysis of mercury contamination.
- DNR and several coastal partners continued leading the Georgia Shorebird Alliance. Involving

state, federal and private groups, the new organization is making significant progress in management, monitoring, research and education regarding shorebirds on the Georgia coast.

## Red-cockaded Woodpecker Recovery

The red-cockaded woodpecker is the only woodpecker in the U.S. that excavates cavities in living pines. The drastic loss of mature pine forests over the past 200 years has been the primary cause of this species' decline. Suitable habitat now occurs primarily on some military bases, national forests and other public lands, although there are still red-cockaded woodpeckers on a number of private properties.

In 1999, Georgia DNR developed the nation's first statewide red-cockaded woodpecker Habitat Conservation Plan to provide management options for private landowners. The plan includes options for mitigated incidental take and for Safe Harbor.

Safe Harbor targets landowners in southwest Georgia, where plantations managed for the northern bobwhite also support a significant population of red-cockaded woodpeckers. Safe Harbor involves a landowner's commitment to beneficially manage habitat for the site's "baseline" number of woodpecker family, those on the site when the

agreement is made. A family group refers to the red-cockaded woodpeckers occupying a cluster of cavity trees. The group can range from a single bird to a breeding pair plus one to three helpers – typically male offspring from previous years that help feed younger siblings. In exchange for maintenance of this baseline number of family groups, the landowner's responsibility will not increase if the woodpecker population increases.

In Georgia, 160,713 acres are enrolled in Safe Harbor management agreements covering 105 baseline groups of red-cockaded woodpeckers and supporting 38 surplus groups, or additions to the woodpecker populations. Most of these properties are in the Red Hills Region near Thomasville. The Red Hills support the largest population of red-cockaded woodpeckers on private lands. Since the inception of Safe Harbor in 2000, the Red Hills population has grown from about 175 family groups to a population that has stabilized at about 180 groups.

The Nongame Conservation Section continued work with Safe Harbor participants in 2013 to monitor and band woodpeckers and install artificial nest cavities.

In cooperation with the Joseph W. Jones Ecological Research Center, the red-cockaded woodpecker population at Ichauway Plantation in Baker County is also being restored. These 29,000 acres supported a



American oystercatchers (Tim Keyes/GaDNR)



single male in 1999. Through the translocation of 65 young birds, the property now has 25 family groups.

In 2008, DNR acquired 8,400 acres near Bainbridge to create Silver Lake Wildlife Management Area, the first state-owned property with red-cockaded woodpeckers. Silver Lake has extensive stands of mature longleaf pine habitat. In 2013, DNR entered into an agreement with the U.S. Army Corps of Engineers to manage the woodpeckers on corps land that DNR leases for Lake Seminole Wildlife Management Area. The property is adjacent to the Silver Lake population and has quality longleaf and wiregrass habitat, some of which red-cockaded woodpeckers already use as foraging habitat. Over the coming years, recruitment clusters will be installed in suitable places at Lake Seminole WMA to encourage the expansion of red-cockaded woodpeckers.

To supplement the red-cockaded woodpecker population at Silver Lake, Nongame Conservation staff translocated six woodpeckers from Fort Stewart to the WMA in 2013. Silver Lake has 28 family groups, three more than the previous year. Also in 2013, 30 young woodpeckers successfully fledged there.

Through more frequent controlled burning, installation of more recruitment clusters and careful forest management, Silver Lake WMA will eventually sustain about 50 family groups.

## Partners in Flight

In Georgia, the international bird conservation effort Partners in Flight continued to focus on the 33 priority bird species identified in the State Wildlife Action Plan. Research and survey questions and conservation needs identified during stakeholder meetings in 2008 were condensed into programs for bird conservation funded by a State Wildlife Grant.

In the most recent fiscal year, Nongame Conservation Section projects involved the following:

**A third year of marshbird surveys** yielded similar results to the previous two survey years, indicating that these birds are fairly common on some state properties in suitable habitats.

Three species of secretive marshbirds – the black rail, king rail and least bittern – are high-priority species in the State Wildlife Action Plan due to factors including small numbers, habitat loss and alteration, and a lack of sufficient information about the birds' distribution and population trends in Georgia.

In spring 2013, the Nongame Conservation Section conducted a third year of standardized surveys using the Continental Marsh Bird Monitoring Program survey protocol. This standardized methodology allows data collected to be shared, aggregated and analyzed at many different levels, including by habitat or wetland type, physiographic province, state, region, country and continent.

## Surveys started three years ago for Henslow's sparrow

continued in 2013. Henslow's sparrow is a small songbird that nests in grasslands of the Midwest and Northeast and winters in grassy areas of pine flatwoods, pitcherplant bogs and powerline corridors in the Southeast's Coastal Plain. Over the past several decades, the species has declined precipitously, likely due to habitat loss on its breeding and wintering grounds.

This sparrow is a species of high conservation concern because of its small population size, greatly reduced habitats and other factors. Its secretive nature and small numbers make it difficult to survey and monitor, and little is known about its distribution and populations across most of its range, including in Georgia.

To better understand the species' status in the state, the Nongame Conservation Section has monitored Henslow's sparrows since winter 2010-2011. Birds were captured in mist nets along several powerline corridors at Paulks Pasture Wildlife Management Area in Glynn County, Townsend Wildlife Management Area near Ludowici and Moody Forest Wildlife Management Area in Appling County. Staff and volunteers used a technique called flush netting. The birds were banded with numbered leg bands for identification.

From December 2012 through early March 2013, 66 Henslow's sparrows were captured and banded. In addition, six individuals banded the previous year were recaptured at the three WMAs, and one bird



originally banded two years ago was also recaptured. As observed last year, most recaptured birds were caught very close to where they were originally banded – less than 200 meters from the original capture location. However, one bird banded at Paulks Pasture was recaptured five days later at Townsend WMA, 17 miles away.

Surveys will continue for at least a few more years at these sites. Other sites with suitable habitat will be surveyed as well to look for new populations. In addition, work will be started to identify micro-habitat, determine site fidelity and gauge the species' response to habitat management.

**More than 40 new nest boxes** were erected for southeastern American kestrels, bringing to 110 the total number of nest boxes monitored by the Nongame Conservation Section. Work with kestrels included a third year of surveys by ground and air of known populations across the state. The population was estimated at about 142 breeding pairs, a slight decline from previous years.

Survey data was used to develop habitat models to search for additional populations. These models led researchers to what apparently is a substantial population of kestrels in the western sandhills, on private land in Harris County. The models also guided efforts on where to put up additional nest boxes.

The number of kestrel nest attempts increased slightly from 2012, but in spite of this the birds had a rough year. Nest success was poor – down about 50 percent compared to previous years.

A cooperative effort has been started to install kestrel boxes on Fort Benning following a pilot project that detected at least four nesting pairs on the Army base near Columbus. Students from the Columbus area built 50 nest boxes. Nongame staff worked with Fort Benning to install about 30 of the boxes in fall 2013. The remainder will be put up by summer 2014.

The Nongame Conservation Section also continued its involvement in the National Audubon Society's Important Bird Areas Program. Projects included native grass restoration and monitoring, loggerhead shrike telemetry, and a barn owl box program.

**Native grass restoration efforts** continued at Joe Kurz Wildlife Management Area near Woodbury and Panola Mountain State Park near Stockbridge, with 80 acres planted on Joe Kurz in 2013. At Panola Mountain State Park, 2012 plantings are going strong, with excellent growth of Indiangrass and almost total elimination of exotic invasive species



American kestrel (Linda May/GaDNR)

on the 45 acres planted. About 300 plugs of native forbs raised by parks staff from nearby seed sources were added to the restoration areas to enhance habitat for birds and butterflies.

Work at these sites has yielded a large number of rare birds and attracted bird watchers. The habitat value of native grasses also has been recognized in the hunting community, garnering wider public support for restoration projects.

**On Brawley Mountain** in northeast Georgia's Fannin County, habitat restoration was completed for the only remaining population of golden-winged warblers in the state. Most of the habitat will be too young for golden-winged warblers to use until 2014.

The bad news: Georgia's golden-winged warbler population has faltered. Biologists detected one lone male in 2013, meaning it is likely this species will be extirpated from Georgia in the coming year. Efforts are underway to "shortstop" migrating golden-winged warblers at suitable habitat. Two solar-powered play-back devices have been deployed in suitable habitat in the north Georgia mountains in an attempt to attract additional warblers. This technique has lured other species into novel habitats. However, golden-winged warbler populations are in such steep declines throughout their range the technique is considered a long shot. It is unlikely there are "excess" birds in the eastern U.S. looking for new habitats.

The Brawley Mountain project, however, will provide almost 300 acres of early succession habitat. This controversial project on the Chattahoochee National Forest – controversial largely because it involved logging – had been in the planning process for more than 10 years. During that time, Georgia's golden-winged warblers dwindled from five populations to one.

## Bird Surveys

### ■ Wood Stork Nests

Wood storks were listed as endangered in 1984 following dramatic declines in breeding colonies in southern Florida. Wood stork nests were first documented in Georgia in 1965. By the 1980s, the birds were nesting here in increasing numbers.

Georgia now supports about 20 percent of the U.S. nesting population, which is about 9,500 breeding pairs. The recovery plan for the wood stork in Georgia includes monitoring reproductive success of nesting colonies and identifying potential threats.

The Nongame Conservation Section conducts aerial surveys each spring to identify and monitor nesting colonies. Stork nesting effort – the number of pairs that attempt to reproduce – fluctuates annually. During 2013, 1,873 nests were documented in 20 colonies in Georgia. A wet winter led to the formation of many smaller colonies in natural wetlands, while several of the largest colonies had slightly fewer nests. A new small colony was discovered in Brooks County.

With more than 75 percent of all wood stork rookeries located on private land, the success of conservation efforts for this species will depend on landowners' willingness to ensure the protection of viable freshwater wetland nesting sites.



Georgia State Parks naturalist Cate Ruka with a juvenile wood stork at Gilman rookery (Tim Keyes/GaDNR)





## ■ Bald Eagle Nests

Once fairly common in Georgia, the bald eagle declined in abundance during the mid-20th century and was no longer nesting in the state by the early 1970s. But, bald eagle populations rebounded here and elsewhere, helped by a ban on the use of DDT in the U.S. in 1972, habitat improvements following enactment of the federal Clean Water and Clean Air acts, protection through the Endangered Species Act, increased public awareness, and the restoration of local populations through release programs.

Following federal de-listing in 2007, primary legal protection for nesting eagles comes under the Bald and Golden Eagle Protection Act. Georgia's ongoing conservation efforts include monitoring all known eagle nests and working with landowners to protect nest sites from disturbance.

During the 2013 nesting season, the Nongame Conservation Section documented 171 occupied nesting territories. Of these, 129 were successful, fledging 193

eaglets. In comparison, there were 55 known nesting territories in 2000, nine in 1990 and only one in 1980. Biologists worked with landowners to manage nesting areas, including assistance with federal incidental take permits for development projects that might infringe on recommended buffer zones.

Nongame continues to work with partners at the University of Georgia Warnell School of Forestry and Natural Resources, the Southeastern Cooperative Wildlife Disease Study, the Army Corps of Engineers, Henry County Water Authority, the U.S. Fish and Wildlife Service, and the American Eagle Foundation to study avian vacuolar myelinopathy, a mysterious disease that has caused significant mortality in American coots and bald eagles. Often referred to as AVM, the disease is apparently caused by an unidentified toxin produced by a cyanobacterium that grows on the surfaces of submerged plants, especially hydrilla, in some sites in middle Georgia and in a few other Southeastern states.

## ■ Swallow-tailed Kite Nests and Roosts

The swallow-tailed kite has suffered a significant range reduction since the 1880s when it bred in 21 states. These elegant raptors are now found in seven Southeastern states, where they nest in bottomland forests along some large rivers. Most nests in Georgia are on private land, particularly industrial timberlands.

Nongame Conservation Section conservation efforts include finding and monitoring nests, protecting nests from predators where possible, working with private landowners to assure habitat viability, and searching for previously radio-tagged kites.

Staff has focused on searching for swallow-tailed kites at the western and northern edges of their range in southwest and south-central Georgia. Kites were documented in 2013 on the Alapaha, Little, Ochlockonee, Withlacoochee and Aucilla rivers. They were also found on Griffin Ridge, Horse Creek and Bullard Creek wildlife management areas, and likely nested – though nesting was not confirmed – on Beaverdam, River Bend and River Creek wildlife management areas. While only 11 nests were monitored for productivity, those nests had higher than average success rates, fledging one chick per nest, on average.

An artificial nest platform/decoy array erected in 2010 at Griffin Ridge WMA near Ludowici was used by two pairs of kites during 2013, as in 2012. The closest known historical nest is approximately two miles away, a much longer distance from known nests than any other artificial platform kites have used.





## Sea Turtle Conservation and Research

The loggerhead sea turtle is found in Georgia's coastal waters year-round and nests on all barrier island beaches. In accordance with the U.S. Fish and Wildlife Service and federal recovery plan for loggerheads, Georgia DNR management efforts focus on surveying and protecting loggerhead nests and managing nesting beach habitat. The Nongame Conservation Section coordinates the Georgia Sea Turtle Cooperative, a group of volunteers, researchers and government employees that conducts nest protection and management activities on Georgia beaches.

Nest management strategies such as nest relocation, installation of protective screens and

removal of predators help ensure high nesting success. Since comprehensive surveys began in 1989, loggerhead nesting has been highly variable, with an average of approximately 1,100 nests per year. In 2013, 2,291 loggerhead nests were documented on Georgia beaches, more than twice the long-term average. According to the recovery plan by NOAA (National Oceanic and Atmospheric Administration) Fisheries, loggerheads may be considered recovered if the population shows a 2 percent annual increase for 50 years resulting in a statewide total of 2,800 nests annually. Cooperators found 1,992 and 2,241 nests in 2011 and 2012, respectively.

To develop a comprehensive understanding of the number and relatedness of loggerheads nesting on Georgia beaches, DNR and the University of Georgia have developed a catalog of unique

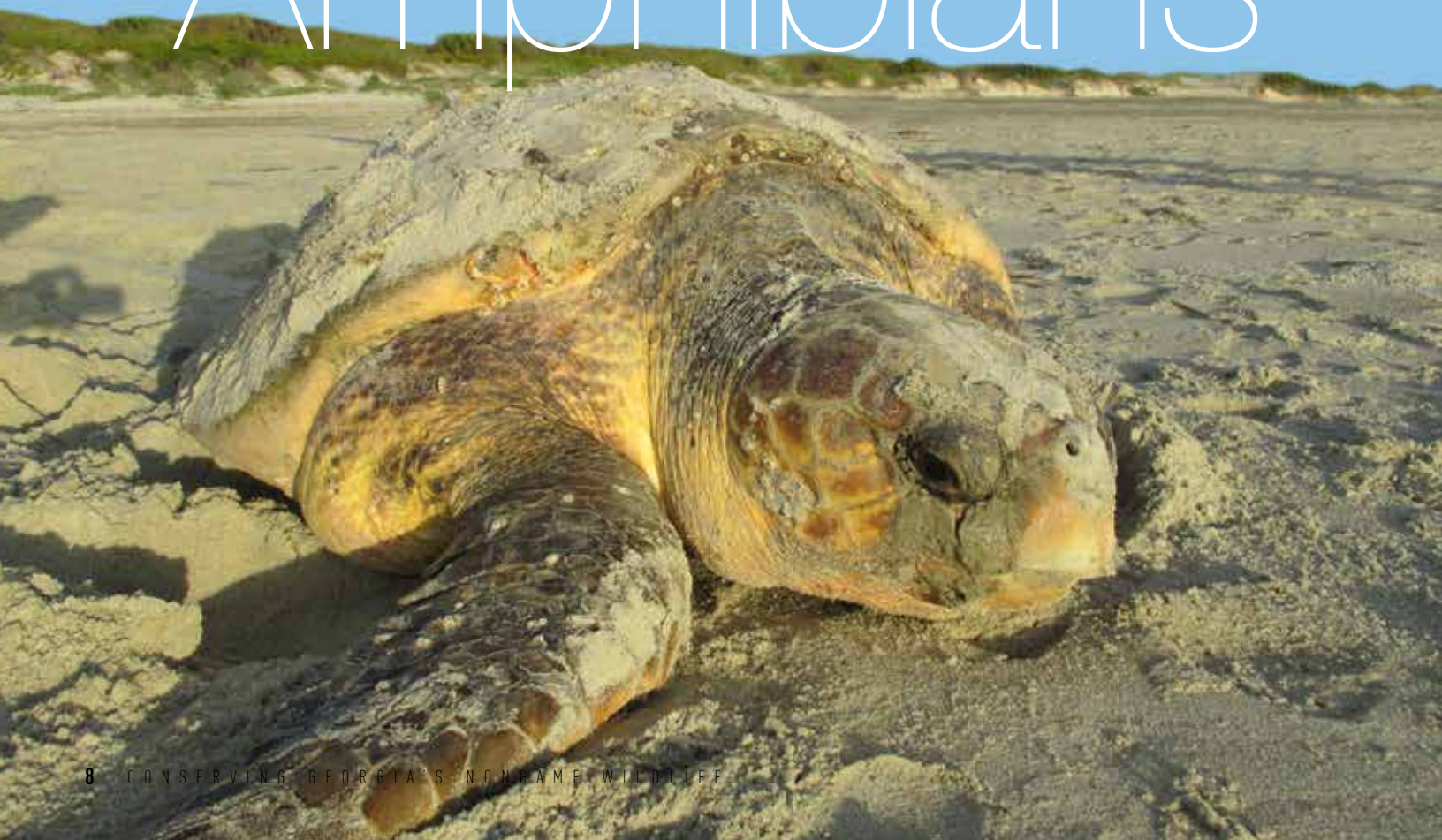
genetic profiles for Georgia's nesting female turtles. A UGA researcher working with DNR has identified more than 2,448 loggerhead females using the Georgia coast for nesting.

One of the significant findings of this study is that there are at least 30 mother/daughter pairs nesting on our barrier beaches. Because it takes at least 30 years for a loggerhead to begin nesting, that means no fewer than 30 of our turtles are at least 60 years old, nesting alongside their 30-year-old daughters.

## Sea Turtle Stranding Network and At-sea Recovery

The Nongame Conservation Section monitors sea turtle mortality through the Sea Turtle Stranding

# Reptiles and Amphibians





and Salvage Network. Systematic patrols of barrier island beaches provide information on the number and species of dead turtles that wash up on the Georgia coast. When possible, necropsies of stranded turtles are conducted to evaluate causes of mortality. Periodic aerial surveys are flown to determine distribution and abundance of marine turtles during migration. Sea turtle strandings are the primary index of threats to sea turtles in Georgia's coastal waters.

In 2013, 165 dead or injured turtles were documented on Georgia beaches, slightly below the 24-year average of 200 strandings per year. Recent patterns in strandings strongly correlate with shrimp trawling effort off the Georgia coast, suggesting that commercial fishing activity is a significant source of mortality for sea turtles.

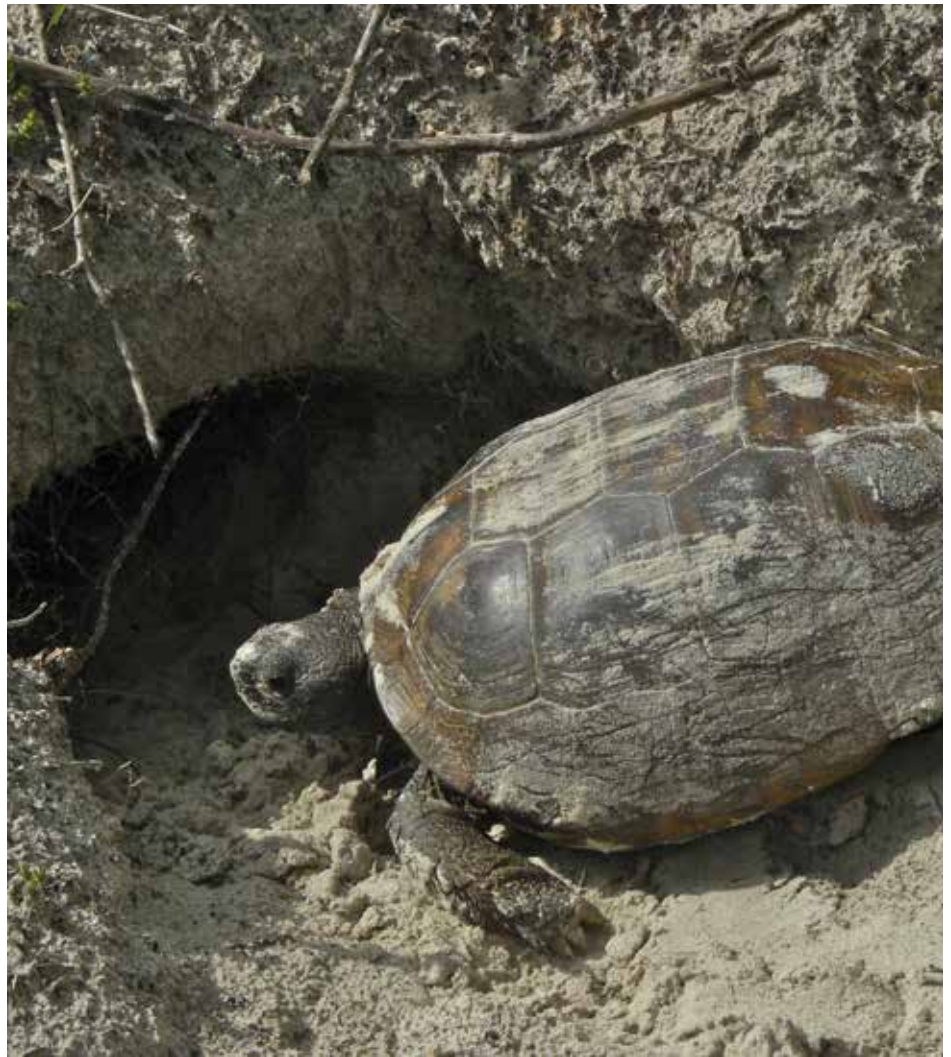
Results from necropsy examinations indicate that boat collisions and disease are also significant sources of mortality, accounting, respectively, for 21 percent and 24 percent of strandings in 2013.

## Bog Turtle Conservation

The federally threatened bog turtle – North America's smallest turtle species – inhabits Georgia mountain bogs generally found along slow-flowing spring creeks and seepages in low mountain valleys.

2013's wetter than average summer made bog turtle surveys a challenge, with rain temporarily flooding targeted bogs. Still, Nongame Conservation Section staff in cooperation with UGA's Warnell School of Forestry and Natural Resources and Odum School of Ecology deployed 140 traps at six known bog turtle sites. Totalling at least 7,500 trap nights, the effort resulted in 33 captures at five sites and 16 different bog turtles – about 20 percent of all bog turtles known from the wild in Georgia.

This work marked the third year of a study in which researchers are identifying the trapping effort necessary to determine bog turtle presence in a potential bog wetland. The findings will be used to assess sites and search for new bog turtle populations in Georgia and across the species' range in the Southern Appalachians in summer 2014.



Gopher tortoise by burrow (Linda May/GaDNR)

## Gopher Tortoise and Eastern Indigo Snake Surveys

Both the gopher tortoise – Georgia's state reptile – and the eastern indigo snake, which is federally listed as threatened, are priority species in the State Wildlife Action Plan.

During the most recent fiscal year, the Nongame Conservation Section funded gopher tortoise population inventories at 19 sites to determine tortoise population sizes and demographics. As with previous years' inventories, line transect distance sampling was used to derive tortoise density and abundance. Sites were also evaluated for habitat suitability and potential as areas where gopher tortoises could be relocated to augment the population.

Three of the sites surveyed in 2012-2013 had estimated populations exceeding 250 tortoises, a

number the U.S. Fish and Wildlife Service has established as the minimum to ensure a long-term, sustainable population.

In another study funded and supported by DNR, The Orianne Society, a nonprofit organization dedicated to conserving rare reptiles and amphibians, continued occupancy monitoring of the imperiled eastern indigo snake to determine population trends. In southern Georgia, indigos overwinter in xeric sandhill habitats where they den in the burrows of gopher tortoises. The study is focused on the Altamaha River basin, considered a population stronghold for this imperiled snake.

Over the three-year study, staff surveyed 40 sandhill sites on public and private lands in the basin, detecting eastern indigo snakes at 43 percent of the sites. The degree of detections in 2013 did not differ significantly from that in previous years, suggesting that the population remains stable in the study area.



## Gopher Frog Restoration

State-listed as rare, gopher frogs depend on intact sandhill habitats where adults survive within the burrows of their namesake host, the gopher tortoise. However, these frogs also require nearby fishless wetlands where they breed and their tadpoles develop. Because of widespread upland and wetland habitat alteration throughout their range, gopher frogs are now limited to fewer than 10 sites in Georgia.

In 2007, the Nongame Conservation Section began a project that involved collecting gopher frog eggs from healthy populations, rearing them to late-stage tadpoles or post-metamorphic froglets, and releasing them at an unoccupied but high-quality protected site at Williams Bluffs Preserve in Early County, which is within the species' historical range. The goal: Establish a self-sustaining breeding population of gopher frogs, a range-wide first for this imperiled amphibian.

In 2013, in partnership with Atlanta Botanical Garden, the University of Georgia, The Nature Conservancy, Zoo Atlanta, the U.S. Department of Defense (Fort Benning) and the Joseph W. Jones Ecological Research Center, 1,305 juvenile gopher frogs were released, bringing the seven-year total released at Williams Bluffs to 5,621 individuals. While previous years of drought prevented mature gopher frogs the opportunity to breed in the release pond – and biologists' ability to assess the success of the project – 2013 finally provided sufficient rainfall to fill the wetland basin.

In early February, multiple male gopher frogs were heard calling in the pond and on Feb. 20 the first egg mass of the species was discovered. Late 2012 camera surveys of gopher tortoise burrows in the uplands surrounding the wetland showed juvenile and adult gopher frogs using the burrows. Together, these discoveries indicate that released juveniles are surviving to adulthood in the uplands and successfully breeding in the wetland.

## Eastern Hellbender Conservation Surveys

The state-protected eastern hellbender – North America's largest salamander – inhabits clear cold-water streams in the north Georgia mountains.

Hellbender sampling proved difficult in 2013 due to higher than average rainfall. Some areas within the species' distribution in Georgia received an extra 18 inches or more of rain during spring and summer 2013, making for high water levels, strong currents and cloudy water – conditions that on many days prevented successful surveys for hellbenders.

Despite the conditions, researchers sampled 19 streams (including 27 segments), captured 90 hellbenders and collected data from 84 individuals. Work during the summer revealed that hellbenders were present in 13 north Georgia streams with historical occurrences and in three segments where this salamander had not been documented before.

Each hellbender captured was weighed, measured, photographed and marked with a Passive Integrated Transponder tag for future identification. Genetic tissue samples were taken

from the 84 hellbenders for the Georgia Museum of Natural History genetic archive collection and for use in other genetics research. Chytrid fungus (Bd) and Ranavirus samples were also collected from each individual. Results from the analysis of these and future samples will help in a range-wide assessment of the health of hellbenders.

Abundance, size and mass data are used to determine the health of hellbender populations.

A status assessment of Georgia populations based on these data was provided to the U.S. Fish and Wildlife Service, part of an assessment of the species' range-wide status in response to a petition to list eastern hellbenders under the federal Endangered Species Act.

Nongame Conservation Section staff initiated a research project with UGA's Savannah River Ecology Laboratory to determine the impact of various loads of fine sediment suspended in the water column on the ability of larval and juvenile hellbenders to absorb oxygen from the water. Nongame staff also helped Smithsonian Institution researchers collect blood samples from wild hellbenders as part of a study of the effects of climate change on these salamanders.

Hellbender surveys and population monitoring are featured in [this DNR video](#).



Hellbender survey (Brant Sanderlin/The Atlanta Journal-Constitution)



## North American Amphibian Monitoring Program

The Nongame Conservation Section coordinates the state's participation in the North American Amphibian Monitoring Program, which is directed nationally by the United States Geological Survey. Patterned after the highly successful Breeding Bird Survey, the amphibian monitoring program is structured to use data collected largely by "citizen scientists" to analyze population trends of frogs and toads on state, regional and national levels. State coordination involves recruiting and retaining volunteers, training, and compiling data.

Volunteers are asked to drive pre-established routes (73 in Georgia) three times a year, record the number of frog species heard and assign each an index of abundance at 10 wetland stops along the way. To ensure that volunteers are qualified to recognize frog species by their unique vocalizations, participants must pass an online quiz that challenges them to identify species from mixed-species choruses in a number of recordings.

In 2013, 62 surveys were conducted with 20 volunteers submitting data. While the monitoring project is relatively young in Georgia, the public can review the richness of frog species on [these state routes](#) marked with a frog symbol.

## Striped Newt Restoration

Nongame conservation efforts by DNR have even extended beyond Georgia's state border. Fall Line Sandhills Wildlife Management Area in Taylor County harbors what is believed to be the only healthy population of "western clade" striped newts, a candidate for federal listing under the Endangered Species Act. Efforts to repatriate this highly imperiled salamander to areas of Florida where it once flourished rely on a captive propagation, rearing and release project led by the Coastal Plains Institute, the Memphis and Jacksonville zoos, and other partners, including the Nongame Conservation Section.

A small number of striped newt larvae collected from the Fall Line Sandhills breeding pond by Nongame Conservation staff and others were added to stock collected earlier at the site to increase the genetic diversity of the captive population. As a result, 57 larvae produced in captivity were released in an Apalachicola National Forest wetland in May 2013. Researchers later documented emigration of fully developed land-bound newts.

Both the release and emergence of striped newts produced in captivity marks a first for this species and hopefully the beginning of its recovery in the region.



Striped newt work group at Fall Line Sandhills WMA (Jim Ozier/GaDNR)

Striped newt eft at Apalachicola National Forest (Ryan Means/Coastal Plains Inst & Land Conservancy)





Right whale No. 3294 (Equator) with calf (Florida Fish and Wildlife Conservation Commission/NOAA Permit 15488)

## North Atlantic Right Whale Conservation

The North Atlantic right whale is one of the most endangered marine mammals in the world, with a population of approximately 450 individuals. Commercial whaling in the late 1800s led to a drastic decline in right whale abundance. Since whaling was banned in 1935, the population's recovery has been limited by mortality from ship collisions and entanglement in commercial fishing gear.

Each winter, right whales migrate from waters off the northeastern U.S. and Canada to calving grounds along the coast of Georgia and northeastern Florida. An average of 22 calves has been documented each year since 2001, compared with 11 calves per year from 1980-2000. Nineteen calves were documented during the 2013 calving season.

While the population is increasing at an annual rate of 2.6 percent, there are still fewer than 100 breeding females in the population.

For more than two decades, DNR has collaborated with various federal, state and private

# Mammals

organizations to conserve North Atlantic right whales. Management actions have focused on reducing human-related mortality and protecting right whale habitat. Aerial surveys are flown December through March to document calf production and warn ships about whale locations. DNR's Nongame Conservation Section participates in various on-the-water management and research efforts, including whale disentanglement, photo-identification studies, genetics sampling and injury/mortality investigations. The Nongame Conservation Section, the Florida Fish and Wildlife Conservation Commission, and NOAA Fisheries staff have collected genetics samples from 68 percent of all right whale calves since 2006. Genetics samples were collected from 17 of 19 calves documented during the 2012-2013 season.

Since 2004, staff has helped disentangle 10 right whales entangled in commercial fishing gear

([YouTube video](#)) and participated in seven injury/mortality investigations. Most of the fishing gear removed from right whales in the southeastern U.S. appears to be from trap/pot fisheries in the northeastern U.S. and Canada. Entanglement in gillnet and longline gear has also been documented.

Nongame staff also works to protect right whales and their habitat through involvement in the Right Whale Southeast Implementation Team, the Atlantic Large Whale Take Reduction Team and the North Atlantic Right Whale Consortium. The Nongame Conservation Section receives considerable support from the DNR Coastal Resources Division and what is now the Law Enforcement Division in education and outreach, policy efforts, and enforcement of federal right whale protections. (Also see the Law Enforcement for Nongame section.)



## Georgia Marine Mammal Stranding Network

The Georgia Marine Mammal Stranding Network was created in 1989 to coordinate marine mammal stranding response in Georgia. The Nongame Conservation Section coordinates the Marine Mammal Stranding Network with help from NOAA Fisheries and other federal, state and private organizations.

Network goals are to investigate human impacts on marine mammals, monitor population health, provide rapid and humane response to live stranded marine mammals, contribute to marine mammal research and educate the public about marine mammal issues.

From 2001 through calendar year 2012, the network documented 365 marine mammal strandings, ranging from 13 to 46 a year. Bottlenose dolphins are the species that most often strands in Georgia, making up 75 percent of strandings, followed by pygmy and dwarf sperm whale (15 percent combined). Other species documented include Stenella dolphins, rough-toothed dolphins, Risso's dolphins, pygmy killer whales, false killer whales, short-finned pilot whales, humpback whales, North Atlantic right whales and beaked whales. Human-related causes of mortality and injury include commercial fishery entanglements, watercraft collisions and ingestion of marine debris.

Check out [this video](#) of staff from DNR, Little St. Simons Island and NOAA Fisheries using an ancient fishing method called hukilau to rescue two dolphins caught in a pool behind a bridge on Little St. Simons.

## Florida Manatee Conservation

Endangered Florida manatees inhabit tidal rivers, estuaries and near-shore ocean waters throughout coastal Georgia during the warm months of the year. The Florida manatee population numbers at least 5,000, with approximately half of the population found along Florida's Gulf Coast and the remainder along the Atlantic Coast. Each spring, an unknown number of manatees migrate into Georgia and return to Florida in the fall as water temperatures cool.

The Nongame Conservation Section cooperates with the U.S. Fish and Wildlife Service, the U.S. Navy and the Florida Fish and Wildlife Conservation Commission to conserve manatees in Georgia.

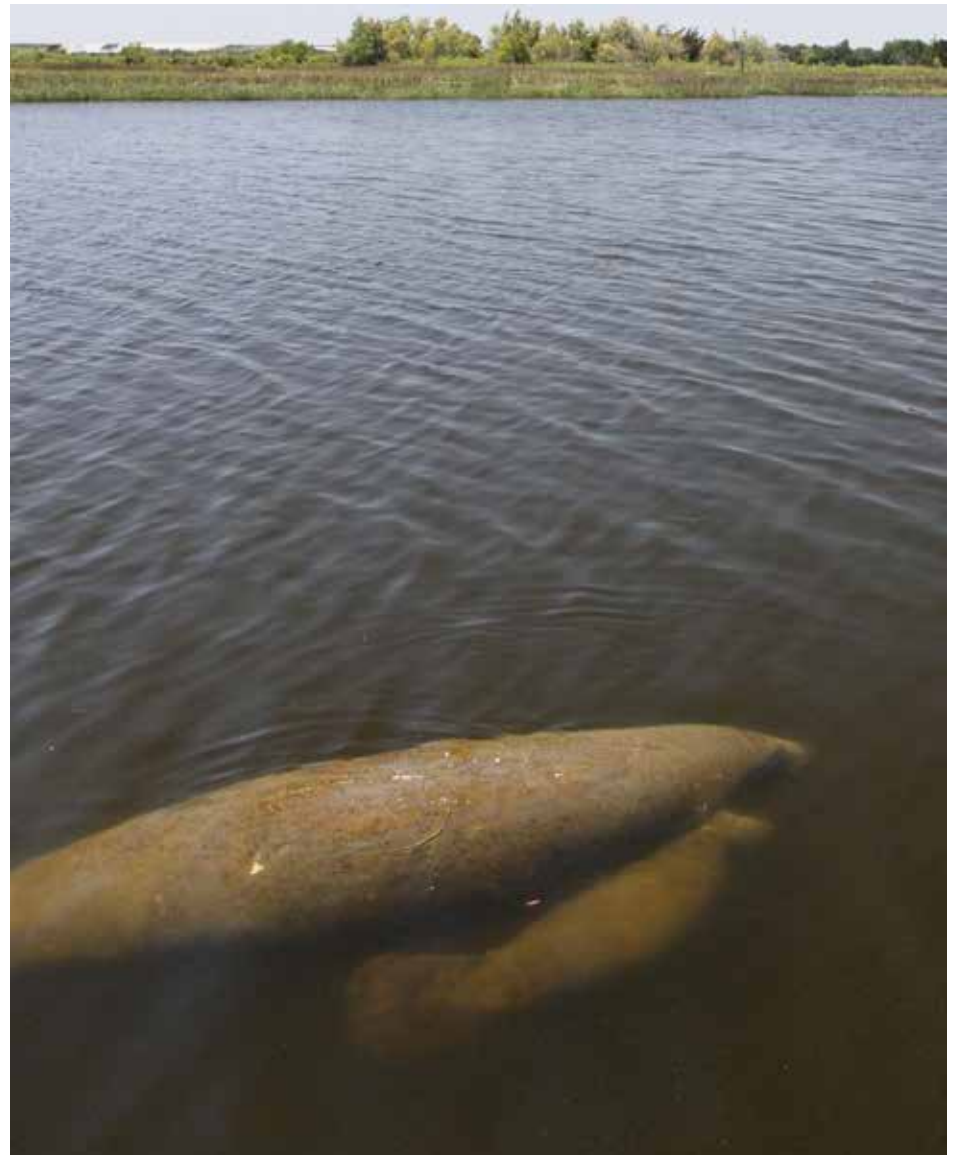
Management actions focus on reducing human-related mortality and protecting manatee habitat. Specific recovery tasks include documenting causes of manatee mortality and injury, rescuing injured and out-of-habitat manatees, monitoring manatee distribution and habitat use, educating boaters about watercraft impacts, and reviewing permits and policies that may impact manatees and their habitat.

Fifty manatee mortalities were documented in Georgia waters from 2000 to 2012. Of those, 16 manatees – or 32 percent – were due to watercraft-related impacts. Less common causes of mortality include drowning in commercial fishing gear and hypothermia when manatees fail to migrate south during winter. Four manatee mortalities were documented during calendar year 2012.

Since 2007, the Nongame Conservation Section has conducted aerial surveys with funding from

the U.S. Navy to estimate manatee abundance and habitat use in waters surrounding Cumberland Sound and Kings Bay Naval Submarine Base. Peak abundance was estimated as high as 40 manatees during May and June 2007. From 2009-2012, sightings averaged 38 manatees observed per survey season, with sightings ranging from one to 22 manatees.

The Nongame Conservation Section collects photo-identification images of manatees and contributes images to the U.S. Geological Survey's Manatee Individual Photo-Identification catalog. Photos are taken during aerial, boat and land-based surveys, and solicited from the public. The catalog is the primary means of estimating manatee survival rates and other population metrics. Digital images of 103 manatees were collected in calendar 2012 alone. Some manatees have been sighted repeatedly in Georgia for 20 years or more.



Manatee mother and young (Clay George/GaDNR)

## Bottlenose Dolphin Contaminants Project

The bottlenose dolphin is Georgia's only year-round resident marine mammal, inhabiting estuaries and near-shore ocean waters. Bottlenose dolphins are ideal sentinels for coastal ecosystem health because they are long-lived predators and tend to accumulate persistent environmental contaminants in their lipid-rich blubber. Since 2006, the Nongame Conservation Section has cooperated with NOAA Fisheries, the National Ocean Service and other organizations to measure contaminants in bottlenose dolphins in the Brunswick and Sapelo areas.

Findings indicated that concentrations of polychlorinated biphenyls, or PCBs, in Brunswick dolphins were 10 times higher than those previously documented in other locations. PCBs in the Brunswick and Sapelo dolphins were consistent with a unique PCB mixture known as Aroclor 1268 that was used at a contaminated industrial site in Brunswick.

Nongame staff helped with a mark-recapture photo-identification study in the Brunswick and Sapelo areas during 2008 and 2009 to estimate dolphin abundance and residence patterns. The study indicated that many of the dolphins are residents, raising questions about dolphin health and contaminant transport in the environment.

This project culminated in a two-week dolphin capture and health assessment during summer 2009. Twenty-nine dolphins were captured, examined (samples were collected for contaminant analysis) and tagged with VHF transmitters to track habitat use and distribution. Many of the dolphins had high PCBs levels consistent with Aroclor 1268 exposure. Those with high PCB levels had low thyroid hormone levels, several dolphins were smaller than expected for their age and 26 percent were anemic.

Nongame Conservation resumed photo-identification monitoring in the Brunswick area during 2011, with the goal of estimating dolphin calf survival. This effort will likely require at least five years to complete. Assistance has been provided by DNR's Coastal Resources Division, the Georgia Sea Turtle Center and the National Ocean Service, with funding and analytical support provided by NOAA Fisheries.



Bat with WNS in Sittons Cave (Pete Pattavina/USFWS)

## Small Mammal Conservation

A grant supporting bat and small mammal conservation was secured in 2012 to continue work on bat and other small mammal species in the state. This grant also included funding for a graduate project investigating northern yellow bats.

Research continued, as well, on a study to evaluate genetic variation in two fox squirrel subspecies, the southeastern and Sherman's. These fox squirrels are difficult to differentiate in the field and questions remain as to whether they are distinct subspecies. Sherman's fox squirrel is considered a species of concern in Georgia but its status is unknown because of the taxonomic questions surrounding the subspecies.

A UGA graduate student began collecting genetic samples from fox squirrels in Georgia in 2010. The samples were analyzed to determine if there are two distinct fox squirrel subspecies in Georgia, and if there are populations that require additional management to conserve the genetic diversity of the species. The study is nearing completion. Initial results suggest there are not distinct subspecies in the state.

Other small mammal work completed in Georgia included trapping for eastern woodrats. The woodrats project began in the winter of 2010. To identify potential sites, Nongame Conservation Section biologists worked with Piedmont College faculty conducting concentrated field inventories of potential rattlesnake hibernacula and gestation locations (rattlesnakes and woodrats often occupy similar habitats). Two hundred potential sites were identified through the presence of suitable rocky habitat.

Site surveys have been conducted since 2011. Another 10 woodrat areas have been confirmed and more than 40 other potential sites identified during ground-truthing of the original 200. Infrared trail cameras placed at each site for a minimum of three nights have been used to determine the presence or absence of woodrats. Findings from this study

will allow researchers to focus on occupied sites in future projects.

**White-nose syndrome**, or WNS, was confirmed in winter 2013 in three Georgia counties, the first time the disease had been documented in the state. No significant mortality from WNS has been seen yet but bat deaths are expected to increase over the next few seasons. In the northeastern U.S., caves infected with WNS can see mortality rates as high as 95-99 percent after a few years of infection.

According to U.S. Fish and Wildlife Service estimates, this devastating disease had killed 5.7 million to 6.7 million bats and been documented in 22 states and five Canadian provinces as of the close of fiscal year 2013. DNR staff will continue to monitor sites in the winter to document the spread of the disease and related mortality. Biologists have focused on educating the public and the caving community to promote awareness of WNS and support for bat conservation efforts.

Work continued on a second and final field season to investigate yellow bats. Very little is known about the yellow bat throughout the species' range. It is a species of concern in several states and Georgia has few records. Project objectives are to characterize roosts of the northern yellow bat at tree, plot and landscape levels and conduct acoustic monitoring to examine the species' habitat selection for foraging.

Thirty-nine bats were tagged and tracked to roosts on Sapelo and Little St. Simons islands. This represents the largest study of its kind for northern yellow bats across the species' range. The majority of the bats roosted in Spanish moss clumps in live oak trees. Further analysis should help determine the best factors for roost site selection and landscape-level habitat characteristics.

**The statewide Anabat survey** also continued in 2013. The project used volunteers to drive 32 transects across the state, collecting bat calls. Most routes were completed once or twice. An aquatic transect was added in 2013 on the Chattahoochee River in Atlanta. National Park Service staff helped the DNR run the route in May, yielding significant results in an area that is difficult to sample.

Researchers used software to complete an initial analysis of calls collected in 2012. New versions of the software will be used for future analysis to determine bat species and numbers on each route. The routes will be run over multiple years to build a long-term set of call data for determining bat population trends across the state.



# Freshwater Aquatic Species

Holiday darter (Anakela Popp/GaDNR)

## Aquatic Conservation Initiative

Georgia is one of the richest states in aquatic biodiversity, ranking among the top five in the number of native species of mussels (125 species), fishes (265) and crayfishes (70). Unfortunately, Georgia also ranks among the top states in imperiled aquatic species. About two-thirds of the state's freshwater mussels are extinct, endangered or threatened with extinction. Approximately 30 percent of Georgia's freshwater fishes and 45 percent of crayfishes fall under similar categories. While no comprehensive assessment exists for the state's freshwater snails, many species have already disappeared from Georgia waters.

The Nongame Conservation Section launched the Aquatic Conservation Initiative in 1998 to determine the status of Georgia's aquatic fauna and develop conservation plans for declining species. The effort is aimed primarily at identifying important populations

of rare aquatic species through surveys and research, incorporating species location and status information into the DNR database, and assisting with conservation planning for rare aquatic species.

**Staff completes hundreds of surveys** around the state each year, documenting or monitoring important populations of high-priority aquatic species. In the past year, surveys focused on species considered for listing under the Endangered Species



Finlined pocketbook (Anakela Popp/GaDNR)

Act, such as the broadstripe shiner in the middle Chattahoochee River system near Columbus and the holiday darter in the Coosa drainage of northwest Georgia. While the broadstripe shiner was detected at numerous locations throughout its historic range, holiday darters were absent at many sites and have an extremely limited distribution.

Additional surveys in South Chickamauga Creek near Ringgold resulted in the first documented occurrence of the federally threatened snail darter in Georgia since 1980. Twelve snail darters were observed, the largest collection ever recorded in Georgia.

Staff also continued annual monitoring of Etowah and Cherokee darters in Raccoon Creek. The purpose of this monitoring is to assess the effectiveness of stream channel and riparian restoration in a reach of the creek affected by a powerline right of way. Unfortunately, extreme drought conditions in summer 2012 resulted in a large reduction in the density of Cherokee and Etowah darters within and upstream of the



restoration site. Depending on funding, researchers hope to continue this monitoring to determine the long-term effect of stream restoration and drought on populations of these two rare darters.

The Nongame Conservation Section also continued annual monitoring of sicklefin redbreast, a state-endangered sucker species known to occur in only a single stream within Georgia. Staff began monitoring this population in 2005, but data have been highly variable due to variation in the timing of the annual spawning migration. To improve the monitoring data, Nongame is partnering with Young Harris College to expand the number of sites and surveys carried out each year.

**Nongame Conservation contracts** with the University of Georgia to conduct long-term monitoring of Etowah and Conasauga river fishes. These two river systems are among the most diverse in the southeastern U.S. and support important populations of rare fishes such as the blue shiner, frecklebelly madtom, trispot darter and Conasauga logperch. This monitoring has been ongoing since 1998. Information from these studies has been invaluable for conservation planning, species status assessments and documenting relationships between fish populations and environmental stressors.

Historic data and results from recent surveys carried out by Nongame staff were used to assess the conservation status and habitat use of the federally threatened goldline darter. Within Georgia, this species is restricted to the Coosawattee River system. The strongest populations occur in the Ellijay, Cartecay and Coosawattee rivers and Mountaintown Creek. Researchers found that goldline darter populations are stable upstream of Carters Lake, but rare or possibly extirpated in the lower Coosawattee River and Talking Rock Creek. Study findings were documented in an article published in the journal *Ecology of Freshwater Fish* (article available upon request from [brett.albanese@dnr.state.ga.us](mailto:brett.albanese@dnr.state.ga.us)).

**Nongame hired a second mussel biologist** in 2013 to coordinate aquatic conservation efforts in the lower Flint River Basin. Monitoring in tributaries to the lower Flint was continued in 2012-2013. The focus is to assess the impacts of extreme low flows on survival and recruitment of mussel populations.

Researchers also continued monitoring the response of mussel populations to experimentally augmented flows in a reach of Spring Creek near Colquitt

in Miller County. More than 4,000 mussels have been tagged in the area, including the federally endangered shinyrayed pocketbook and oval pigtoe.

A project to assess the status and distribution of imperiled species in the Apalachicola-Chattahoochee-Flint river basin began in spring 2013 with sampling tributaries to the mainstem Flint and in Lake Blackshear. Apalachicola floaters were collected from several sites in Blackshear. Work on this project will continue in the upcoming year.

Nongame staff presented results of research at regional and national symposia, and published study results in several peer-reviewed journals. Staff also contributed to multi-state and national efforts to assess the taxonomy, status and distribution of species in North America.

Data from survey and monitoring efforts are entered into the NatureServe Biotics database. Partnerships are also maintained with the Georgia

Museum of Natural History and the Stream Survey Team of DNR Wildlife Resources Division's Fisheries Section, greatly expanding the amount of data available for environmental review and conservation planning. The Nongame Conservation Section is recording population-level information on 133 fishes, 72 freshwater mussels and snails, and 24 crayfish species. In the past year, more than 180 new records of aquatic species were added to the database and more than 500 existing records were updated.

The database is being used to develop conservation status maps for all rare aquatic species in Georgia. By color-coding watersheds by the date of the last observation of a species, maps will quickly show areas with current populations, as well as areas that need to be re-surveyed. These maps will help researchers more consistently assess the conservation status of species as Georgia's State Wildlife Action Plan is updated in 2014.



Sampling mussels in Spring Creek (Jason Wisniewski/GaDNR)



## Robust Redhorse Conservation

The robust redhorse is a rare sucker with wild populations occurring in limited reaches of the Ocmulgee, Oconee and Savannah rivers in Georgia and the Pee Dee River in North and South Carolina. The fish is listed as endangered in Georgia. Prior to its collection and identification in 1991 by DNR Wildlife Resources Division fisheries biologists, this species had not been observed for more than 100 years. A team of state, federal and industry biologists organized under the Robust Redhorse Conservation Committee has done intensive work since the early 1990s to recover this species in Georgia and the Carolinas.

A major part of this effort has been capturing and spawning wild fish from the Oconee and Savannah rivers and producing young in hatcheries for restoration of stocks in rivers within the former range. In partnership with the U.S. Fish and Wildlife Service, Georgia Power and the University of Georgia, DNR's Wildlife Resources Division helped develop a hatchery program in 1993. A Candidate Conservation Agreement with Assurances, the first of its kind for an aquatic species, was developed by DNR, the Fish and Wildlife Service and Georgia Power to help reintroduce robust redhorse into the Ocmulgee River in Georgia.

From 1993-2008, about 115,700 hatchery-reared robust redhorse were stocked into the Broad, Ocmulgee, Oconee and Ogeechee rivers in Georgia. South Carolina DNR stocked some 60,000 fingerlings in the Broad and Wateree rivers from 2004 through 2013. The South Carolina Department of Natural Resources' hatchery program was ending in 2013. The North Carolina Wildlife Resources Commission spawned robust redhorse experimentally for the first time in 2013 and plans to begin augmentation of the Pee Dee River population below Blewett Falls Dam in 2014.

Biologists have documented growth and survival rates in all stocked rivers in Georgia and South Carolina and observed spawning behavior in fish stocked in the Broad, Ocmulgee and Ogeechee rivers. Researchers are trying to document survival of wild-spawned fish in stocked populations and their recruitment into the juvenile and adult population. Establishment of additional self-sustaining populations will represent a significant



DNR biologist Jimmy Evans with robust redhorse (GaDNR)

step toward recovery. Other recovery activities have included evaluations of recruitment success and a major gravel augmentation project on the Oconee, as well as telemetry studies on the Ogeechee, Ocmulgee, Broad, Savannah and Pee Dee rivers, and a population dynamics study on the Ocmulgee.

The Oconee River gravel augmentation project is designed to improve the abundance and quality of spawning habitat. Recent monitoring suggests that three sites have been substantially enhanced by the addition of more than 1,000 tons of gravel. More intensive monitoring for spawning activity at these new sites was planned for spring 2013, but high flows precluded observations of gravel bars during the spawning season. Additional monitoring is planned for 2014.

Other activities planned in Georgia for 2014 include:

- An intensive electrofishing survey of the Oconee River from Sinclair Dam to Dublin designed to assess the current status of the Oconee population.
- An electrofishing survey of the Ogeechee River population associated with DNR's standardized sampling program.
- A search for remnant populations above Sinclair Dam (Little River, Wallace Dam tailrace) and above Wallace Dam (Apalachee and Oconee rivers). A single adult robust redhorse was collected from the lower portion of Little River above Lake Sinclair in 2012, the product of an accidental escape of fingerlings from the Walton Hatchery in 1995. A limited survey was conducted to assess the status of this stocked population in 2013. A more intensive search upriver will be conducted in 2014.

# Plants and Natural Habitats

## Sandhills Conservation

Sandhill and upland longleaf pine habitats supporting gopher tortoises in Georgia and other states have benefited from two competitive State Wildlife Grants. DNR received a \$1 million grant in 2009 to work with Alabama, Florida and South Carolina on restoring high-priority sandhills across the region. DNR and state wildlife agencies in Florida, Alabama, Mississippi and Louisiana were awarded a \$981,000 State Wildlife Grant in 2011



Juvenile gopher tortoise at Moody Forest (Tom Sayward/Ga DNR)

for additional habitat restoration on sandhills and upland longleaf pine habitats, work referred to as phase two of the original project.

Restoration targets exceed 51,000 acres across the five states, and more than 18,000 acres in Georgia. At the end of fiscal 2013, Georgia was well over halfway toward achieving its goal.

While work continues on phase two of sandhills restoration, the phase one grant – closed out at the end of fiscal 2013 – saw Georgia, Alabama and Florida far exceed all goals except in planting longleaf. (South Carolina completed restoration activities but did not use the federal funds allocated. Those state acreages are not included in the project summary.) Total acres affected topped 95,000, compared to the proposed objective of about 38,600.

Georgia documented 17,490 acres of prescribed fire (the original target was 9,950) and treated

1,253 acres of invasive hardwoods and sand pines, nearly four times the goal. DNR and partners, including private landowners, planted 1,810 acres of longleaf pine.

In addition, baseline gopher tortoise population surveys were completed for an array of sites, as well as pre- and post-treatment avian and vegetation monitoring. Highlights of the tortoise surveys include a population of nearly 800 adult tortoises at Townsend Wildlife Management Area, the largest population on state lands in Georgia. Vegetation and avian monitoring revealed reductions in canopy cover and hardwood mid-stories in treated stands, and increases in northern bobwhite, blue grosbeak, common ground-dove, indigo bunting and other targeted species.

With continued prescribed fire, it is expected that herbaceous understory components in treated stands will also increase, further benefiting gopher tortoises and bird species such as bobwhite quail.



## Rare Plant Surveys on Public and Private Lands

Surveys are conducted throughout the state to identify and inventory locations of rare plants and provide guidance on appropriate management activities. The Nongame Conservation Section does this work with consultants, landowners and botanical organizations, as well as through participation in the Georgia Plant Conservation Alliance, enhancing the exchange of information on discoveries, natural area management and plant conservation activities.

In 2013, numerous rare plant discoveries resulted from surveys conducted by DNR staff and contractors, nature photographers, and field botanists, including Jim Allison, Steve Bowling, Alan Cressler, Max Medley, Richard Reaves and Matt Richards. A high-elevation boulderfield on Brasstown Bald was found to harbor a small population of blue-bead lily, a plant of high elevations in the southern part of its range and not seen at this site or even in Georgia since 1947. A remnant heath bald, also on Brasstown Bald, was found that had a small population of three-tooth cinquefoil. Rush quillwort, a Georgia endemic found in seasonal pools in hardwood bottoms near Tifton, was observed again at the site it was first collected, thanks to heavy spring rains. On a private preserve near Lula Lake atop Lookout Mountain in Walker County, a large stand of Lyon's purple turtlehead was discovered on a talus – or rocky – slope.

Jim Allison completed a detailed study of Lithonia gneiss outcrops as a baseline for future site conservation work. Among discoveries were nine new sites for federally listed pool sprite, 29 for Louisiana bluestar, 24 for Alexander's rock aster, 19 for granite stonecrop and 13 new flatrock onion outcrops. A newly described granite outcrop endemic known as granite hedge-hyssop, known only from South Carolina and Georgia, was reported from 15 sites.

Safeguarding activities, where rare plants are established at new protected sites, are conducted throughout the state. For Georgia plume on Burks Mountain in Columbia County – this plant is found only in Georgia – saplings were fenced to prevent browsing damage, flowers cross-pollinated to promote seed production



Jeremy Kicklighter (L) and Jimmie Lee III help rescue pitcherplants at a Statesboro bog (GaDNR)

and cuttings taken for propagation. A new site for Radford's sedge, known only from marble ravines in Stephens County and adjacent South Carolina, was sampled and live plants collected for propagation at the State Botanical Garden of Georgia. One site for Carolina trefoil, a plant found only in the Piedmont, was augmented by planting seed harvested in 2012.

A special effort to locate ten-lobe purple foxglove proved successful at Cloudland Canyon State Park, near Rising Fawn. This showy annual, which is closely related to federally listed sandplain foxglove from the Northeast, was officially documented as a state record and represents yet

another example of the diversity found in meadow-like habitats in well-maintained powerline right of ways. Exploration of Cedar Cliffs in Rabun County provided new information on sand myrtle, granite dome bluets and granite dome goldenrod – all uncommon in the Georgia mountains.

Pitcherplant bogs remain of special conservation concern. A few new bogs investigated in Wheeler and Turner counties had exceptional new stands of parrot pitcherplant and wiregrass dropseed. Safeguarding efforts include rescued pitcherplants and associates from a construction site near Statesboro and propagation material gathered for bog St. Johnswort and cottongrass.

## Coastal Habitat Conservation

Nongame Conservation Section staff aided in the conservation of Cannon's Point Preserve, 608 acres on St. Simon's Island. The St. Simons Land Trust bought the property in September 2012. The Nature Conservancy holds a restrictive conservation easement that protects the site's important conservation values while allowing for nature-centered recreation and education. Nongame staff served on the Cannon's Point Conservation Task Force and helped create an Easement Documentation Report for the property. Staff also helped update a site management plan for the preserve.

Nongame staff served, as well, on the Little St. Simons Island Ecological Advisory Council. The council is creating a management plan for the island. The group also makes management recommendations and reviews research proposals for the island to determine if projects meet the conservation and management goals. Nongame also helped Little St. Simons staff establish a long-term photo monitoring project in each ecosystem on the island. The project will be used to examine ecosystem changes.

Nongame biologists began a collaborative project with DNR's Coastal Resources Division to establish salt marsh monitoring transects along the Georgia

coast. Staff used remote sensing to select nine study sites. Transects were established at each site, starting at an upland reference point and continuing into the salt marsh until reaching *Spartina alterniflora*-dominated salt marsh. Vegetation and elevation data are collected for each distinct salt marsh community type encountered along each transect. The project goal is to examine long-term change in Georgia salt marsh communities and determine the effects of sea-level rise on coastal habitats.

Nongame staff conducted surveys for rare natural communities and plants on the coast. Efforts were focused on a previously undescribed calcareous bottomland forest endemic to Camden and Charlton counties. This seasonally-flooded vegetation is dominated by laurel oak, sugarberry, hawthorn and Cherokee sedge. A coast-wide survey of hydric hammock communities was also initiated. These unique communities have characteristics of both uplands and wetlands and are in need of better description in Georgia.

Nongame botanists worked with staff at Atlanta Botanical Garden staff, a DNR partner, to survey for rare orchids on the coast. Atlanta Botanical Garden's conservation program focuses much of its work on the conservation of orchids and other rare plant species in Georgia.

## Restoration of Mountain and Coastal Plain Bogs

Mountain bogs are one of the most critically endangered habitats of the Southern Appalachians. The bogs are typically small – from a half-acre to 5 acres – and usually associated with seeps, springs and small creeks. These are early successional habitats that support a variety of unique and imperiled flora and fauna, including the federally threatened bog turtle and swamp pink, possibly the state's rarest reptile and plant species, respectively. Other exceptionally rare and state-protected mountain bog plants include the montane purple pitcher plant (which has been petitioned for federal listing), Carolina bog laurel, Canada burnet and Cuthbert's turtlehead.

For 21 years, the Nongame Conservation Section, working independently and as a member of the Georgia Plant Conservation Alliance, has engaged in mountain bog restoration that includes:

- Locating mountain bogs with restoration potential.
- Restoration at eight bog sites.
- Propagating and outplanting rare mountain bog plants. More than 5,000 individuals of five rare-plant species have been propagated during the last 20 years, with 1,000 outplanted (in-situ) into appropriate habitats. The remaining plants are in conservation holdings (ex-situ) at Georgia Plant Conservation Alliance gardens. Seedling recruitment has been documented for swamp pink and purple mountain pitcherplant at two restored bogs.

The natural disturbance factors needed to maintain mountain bog habitats are now largely missing from the landscape, and the few remaining bog habitats must be maintained by mimicking these natural effects using techniques such as manual clearing and prescribed fire.

A field experiment was initiated in 2007 to test various restoration protocols, with final research plots established in 2010. The goal is maximizing effectiveness and efficiency, thus saving the Nongame Conservation Section and its partners time and expense in maintaining mountain bogs. Three sites were treated with prescribed fire as part of this research in cooperation with the U.S. Forest Service.



Volunteers plant pogonia at a Coastal Plain bog (Lisa Kruse/GaDNR)



**In the Coastal Plain,** Doerun Pitcherplant Bog Natural Area features one of Georgia's crown-jewel pitcherplant bogs, with three species of pitcherplants and other carnivores of the plant world such as sundews and butterworts. Restoration work continues at this Colquitt County site with an emphasis on prescribed fire and invasive species control.

Because bogs often occur in small patches on private property, much pitcherplant bog conservation depends on work with private landowners. For example, cooperative work with landowners for management and conservation continues at a complex of privately owned bogs near Claxton. These bogs include the only known occurrence of the Coastal Plain purple pitcherplant, in addition to eight other tracked plants. The bogs are contiguous to diverse sandhill habitat, with occurrences of gopher tortoises.

Conservation efforts are focused on restoring prescribed fire, raising awareness of the site and preventing destruction caused by off-road vehicles. Monitoring and pitcherplant population augmentation is done by a local volunteer steward.

## Habitat Improvement on State Lands and the Interagency Burn Team

Many sites across Georgia have experienced a return of rare plants and animals as a result of DNR habitat conservation on state lands, including natural areas, wildlife management areas and state parks. For example, Bachman's sparrows are singing again on Fall Line Sandhills Wildlife Management Area and the woods are filled with the whistle of northern bobwhites. Both species had tiny populations when the state acquired this Taylor County property less than a decade ago. Loggerhead shrikes and red-headed woodpeckers, absent from Fall Line Sandhills for years, have returned. Gopher frogs had one of their best years in more than a decade; now it's not uncommon to find these frogs on the WMA.

The changes are the result of several years of hard work by the Nongame Conservation Section restoring this habitat. That work has included thinning timber or clearcutting on 380 acres, planting more than 150,000 plugs of

native grasses, conducting prescribed burns on thousands of acres, working with neighboring landowners to improve their habitats through prescribed fire and helping them enroll in conservation cost-share programs, and planting hundreds of thousands of longleaf pine to restore the ecosystem upon which all this depends.

To better ensure frequent juvenile recruitment of gopher frogs, striped newts and other amphibians at Fall Line, Nongame Conservation also built three artificial wetlands to allow dispersal and inhabitation across a greater area and increase the amphibians' overall population on the property.

Isolated, fishless ponds provide critically important breeding sites for more than 50 percent of the amphibian species found in the Coastal Plain of Georgia, including the state-threatened striped newt and gopher frog. These wetlands have become increasingly rare through land conversion, and further separated from the upland foraging habitats needed during the amphibians' non-breeding season. Based on observed and predicted climate trends of longer and more frequent droughts in the southeastern U.S., the availability



Digging pond at Fall Line Sandhills WMA (John Jensen/GaDNR)





of inundated isolated wetlands will become even more critical for the persistence of pond-breeding amphibians.

### **Fall Line Sandhills is just one success story.**

On Mayhaw and Chickasawhatchee wildlife management areas in southwest Georgia, the Nongame Conservation Section has restored hundreds of acres of longleaf and wiregrass with similar results. Nongame has also played a significant role on Silver Lake Wildlife Management Area near Bainbridge, treating woody encroachment in the understory and conducting thousands of acres of growing-season fires. The result: The number of endangered red-cockaded woodpeckers has continued to increase.

On Panola Mountain State Park near Stockbridge, more than 100 acres of native grassland have been restored. Grassland birds and secretive marsh birds such as eastern meadowlark, grasshopper sparrow, king rail, black rail, sedge wren and sandhill cranes are now found in the shadow of metro Atlanta. Nongame Conservation also has begun safeguarding rare plants in Panola's restored grasslands. One species, Michaux's sumac, has only two natural populations remaining in Georgia. At Sprewell

Bluff Wildlife Management Area near Thomaston, researchers are safeguarding a plant that is even rarer in the state, American barberry. The Sprewell Bluff site is only the second population documented in Georgia. Also, in longleaf forests across south Georgia, pitcherplant bogs are thriving and expanding, like at Moody Forest Natural Area near Baxley and Doerun Pitcherplant Bog Natural Area near Moultrie.

The take-home: Habitat restoration is paying dividends for rare species. After years of hard work to restore habitats, rare species are returning. As these habitats improve, game species also benefit.

**Prescribed fire is vital** to this restoration effort. As noted, the Nongame Conservation Section uses a variety of land-management techniques to improve rare species habitats on state lands, from removing invasive species to planting native species, and from thinning timber to prescribed burning. However, prescribed fire remains the most effective tool for conserving and restoring fire-adapted habitats that support numerous species of conservation concern.

Simply put, prescribed fire is a safe way to employ a natural process to ensure ecosystem health

and reduce the risk of wildfire. Working with Interagency Burn Team partners, Nongame Conservation applied prescribed fire to key habitats on state, federal and private lands in 2013. Burn team partners include the Georgia Forestry Commission, The Nature Conservancy, The Orianne Society, the U.S. Forest Service and the U.S. Fish and Wildlife Service.

Nongame staff led or helped on prescribed burns totaling almost 27,050 acres in 2013. This work involved staff from other Georgia Wildlife Resources Division sections and DNR's State Parks and Historic Sites Division, as well as volunteers trained by the Nongame Conservation Section to federal fire standards.

A seasonal fire crew carried out the bulk of burning in the dormant season. The crew's dedicated efforts led to more acres burned – 9,882 acres in 2013 compared to 6,003 in 2012. In addition to the seasonal fire crew, Nongame Conservation burn crew members helped the Interagency Burn Team. The team also offered training opportunities for partners and conducted public outreach, with press releases, newspaper articles and outreach during burns on high-profile areas.



## The Nongame Conservation Section

**burned** at many high-priority conservation sites across the state. Highlights include state-owned lands such as Big Hammock, Chickasawhatchee, Clybel, Doerun Pitcherplant Bog, Fall Line Sandhills, Flint River, Joe Kurz, Lake Seminole, Mayhaw, Moody Forest, Oaky Woods, Ohoopee Dunes, River Creek, the Rolf & Alexandra Kauka, Silver Lake and Sprewell Bluff wildlife management areas, Black Creek Natural Area, Rocky Hammock tract, Kolomoki Mounds Historic Park, and General Coffee, George L. Smith, Hard Labor Creek, Little Ocmulgee, Panola Mountain, Reed Bingham and Seminole state parks.

Other prescribed burn sites included preserves owned and managed by The Nature Conservancy – the Almo, Ingram and Lewis tracts, Broxton Rocks, Buck property, Little Pine Knot, North Meade, Rovig and Williams Bluff. Private lands were also burned – including montane longleaf tracts adjacent to Sprewell Bluff and sandhills where DNR holds a conservation easement – as well as federal land in Oconee National Forest.

A wide variety of fire-dependent habitats were targeted for restoration, including aeolian dune sandhills with xeric longleaf pine/turkey oak, Coastal Plain pitcherplant bogs, Coosa flatwoods, fall line sandhills, longleaf pine flatwoods, longleaf pine/wiregrass woodlands, oak

woodlands, native grasslands, pond pine/mixed shrub flatwoods and shortleaf pine/mixed oak woodlands. Many high-priority species identified in the State Wildlife Action Plan benefitted from these restoration efforts.

As sites move from restoration to the maintenance phase, Nongame Conservation has been able to conduct more growing-season burns. These ecological burns have had a profound impact on species, restoring the natural balance in fire-adapted ecosystems by reducing hardwood competition and increasing native grasses and forbs. DNR has increased its growing-season burns from 151 acres in 2003 to 2,639 acres in 2013, although the unseasonably wet spring and summer in 2013 resulted in a reduction in burned acres compared to the previous year. (Crews conducted a record 4,804 acres of what many call lightning-season burns in 2012.)

## Georgia Plant Conservation Alliance

The Georgia Plant Conservation Alliance, or GPCA, is an innovative network of 27 public gardens, government agencies, academic institutions, utility companies and environmental organizations committed to preserving Georgia's endangered flora. Formed in 1995 with the Nongame Conservation Section as a charter member,

GPCA initiates and coordinates efforts to protect natural habitats and endangered species through biodiversity management, public education, and rare plant propagation and outplanting (i.e., safeguarding).

GPCA's member organizations are engaged in recovery projects for 72 imperiled plant species. Fifty-five of these are in safeguarding programs at botanical gardens, arboreta and seed banks. Twenty-seven species have been successfully introduced back into the wild.

Calculating time and expertise volunteered and equipment used, GPCA efforts have amounted to an estimated \$1.35 million in direct and indirect support for plant conservation since the organization was formed. More than \$1 million of this was accounted for by non-DNR members supporting high-priority species and habitats in Georgia's State Wildlife Action Plan.

Trained GPCA volunteers known as botanical guardians – there are 140 – contributed more than 1,000 hours of conservation work during calendar year 2012. GPCA has assisted the research of 10 graduate students who have gone on to full-time careers in plant conservation in the southeastern U.S. GPCA also has mentored several states that are trying to establish similar statewide plant conservation alliances, including Alabama, North



University of Montana Grizzly Crew member helps monitor a prescribed fire in Georgia (Jim Riddering)



Carolina, Texas, Arizona, Colorado and, most recently, Kentucky.

The GPCA received the 2013 Award for Program Excellence at the American Public Gardens Association annual meeting in Phoenix, Ariz. Each year, the association honors one of its 500 members for innovation in developing programs and pioneering horticultural disciplines. Considered an innovator at the national level, GPCA joins award recipients such as Missouri Botanical Garden, Smithsonian Institution and Chicago Botanic Garden.

From research, habitat restoration and management to hands-on stewardship projects with elementary schools, the resources, expertise and outreach strategies of GPCA members provide powerful tools for plant conservation.

## Ginseng Management Program

Export of American ginseng is regulated under the Convention on International Trade in Endangered Species, of Wild Fauna and Flora, an international agreement which is administered in this country by the U.S. Fish and Wildlife Service. The export of ginseng from Georgia is authorized by this federal authority in combination with the Georgia Ginseng Protection Act of 1979, a state law amended in 2013.

In order to have a legal ginseng trade in Georgia, the Fish and Wildlife Service requires Georgia to maintain a Ginseng Management Program that ensures compliance with federal and state

regulations. The objective is to prevent this perennial forest herb from becoming endangered due to trade. Demand for ginseng is high in natural medicinal markets and in Asian medicine.

The Nongame Conservation Section administers the Georgia Ginseng Management Program, which monitors harvest and sale of ginseng. Staff works with ginseng dealers, growers, the Game Management Section and DNR's Law Enforcement Division to make ginseng regulation a transparent and simple process.

Most American ginseng harvested is exported to China. Georgia is at the southern edge of the distribution of ginseng and Georgia's ginseng trade is much smaller than in nearby states such as North Carolina and Kentucky, where millions of dollars in ginseng is exported every year. Over the Georgia Ginseng Program's 26 years there has been an overall decline in ginseng harvest and trade.

The reported wild Georgia ginseng harvest in 2012 was 361.3 pounds dry weight. This topped the 10-year average by 80 pounds, and marked a 127 percent increase from 2011. Two variables that likely contributed to the surge are increases in the number of dealers and the price of ginseng.

Recent research on ginseng biology has demonstrated that seed germination depends on full ripening of the plant's berries. To promote sustainable ginseng harvest and maintain consistency with other states' regulations, the Nongame Conservation Section worked with the Georgia Legislature to pass legislation moving the start of the state's harvest season from Aug. 15 to Sept. 1.

In 2013, Nongame and Game Management biologists held a public information meeting on American ginseng biology and ginseng trade regulations in Georgia. Presenters included experts from Atlanta Botanical Garden and the U.S. Forest Service. Georgia ginseng dealers and agency personnel were well-represented and discussed topics such as how to address ginseng poaching and how to encourage sustainable ginseng harvest and export.

## Biotics Database Development

The Nongame Conservation Section manages the NatureServe Biotics database, the state's most comprehensive database of occurrences of rare species and natural communities. Data in Biotics are used for many purposes: environmental site reviews, conservation planning, scientific research, habitat restoration and management plan development.

The database contains more than 13,500 occurrence records for rare species in the state and provides web access to information on occurrences of special-concern species and significant natural communities.

During 2013, staff added 732 new records and edited 4,023 existing records. Significant efforts were made to update information on species proposed for listing under the federal Endangered Species Act. Many species are under review and updating database records helps with the process and allows for a more accurate review of species.

Staff also responded to 350 formal requests for data, not counting in-house environmental reviews or data obtained by the public through the website.

New computer applications for field entry of rare species data are being tested. These tools allow biologists to use standard consumer mobile devices such as tablet computers to update and add data for element occurrence records and field surveys while in the field. This provides for real-time record updates and improves the overall efficiency of data entry.

Lists of rare and protected plants, animals and natural communities are available at [www.georgiawildlife.com/conservation/species-of-concern](http://www.georgiawildlife.com/conservation/species-of-concern).



## Private Land Activities

Because some 93 percent of the Georgia landscape is privately owned, conservation activities on private lands are crucial to wildlife and natural communities in the state. The Nongame Conservation Section worked with private landowners throughout Georgia on a variety of conservation activities in fiscal year 2013 (also see "Land Acquisition and Conservation Planning").

Staff fielded phone calls, answered landowners' questions and visited sites to give management advice. Nongame Conservation also worked to make cost-share and grant opportunities known to landowners and help them navigate procedures for using the programs. Examples include the Natural Resources Conservation Service's Environmental Quality Incentives and Working Lands for Wildlife programs, and the U.S. Fish and Wildlife Services' Partners for Wildlife Program.

Staff updated the web version of the popular "Landowner's Guide to Conservation Incentives in Georgia" to reflect the ever-changing details of these incentives.

The Nongame Conservation Section also provided threatened and endangered species training to loggers and others at quarterly Master Timber Harvester events around the state. This training includes a review of how timber harvesting affects

wildlife habitat. Nongame staff served on the Sustainable Forestry Initiative Implementation Committee and its Private Landowner Outreach Subcommittee. Additional education activities included training sessions at Southeastern Wood Producers workshops.

Nongame Conservation also took part in Natural Resources Conservation Service State Technical Committee meetings to identify wildlife conservation priorities relevant to Farm Bill programs for private landowners.

Staff cooperated with the Game Management Section's Private Lands Program and the Natural Resources Conservation Service to establish four temporary biologist positions stationed at Natural Resources Conservation Service field offices in Blakely, Douglas, Swainsboro and McDonough. Duties include promoting and implementing Farm Bill programs to benefit species and habitats of conservation concern as defined in the State Wildlife Action Plan. Nongame continues to support a fifth cooperative biologist in Fitzgerald using a grant from the National Fish and Wildlife Foundation and Southern Company. In all, these biologists work with local landowners to implement National Resources Conservation Service programs aimed at restoring and managing longleaf pine systems, including the Working Lands for Wildlife initiative that targets gopher tortoises.

Along with Game Management and Parks personnel, staff also visited all 25 DNR-held conservation easements to ensure compliance with easement terms and to renew relations with landowners.

## Forestry for Wildlife Partnership

The Nongame Conservation Section plays a strong role in the DNR Wildlife Resources Division's Forestry for Wildlife Partnership. This voluntary program encourages conservation of wildlife habitat on corporate forestlands in Georgia and provides public access to privately owned wildlife management areas for hunting, fishing, wildlife viewing, hiking and camping.

Corporations participating in Forestry for Wildlife are among the largest landowners in Georgia, directly affecting wildlife habitat on more than 974,000 acres.

By working closely with Nongame Conservation and Game Management Section biologists, this public/private partnership provides opportunities to enhance wildlife conservation practices on these lands and benefit companies with public recognition for their conservation achievements. Participating companies are evaluated on wildlife conservation planning, education and outreach, management practices, sensitive sites and rare-species concerns, recreation, and partnerships.



# Private Lands

Plum Creek, Georgia Power and Wells Timberland, the newest partner (known since September 2013 as CatchMark Timber Trust), were the 2012 Forestry for Wildlife partners.

Conservation efforts benefiting from Forestry for Wildlife include endangered red-cockaded woodpecker habitats, bald eagle and swallow-tailed kite nesting, isolated wetlands critical to protected reptiles and amphibians, and rare remnant Coosa Valley prairie and Black Belt prairie habitats containing endangered plants. The partnerships also provide the public with many opportunities to enjoy the outdoors through wildlife viewing, hunting and fishing.

Highlights of partners' conservation work during fiscal 2013 included:

- Plum Creek maintained important habitat at Paulks Pasture Wildlife Management Area near Brunswick for Henslow's sparrows, a secretive songbird.
- Plum Creek converted nearly 400 acres of loblolly stands to longleaf and is monitoring and mapping gopher tortoise locations on company lands. The company is also working with the U.S. Fish and Wildlife Service and State Botanical Garden of Georgia to establish populations of mat-forming quillwort on granite outcrops in Greene County.
- Georgia Power helped the DNR relocate and monitor gopher tortoises displaced by development, including restoring 300 acres of longleaf pine as a future site for tortoises. The company has an active prescribed fire program, burning more than 5,000 acres a year, and participates in the Safe Harbor program for red-cockaded woodpeckers.
- Georgia Power worked with the DNR to relocate and protect relict trillium from developmental threats. Also, company powerlines and right of ways are home to nine federally listed plant species.
- Wells Timberland, or CatchMark Timber Trust, worked with the Fish and Wildlife Service to protect habitat for rare fringed campion on company lands in Talbot County, and thinned and burned pine plantations to allow native understory plants to grow and benefit wildlife.
- Wells Timberland also partnered with the National Wild Turkey Federation to burn and restore longleaf pine in sandhill habitats in

Marion County. The company did not convert any bottomland hardwood forest and continued to monitor and treat invasive species on company lands.

## Army Compatible Use Buffer Conservation

The Army Compatible Use Buffer program, or ACUB, seeks to protect priority conservation lands surrounding military installations from incompatible development, primarily through permanent conservation easements. In recent years, the Nongame Conservation Section has partnered with Fort Stewart and others to conserve critical lands in the Fort Stewart/Hunter Army Airfield area, including some of the best eastern indigo snake habitat in Georgia.

Nongame Conservation is also involved with the Chattahoochee Fall Line Conservation Partnership, which is geared toward conserving lands along the eastern edge of Fort Benning. Staff's involvement included partnering with land management activities to enhance gopher tortoise habitat, serving on the group's steering committee and joining efforts to bring more tracts under conservation ownership and management.

## Community Wildlife Project

The Community Wildlife Project, an initiative of the Nongame Conservation Section and the Garden Club of Georgia, seeks to:

- Enhance native nongame animal and plant populations and their habitats in urban, suburban and rural communities throughout the state.
- Foster wildlife conservation stewardship and education in Georgia communities.
- Promote respect and appreciation of wildlife in combination with community beautification.
- Improve the quality of life for Georgians living in these communities.

More than 750 communities have been awarded full certification, with more than 600 in various stages of completing certification standards. Since 2005, the new Backyard Wildlife Certification survey has added about 2,500 certified backyards, 500 of which were certified with two or more adjoining neighbor's backyards to attain a Neighborhood Backyard Certification.

In summer 2013, a new certification application was created. The Hummingbird Haven Certification centers on attracting hummingbirds to yards.



Gray catbirds fighting over suet (Terry W. Johnson)





# Invasive Species Assessment and Management

AmeriCorps crew removing sand pines at Townsend WMA (Eamonn Leonard/GaDNR)

Georgia's State Wildlife Action Plan emphasizes the need for increasing efforts to detect, monitor and control invasive species in order to conserve native wildlife and their habitats. Invasive species have negative impacts on native species and are noted for being one of the greatest threats to biodiversity. Effective control and treatment of invasive species can have positive cascading effects for many species and ecosystem services.

Following completion of the Georgia Invasive Species Strategy in 2009, the Nongame Conservation Section sought State Wildlife Grants funding to implement invasive species assessment and management programs, with a focus on the coastal region. The primary objective of the current project is to enhance

methods for assessing and controlling invasive nonnative species on public and other conservation lands. A second objective is providing land managers better technical and informational resources to help control invasive species. A third objective is promoting appropriate use of native plant species by public and private land managers.

During 2013, Nongame Conservation staff funded by this grant:

- Continued a three-year control project to eradicate common reed from the Altamaha River delta.
- Coordinated a volunteer pull of water hyacinth using a 10-member AmeriCorps National

Civilian Community Corps team in the Altamaha River and funded applications of herbicide to treat water hyacinth in and around Butler Island waterfowl impoundments.

- Brought together representatives from more than 40 state, federal and county agencies, non-profit organizations, and citizen groups for the second annual meeting of the Coastal Georgia Cooperative Invasive Species Management Area, or CISMA, for Georgia's coastal region. Participants developed a prioritized list of invasive plants and animals for the 11-county coastal region.
- Received two years of funding from the National Fish and Wildlife Foundation for a





co-coordinator for the Coastal Georgia CISMA and a Student Conservation Association intern, and to buy herbicide and field supplies for control and monitoring work.

- Coordinated an AmeriCorps team and helped direct Student Conservation Association interns with The Nature Conservancy on invasives projects with partners varying from mapping species to treating salt cedar on Andrews Island in Brunswick and removing sand pine to help the rare Radford's mint at Townsend Wildlife Management Area near Ludowici.
- Installed vegetation monitoring plots in areas of Sapelo and Ossabaw islands infested with Chinese tallow to measure the effectiveness of different control methods and the recovery of the natural communities.
- Held citizen science programs in the Brunswick and Savannah areas to teach people how to identify and map locations of invasive species in coastal Georgia using EDDMapS, the Early Detection and Distribution Mapping System developed by the UGA Center for Invasive Species and Ecosystem Health.
- Worked with Coastal Wildscapes, a nonprofit group that promotes gardening with natives, to increase volunteer opportunities in collecting native seed and identifying and removing invasive species. In addition, staff worked with the Jekyll Island Authority to grow native plants from seeds collected by volunteers and make these plants available to the public at two plant sales.
- Continued work with the Cannon's Point Conservation Task Force to manage invasive

species according to the management plan for Cannon's Point on St. Simons Island.

- Held five volunteer work days to help Coastal Wildscapes and the city of Midway in removing Chinese tallow and Japanese honeysuckle from the Cay Creek Wetlands Interpretive Center.
- Worked with the First Coast Invasive Working Group in northeast Florida on a salt cedar removal project in the north Florida/south Georgia coastal region.

- Gave talks on invasive species assessment and management to garden clubs, the student Chapter of Society of Conservation Biology at UGA, Coastal Wildscapes, the Georgia Exotic Pest Plant Council and others.

In separate work involving invasive species, Nongame staff monitored and treated Japanese climbing fern and crotalaria on 500 acres at Silver Lake Wildlife Management Area in southwest Georgia. This work will continue in 2014.



Removing water hyacinth on Altamaha (GaDNR)



During 2012-2013, rangers with what is now the DNR Law Enforcement Division conducted 40 commercial vessel boardings along Georgia's coast to check for compliance with turtle excluder device, or TED, regulations. Rangers issued seven state TED-related warnings, 10 state citations, one federal warning and one federal citation.

The TED checks were part of 423 hours the Law Enforcement Division spent at sea in fiscal 2013. Activities also included 75 hours patrolling for violations of laws protecting North Atlantic right whales and 145 hours at Gray's Reef National Marine Sanctuary. Four federal warnings were given for feeding dolphins.

In May 2012, rangers had foiled an attempt to poach sea turtle eggs from nests on Sapelo Island. Using

a DNR K-9 trained to sniff out wildlife contraband, officers found 156 sea turtle eggs in the baggage of a passenger leaving Sapelo on the island's ferry.

Sea turtle eggs are prized by some as a purported aphrodisiac and a food delicacy. All sea turtle species that nest on Georgia beaches are protected by state and federal laws. Penalties for illegal possession of sea turtle eggs can include up to a year in jail and a \$100,000 fine.

Because of the potential federal violations, the case was turned over to the U.S. Fish and Wildlife Service.

Suspect Lewis Jackson of Brunswick pled guilty in April 2013. He was fined \$468 and sentenced to six months in federal prison, two years of

probation under federal supervision and 156 hours of community service – to be served at the Georgia Sea Turtle Center on Jekyll Island.

Ranger also handled other nongame-related cases, as well as one osprey rescue.

While training in a boat operator course at Lake Walter F. George in June, rangers Jordan Crawford, Mark Puig and Patrick Gibbs were returning to the marina when they spotted three juvenile ospreys sitting in the remains of a nest in the water. Storms that morning had apparently blown the nest into the lake. The rangers caught the birds and put them in a new nest that other rangers built in a nearby tree. "The next day," Puig wrote, "we observed the mother going to nest to feed the ospreys. Success!"

# Law Enforcement for Nongame

DNR rangers rescue young ospreys at Lake Walter F. George (Jay Bright/GaDNR)



## Regional Education Centers

The DNR Wildlife Resources Division is charged with promoting the conservation and wise use of Georgia's natural resources. The division's educational mission involves cultivating an appreciation and understanding of wildlife resources, fostering wise stewardship of these resources, and promoting safe and ethical natural resource-based recreation.

Throughout its history, the Wildlife Resources Division has educated the state's youth and families to increase awareness, engagement and stewardship regarding Georgia habitats, wildlife and natural resources. These education efforts began when Charlie Elliott, first director of what is now Georgia DNR, started the Junior Ranger Program in 1940. Children in the program conducted nature surveys, planted wildlife food crops and helped "senior rangers." In its first year, more than 25,000 children became involved in learning and practicing conservation.

Elliott's vision of a conservation education program continues today through the Wildlife Resources Division's seven regional education centers, as well as the continuation of the Junior Ranger Program in DNR's State Parks & Historic Sites Division. As growth and development increasingly require stewardship and conservation, the need for wildlife education is paramount.

Wildlife Resources operates the regional education centers in partnership with local school systems, Regional Educational Service Agencies and other state and federal agencies to deliver wildlife-based education to students, adults and families. The centers are Charlie Elliott Wildlife Center near Mansfield, the Go Fish Education Center in Perry, Smithgall Woods near Helen, McDuffie Environmental Education Center near Dearing, Arrowhead Environmental Education Center near Armuchee, Grand Bay near Valdosta and Sapelo Island National Estuarine Research Reserve.

Visitors learn about conservation and wise use of natural and cultural resources through hands-on experiences. More than 64,000 students and adults visited the centers in fiscal year 2013, a 4 percent increase over the previous year.

### 2013 highlights include:

**Charlie Elliott Wildlife Center** shepherded a Project WILD program that trained a growing number of teachers, 633 compared to 474 the previous year. Project WILD is an interdisciplinary curriculum that schools teachers in teaching wildlife and conservation while still covering curriculum standards in math, reading and science.

Project WILD offered basic educator workshops, Growing Up WILD workshops targeted early childhood teachers and Flying WILD workshops reached middle school teachers. Project WILD conducted advanced programs for teachers, partnering in 2013 with Project Learning Tree to offer a Longleaf Pine Workshop.

Charlie Elliott Wildlife Center also continued the Outdoor Wildlife Leadership School. Through OWLS, teachers throughout the state learned about wildlife habitats in the Piedmont and Coastal Plain by canoeing in Bond Swamp National Wildlife Refuge, learning about mammals at

DNR's Kim Kilgore at Metter Elementary (Linda May/GaDNR)





Dauset Trails Nature Center and hiking at Ochoopee Dunes Wildlife Management Area.

The center expanded shooting programs, banking on a new shotgun range as well as the rifle and pistol ranges. Family Day at the Range programs taught shotgun, rifle and pistol safety to beginners. A new archery range also built in 2013 features a static and a field archery range, allowing Charlie Elliott staff to expand Family Day at the Range to include archery. Visitors can learn not only how to shoot but also how to care for archery equipment.

The center's Hunt and Learn program started in 2011 is expanding still. Five programs were offered last year, with nine planned for fiscal 2014. The Wildlife Resources Division's shooting sports program is also offering two additional Hunt and Learn programs in each region. Hunt and Learn teaches children hunting skills and conservation knowledge. The program is part of a Wildlife Resources Division effort that, through shooting sports and Hunter Education, served more than 39,000 people in 2013. Hunt and Learn programs teach hunting skills including for deer, squirrels, turkeys, quail and rabbits.

Charlie Elliott Wildlife Center and Project Wild also continued improving their websites,

[www.CharlieElliott.org](http://www.CharlieElliott.org) and [www.GAProjectWILD.org](http://www.GAProjectWILD.org). Charlie Elliott Wildlife Center has a popular Facebook page at [www.facebook.com/CharlieElliottWildlifeCenter](http://www.facebook.com/CharlieElliottWildlifeCenter).

**Smithgall Woods'** education department continued to offer a variety of onsite and outreach programs for students and adults. During the fall and spring semesters, approximately 20,000 students from adjacent counties to as far away as Jacksonville, Fla., participated in 680 programs that highlighted the beauty and resources at Smithgall Woods.

Demand was high for "in-school field trips" during the 2012-2013 school year. Through word of mouth, new contacts in several counties were added, boosting outreach numbers to almost 18,000 students and adults. "Snakes Alive" remained the most requested program, with "Animal Adaptations" running a close second. Outreach remains the mainstay for the education department, accounting for 86 percent of students reached during the recent year.

Sheila Humphrey, wildlife interpretive specialist, was named Georgia Project WET Educator of the Year for 2013. This was due in part to the vast number of aquatic programs conducted

at Smithgall Woods, as well as the variety of stream-based workshops and presentations for Trout Unlimited chapters in northeast Georgia. To enhance educational opportunities for youth, the Georgia Council of Trout Unlimited donated scholarship money to Humphrey to provide free outreach to seven counties surrounding Smithgall Woods Education Center.

Through a wide range of activities, **McDuffie Environmental Education Center** continued to promote appreciation and enthusiasm for nature and conservation among students and their parents. The number of classes coming to the center remained fairly constant despite the economic difficulties experienced by local schools. In support of the local community and schools, McDuffie Environmental Education staff also provided programs for Career Night and Leadership McDuffie, and served as judges for the local 4-H. The center represented DNR as an exhibitor at the Central Savannah River Area Earth Day Celebration held at Phinizy Swamp Nature Park in Augusta. Staff also supported McDuffie Public Fishing Area's Outdoor Adventure Day by providing exhibits and programming.

In May 2013, the McDuffie Environmental Education Center played host to the 13th annual Eco-Meet. Sponsored by the Central Savannah River Area Environmental Sciences Education Cooperative, Eco-Meet is an environmental education competition for middle-schoolers that is modeled after the North American Envirothon. Thirty teams from schools competed in the daylong event. Staff pitched in from Game Management, McDuffie Fisheries and the Environmental Protection Division to help the education center hold a successful competition.

In June 2013, McDuffie and the Watson-Brown Foundation held a three-day teacher workshop called Get Natural. This unique workshop, developed by staff at the education center and Watson-Brown, was approved by the Georgia Department of Education. Teachers completing the course earned two professional learning units, which can be used toward teacher recertification. The workshop allowed teachers to experience the diverse educational resources available at McDuffie Environmental Education Center and the Watson-Brown Foundation while participating in activities designed to demonstrate how standards can easily be taught beyond the classroom.



Salamander pond at Ochoopee Dunes Natural Area (Linda May/GaDNR)

**Arrowhead Environmental Education Center**, a partnership between DNR and Floyd County Schools, focuses its outreach programs and field trips on educating pre-K through 12th-graders about northwest Georgia's environment, habitats and wildlife. During the 2012-2013 school year, 11,644 people were reached.

Students of all ages came to field trips at Arrowhead. Also, by leading outreaches, Arrowhead staff visited students in their classrooms, bringing live animals for demonstration and making a concerted effort to tie content to national education standards.

For the 11th consecutive year, local students helped release lake sturgeon into the Coosa River basin. Students look forward to the release each year, and the outreach provides a hands-on opportunity for them to learn about Georgia's river systems.

As exhibitors, Arrowhead shared with thousands in the community by participating in local events such as the Trout Unlimited Chili Cook-off sponsored by the Coosa Valley Chapter of Trout Unlimited. A portion of proceeds are donated to support the environmental education center. Arrowhead also was

involved in DNR's Outdoor Adventure Day, held annually on National Hunting and Fishing Day.

Arrowhead represented the statewide environmental education community by having a representative on the Environmental Education Alliance of Georgia advisory committee. Staff served on the organization's Monarchs Across Georgia committee and participated in the 2013 Claxton Wildlife Festival. Arrowhead also helped with the 2013 Weekend for Wildlife, a key fundraiser for the Nongame Conservation Section.

**Grand Bay Wetland Education Center**, a partnership between DNR and Coastal Plains Regional Educational Services Agency, maintains a full schedule each year. During the 2012-2013 school year, 9,076 students and adults visited the center. While the busy schedule and limited staff do not allow for outreach programs during the school year, Grand Bay had a full summer program in 2013, both at Valdosta State University and with day camps.

Summer day-camp programs included 50 Taiwanese middle-school students, 30 student teachers from Czechoslovakia, 1,000 children at Valdosta State University Science Saturday and 600 children

from the Lowndes County Boys and Girls Club, Sheriff's Boys Ranch and the DARE program. The camps featured lessons on mammals, birds, reptiles, amphibians and fish found in south Georgia, as well as local plant communities and current environmental issues.

The education program at **Sapelo Island National Estuarine Research Reserve** finished modernizing its education facilities in 2013. New monitors were bought for use with new microscopes and handheld digital microscopes. An interactive white board was installed and the auditorium has a new overhead digital projector. Nature signs incorporating QR code technology designed for smart device users were added along the island's nature trail. A new education website lists all Sapelo programs.

The Sapelo education and research programs also partnered with Georgia Southern University to develop a teacher workshop focusing on Science Technology Engineering and Math, or STEM. The workshop received national publicity through quarterly newsletters of the National Estuarine Research Reserve System and NOAA's office of Ocean and Coastal Research Management.

**The Go Fish Education Center** provides quality on-site environmental education programs focused on aquatic resource education and conservation. During 2013, students from preschool to college levels participated in hands-on activities incorporating Georgia Performance Standards and Project WILD and WET activities. Customized programs on water resources, economic impacts of freshwater fishing in Georgia and fish dissection were designed for middle school students. Classes in LEED building design at local colleges have made annual visits to study the facility.

The center's 2013-14 calendar will include on-site school field trips, monthly homeschool programs, a State Fish Art Camp during Houston County's winter break, monthly weekend Fish and Learn classes and other monthly public programs. Also, summer fish camps will be offered for the first time at Go Fish.

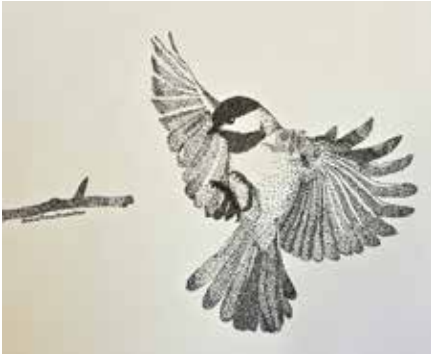
Education volunteers have become an integral part of the center's school and public programs. Because training is vital to their continued participation and support, a volunteer education handbook is being developed. Staff presentations to the Houston County Retired Teachers Association, Master Gardeners of Central Georgia and Bibb County Extension Master Naturalists have been a crucial tool in recruiting adult volunteers who have a passion and understanding regarding Georgia native plants, wildlife and natural resources.



DNR's Pete Griffin discusses bald eagles with school students. (Linda May/GaDNR)



## Youth Birding Competition



2013 Youth Birding Competition T-shirt Art Contest winner (Carolina chickadee by Anna Hamilton) (GaDNR)

The 2013 Youth Birding Competition had the second-most number of registrants since the Nongame Conservation Section began the competition eight years ago. Twenty-eight teams totaling 128 members signed up, underscoring the popularity of an event that is promoting birding and conservation among young Georgians.

For this 24-hour birding contest, teams of pre-K through 12th-grade birders representing schools, Scout troops, science clubs and other groups compete with teams their age to identify as many bird species as they can in the state.

During the spring 2013 competition, young birders from pre-school ages to teens saw or heard some

200 species (the top team reported 136) and raised more than \$1,100 for conservation projects throughout the state. In addition, the event's T-shirt Art Contest attracted 132 drawings and paintings of native Georgia birds.

The Youth Birding Competition is sponsored by The Environmental Resources Network (TERN), Audubon Society, Georgia Ornithological Society and others.

## Give Wildlife a Chance Poster Contest



Winning Give Wildlife a Chance poster by Andrew Edwards (Division 2) (Linda May/GaDNR)

Kindergarten through fifth-grade students submitted nearly 1,800 posters for the 2013 Give Wildlife a Chance Poster Contest. That total was up from the previous year. This annual event has successfully encouraged students to explore the wonders of Georgia's native plant and animal species through art for 23 years. Fifth-graders from 20 public schools, private schools and homeschool groups took part in 2013.

The posters of state-level contest winners were displayed at the Go Fish Education Center in Perry.

The contest is organized and sponsored by DNR, The State Botanical Garden of Georgia and The Environmental Resources Network, or TERN.

## Social Media

The DNR Wildlife Resources Division's social media sites – Facebook, Twitter, Flickr, YouTube and a blog – grew in popularity, spreading awareness of conservation and the division's work. Facebook recorded 17,213 likes through June 30, 2013, the end of the fiscal year. Twitter had 2,800 followers and the YouTube channel had 55,202 views and 162 subscribers.

The division's blog, which has a conservation-specific section, registered 33,446 views.

2013 Youth Birding Competition winners the Chaotic Kestrels (Chris May)



Circulation for the nongame e-newsletter Georgia Wild increased slightly, to nearly 16,500 subscribers. Key newsletter features and videos are cross-promoted on the division's social media sites, increasing the size of the audience and potential impact of the conservation information.

The online ventures and the e-newsletter not only broadened the reach of the Nongame Conservation Section's communications efforts, they enhanced interactivity and customer service.

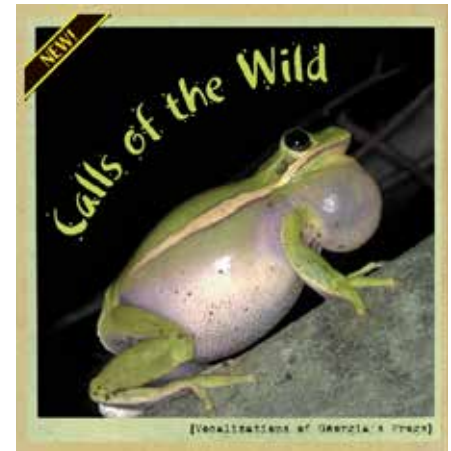
## Promoting Awareness

Beyond youth contests, social media and news releases, the Nongame Conservation Section promotes awareness of nongame wildlife and related issues in many other ways.

Employees responded to requests from schools, civic groups and other agencies for information about rare species and habitats in 2013.

They gave presentations to citizens and scientific audiences, answered emails and provided advice by phone. Staff worked events varying from CoastFest in Brunswick and the Rattlesnake & Wildlife Festival in Claxton to the Georgia Association of Tax Officials' spring conference and Endangered Species Day at Atlanta Botanical Garden. They also provided interviews on wildlife to multiple media outlets, including Savannah Morning News, The Atlanta Journal and Constitution, Athens Banner-Herald, Georgia Public Broadcasting and The Associated Press.

A few more examples:



- At Oconee County Middle School in north Georgia, botanist Dr. Mincy Moffett and Anna Yellin, Nongame's environmental review coordinator, walked about 300 seventh-graders through the use of key natural history websites and ways to learn about citizen science projects.
- Yellin and Linda May, Nongame's environmental outreach coordinator, organized and awarded a \$1,000 grant to Athens science teacher Halley Page as part of a TERN-sponsored grant to recognize exceptional teachers in life sciences. The program continued in fiscal 2014.
- Nongame live-streamed a peregrine falcon nest in Atlanta, with help from DNR Information Technology, McKenna Long & Aldridge law firm and Georgia Public Broadcasting's "Georgia Outdoors." The HD video, broadcast from March through May on Ustream ([www.ustream.tv/georgiawildlife](http://www.ustream.tv/georgiawildlife)), drew more than 136,000 views and provided a forum for three hour-long online chats between Nongame Program Manager Jim Ozier and viewers, including two East Coweta sixth-grade classes. TERN, McKenna Long & Aldridge and The Garden Club of Georgia provided financial and other support. The nest will be live-streamed again in 2014.
- The "Calls of the Wild" CD featuring vocalizations of Georgia frog species and Nongame's "Venomous Snakes of Georgia" brochure were updated and re-produced by Public Affairs and Nongame biologists John Jensen and Thomas Floyd. TERN provided grants for both projects. The snakes brochure was also supported by the University of Georgia Cooperative Extension Service, the Georgia Southern University Center for Wildlife Education and Southeastern Reptile Rescue.



Atlanta peregrine falcon feeding chick (GaDNR)

Lisa Kruse at Atlanta Botanical Garden's Endangered Species Day (Linda May/GaDNR)



The Nongame Conservation Section facilitated two land conservation projects for the acquisition of 5,903 acres of wildlife habitat in 2013. Both projects, detailed below, conserve priority habitats identified in Georgia's State Wildlife Action Plan.

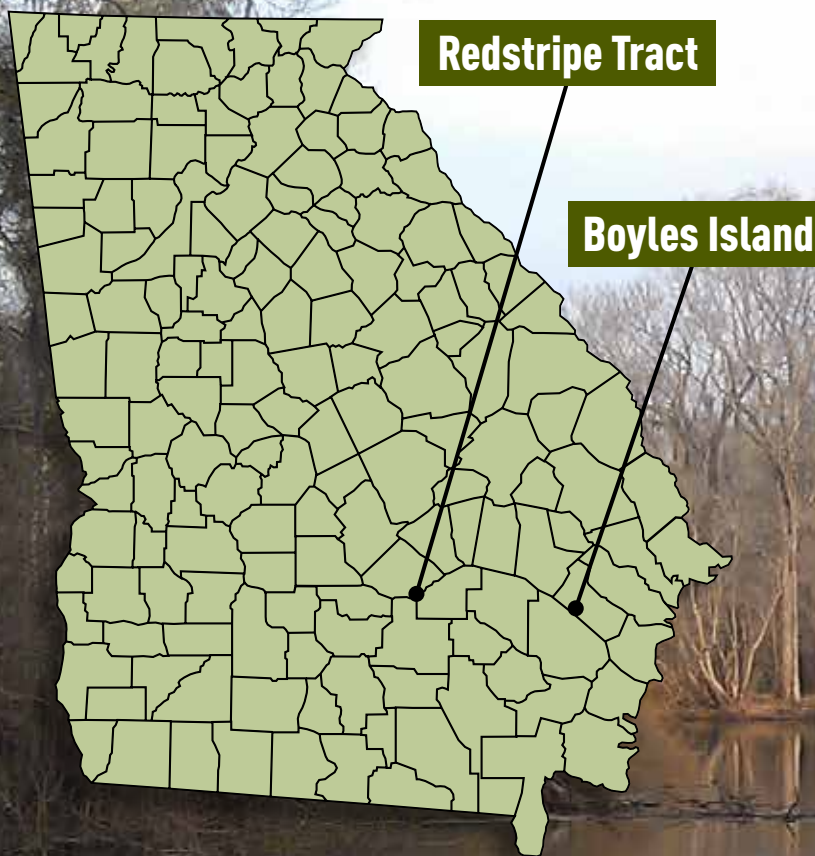
Staff also helped the Georgia Forestry Commission close a perpetual conservation easement on an ecologically important 1,000-acre site on Pine Mountain in Harris County. The tract is adjacent to 14,800 acres of permanently protected land and contains examples of at least five State Wildlife Action Plan high-priority habitats, eight high-priority plant species and five high-priority animal species. Nongame and the Georgia Forestry Commission are providing habitat management advice and other assistance at the landowner's request.

## Altamaha River – Boyles Island

The Boyles Island acquisition in Wayne County protects 5,102 acres of the lower Altamaha River floodplain, which has extensive forested wetlands and is one of the most valuable ecological corridors in Georgia. Boyles Island has several uplands that become "islands" during the Altamaha's annual high flow events. These uplands are dominated by a rare natural community type called southern Coastal Plain oak dome and hammock that is found on uplands in large river floodplains.

Boyles Island also provides breeding and wintering habitat for four priority species of waterfowl and indirectly benefits another 12 waterfowl species.

Partners in the acquisition, closed on Dec. 18, 2012, included The Nature Conservancy, the U.S. Marine Corps, the U.S. Fish and Wildlife Service, and the Knobloch Family Foundation. The Nature Conservancy gave the state \$880,000 to acquire the site, while the Marine Corps provided \$3.1 million to acquire a restrictive easement over the tract, the Fish and Wildlife Service provided a \$1 million Coastal Wetlands Grant and the Knobloch Family Foundation, with the



Georgia Conservancy's help, provided a \$200,000 grant.

This project is the first part of a nearly 6,300-acre planned acquisition. The Nature Conservancy purchased the property from Rayonier and sold it to the DNR in two phases.

Boyles Island will be managed as part of Penholoway Wildlife Management Area, providing public outdoor recreational opportunities such as hunting and birdwatching, while also buffering the Marine Corps' Townsend Bombing Range. The 5,183-acre range is used by all branches of the military and from bases in 40 states.

## Flat Tub WMA – Redstripe Tract

This acquisition conserves 801 acres along the Ocmulgee River in Jeff Davis County. Due to the unique geology and topography of this area, the plant community is one of the richest and most diverse in the state. Preservation of the Redstripe Tract will

also protect habitat for the eastern indigo snake, a federally listed species, and the gopher tortoise, Georgia's state reptile and a candidate species for listing under the Endangered Species Act.

The Redstripe Tract includes a significant amount of native groundcover that the Wildlife Resources Division will enhance through the use of prescribed fire.

Purchased Jan. 23, 2013, the tract connects with Flat Tub Wildlife Management Area and is across the Ocmulgee from Horse Creek Wildlife Management Area. The property also adjoins Broxton Rocks, a conservation tract owned in part by the Georgia Forestry Commission and The Nature Conservancy. Collectively, more than 16,000 acres are preserved along this stretch of the Ocmulgee corridor due to private and public conservation efforts.

Project partners included The Conservation Fund, which sold the property, and the Fish and Wildlife Service, which provided a Pittman-Robertson grant of \$1,296,000.



## Conservation Planning

Georgia's State Wildlife Action Plan, a vital roadmap for conservation, was completed in 2005 and provides guidance for wildlife conservation efforts by Georgia DNR and its partners. The plan outlines critical areas of need, with a focus on keeping Georgia's native species from declining to the point of requiring federal protection as threatened or endangered species.

Like all state wildlife agencies, DNR made a commitment to review and revise its State Wildlife

Action Plan, better known as SWAP, within 10 years. The revision process began in 2010.

The plan is being revised to reflect the most current assessment of Georgia's wildlife conservation needs, with emphasis on the development of proactive strategies that address wildlife conservation needs from a state and regional context. Participation in recently formed partnerships known as Landscape Conservation Cooperatives will be instrumental in shaping these regional conservation strategies.

Development of climate change adaptation strategies is another area of emphasis. The Wildlife Action Plan

revision will incorporate information on potential impacts of climate change on species and habitats in Georgia and the Southeast, and outline conservation programs that provide options for maintaining natural diversity in the face of changing climatic conditions.

The Nongame Conservation Section staff is coordinating the revision process with help from other DNR staff and representatives of a wide variety of government agencies, non-governmental conservation organizations, landowner groups and private corporations. The revision is scheduled for completion in fall 2014.



Boyles Island (Wade Harrison/The Nature Conservancy)



## Nongame Wildlife Conservation Fund

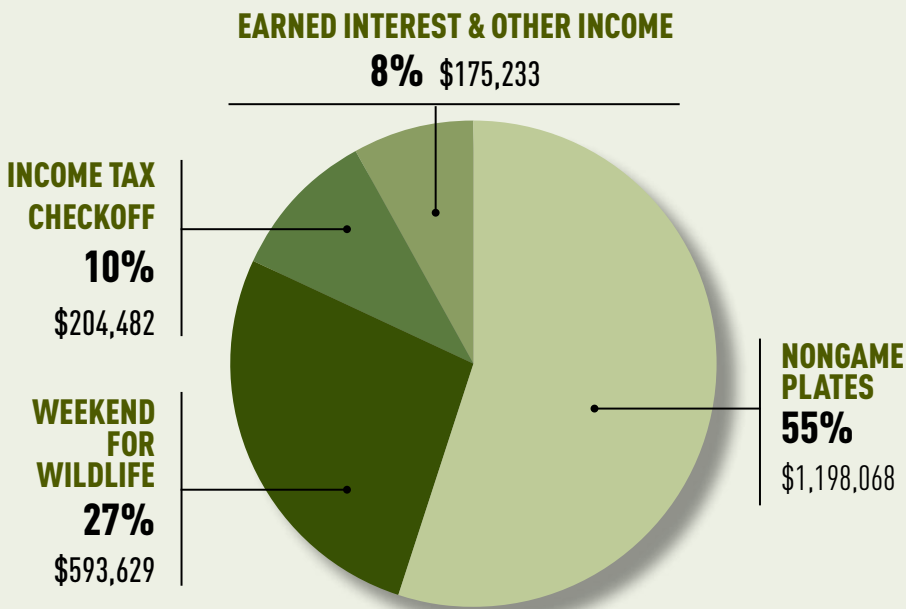
The Nongame Conservation Section receives no state appropriations for nongame wildlife conservation, depending instead on grants, fundraising and direct contributions. With fundraising a necessity, the section has three primary avenues: the nongame wildlife license plates, Weekend for Wildlife and the Give Wildlife a Chance state income tax checkoff.

All contributions go into the Nongame Wildlife Conservation and Wildlife Habitat Acquisitions Fund, often referred to as the Georgia or Nongame Wildlife Conservation Fund.

The Environmental Resources Network, or TERN, the Nongame Section's friends group, also provides significant support.

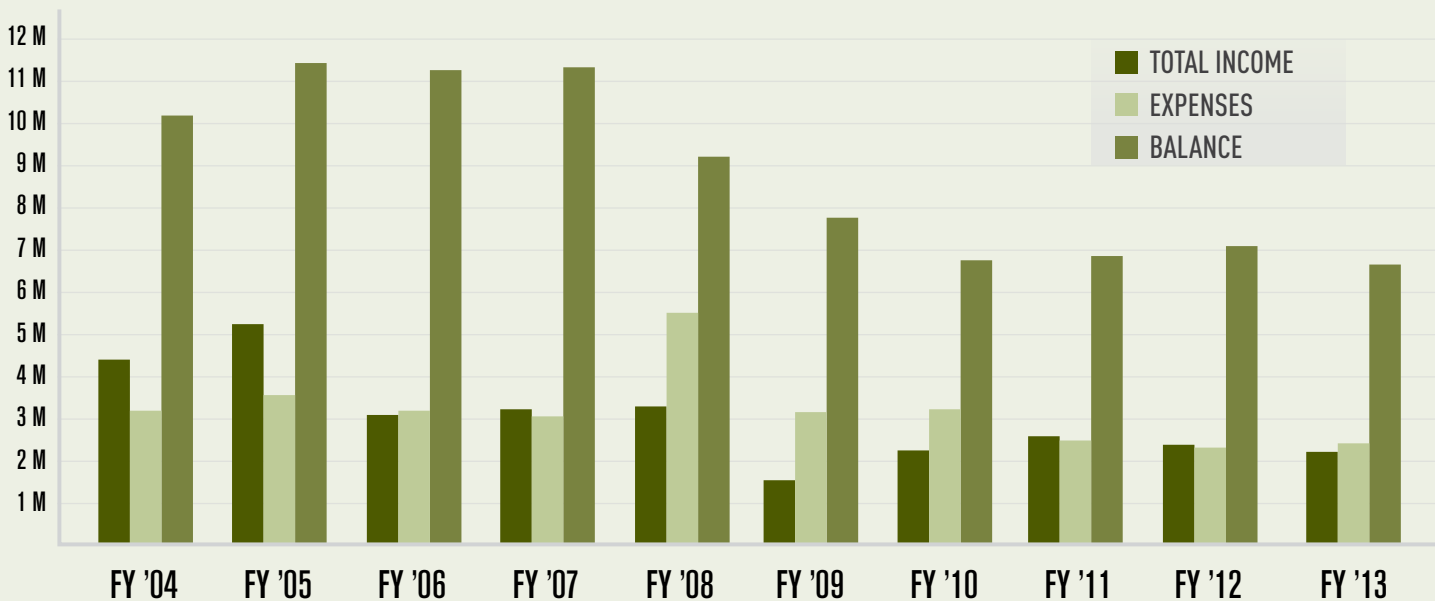
For fiscal 2013, the Nongame Conservation Section totaled \$2.17 million in income from the Nongame Wildlife Conservation Fund (not counting federal and other grants) and \$2.44 million in expenses. The fund had a balance of \$6,788,853 million at the end of the fiscal year.

## Fiscal Year 2013 Funding



## Nongame Wildlife Conservation Fund

Listed in millions per year



## Weekend for Wildlife

Weekend for Wildlife is one of the country's most successful fundraisers for conservation, grossing nearly \$9 million since its start in 1989. The annual event draws 200-400 guests to the prestigious Cloister at Sea Island for a weekend of outdoor trips, auctions and dining.

The 2013 celebration, the 25th annual Weekend for Wildlife, grossed \$593,629.



Kestrel at 2013 Weekend for Wildlife (Linda May/GaDNR)

## 'Give Wildlife a Chance' State Income Tax Checkoff



The state income tax checkoff offers Georgians a convenient way to contribute to the Nongame Wildlife Conservation Fund. Since the checkoff's

creation in 1989, net contributions have averaged \$304,000, with a high of \$510,910 collected in 1991 and a low of \$184,065 in 1994.

The revenue received for fiscal year 2013 slumped to \$204,482, a decrease of about \$83,000 from the previous fiscal year and near the checkoff's record low.

The Give Wildlife a Chance checkoff is line 26 on the long state income tax form (Form 500) and line 10 of the short form (Form 500-EZ).



The Environmental Resources Network, or TERN, a nonprofit organization founded to support DNR's nongame conservation activities, funded 20 proposals totaling \$89,002 in 2013. TERN raised the funds primarily through membership dues and through auction and raffle items at the annual Weekend for Wildlife.

The nonprofit funded requests including environmental education workshops for teachers and students, the annual Youth Birding Competition, the Give Wildlife a Chance poster contest, a bat condominium and supplies, workshops and awards to facilitate conservation education efforts. The complete list of projects funded:

Teacher conservation workshop	\$2,000
Advanced training for environmental educators in Georgia	\$1,500
Adventures in Conservation Education (Camp ACE)	\$5,646
Outdoor Wildlife Leadership School (OWLS)	\$11,992
Ninth annual Youth Birding Competition	\$7,900
Freshwater mussel survival in low-flow conditions	\$4,902
Indigo snake sign reprint	\$1,500
"Venomous Snake of Georgia" brochure update and reprint	\$1,137
Hellbender survey equipment	\$3,500
Box cannon net for shorebird capture	\$2,000
Coastal Georgia Cooperative Invasive Species Management Area equipment	\$5,000
GPS cameras for plant community surveys and monitoring	\$3,200
24th annual Give Wildlife a Chance Poster Contest	\$4,600
Red-cockaded woodpecker cavity tree management equipment	\$525
Outstanding teacher award	\$1,250
Bald eagle AVM research and monitoring at Lake Thurmond	\$10,000
Digital camera for surveys, monitoring, documentation and education	\$650
F.D. Roosevelt State Park community bat roost and signs	\$7,200
UGA Museum of Natural History new collection transport	\$5,000
Safety equipment for eco-burner volunteers	\$9,500

TERN, online at <http://tern.homestead.com> and on Facebook ([www.facebook.com/TheEnvironmentalResourcesNetwork](http://www.facebook.com/TheEnvironmentalResourcesNetwork)), raises money through membership fees, donations, and the sale of raffle tickets, gifts and silent and verbal auctions at Weekend for Wildlife.



## Nongame License Plates

The bald eagle and ruby-throated hummingbird automobile tags remain the Nongame Conservation Section's largest funding source. Sales and renewals of the plates provide more than half the revenue for the Nongame Wildlife Conservation Fund each year. Affirming that critical role, in June 2013 the Wildlife Resources Division introduced designs that feature new, compelling artwork across the entire plate for the eagle tag and the two tags benefiting the Wildlife Resources Division's bobwhite quail and trout programs.

Yet, financial support from the nongame plates – new and old – and funding projections have changed significantly since the Georgia Legislature changed the fee and revenue-sharing structure for these and other specialty plates. The legislation, which began being implemented in May 2010 and took full effect by September of that year, reduced the share of the purchase price that goes to sponsor groups and added an annual renewal fee. Now, \$10 of each wildlife plate sale and renewal goes to the Nongame Wildlife Conservation Fund.

While adding an annual renewal fee increased revenue – by \$1 million from fiscal 2010 to 2011 – the price increase and additional fee resulted in a sharp drop in sales of eagle and hummingbird plates, coupled with low renewal rates. The Nongame Conservation Section had 347,401 plates in service before the changes. At the close of fiscal 2013, that total had plunged by nearly 77 percent to slightly more than 101,805 plates.



The introduction of the new eagle plate in June did not increase sales significantly, and the decline in issuances of new plates loomed large. New plate sales during April-June 2013 dropped 93 percent compared to February-April 2010, the three months prior to the change in fees.

In fiscal 2013, license plates revenue for the Wildlife Conservation Fund totaled \$1.19 million, down from \$1.46 million in 2012 and \$1.88 million in 2011. (Revenue peaked in fiscal 2011, the first full year of new fees, and has decreased since.) As income dropped – 36 percent from two years ago – the percentage of fund revenue provided by the plates slid to 55 percent. From 1997 through 2013, the plates averaged 60 percent of fund revenues.

If these trends and the Wildlife Conservation Fund's current share of fees continues, annual revenue from the plates will soon dip below \$1 million, then slide even further, undermining what has been a standard of support for conserving Georgia's nongame wildlife for more than 15 years.

## Federal and Other Funding

The Nongame Conservation Section received \$4.9 million in federal and other grants during fiscal 2013.

Notable funding included a \$500,000 grant from the U.S. Fish and Wildlife Service Cooperative Endangered Species Fund for work with Florida. The multi-year project will fund status assessments for 23 at-risk species that occur in both states.

Since 2006, the State and Tribal Wildlife Grants program has been the most important source of federal funding for conserving nongame wildlife that are not federally listed. Yet, budget cuts have sliced State and Tribal Wildlife Grants by almost a third since fiscal 2010. A suite of federal conservation programs including State Wildlife Grants has been cut by 25 percent, and all have faced repeated House subcommittee proposals to eliminate funding.

Since 2000, the State Wildlife Grants program has been the main federal funding source to help keep states common species common and protect others before they become critically imperiled and more costly to recover. That work contributes to local and state economies by supporting the nation's more than 90 million wildlife watchers 16 years old and older, a group that spends some \$55 billion a year on wildlife-related recreation, according to State Wildlife Grants advocate Teaming with Wildlife and a 2011 U.S. Fish and Wildlife Service survey.

In Georgia, State Wildlife Grants are critical to helping the state conserve wildlife and natural places for current and future generations. Likewise, the state is big on wildlife watching, with more than 2.2 million Georgians and \$1.8 billion in related expenditures in the state in 2011, according to the Fish and Wildlife Service survey.

The Wildlife Resources Division supports Teaming With Wildlife, a national coalition working to support State Wildlife Grants and find new funding to prevent America's wildlife from becoming endangered.

The Nongame Conservation Section received \$175,233 in interest and other income in fiscal 2013.

### HOW YOU CAN HELP

In conserving Georgia's nongame wildlife, we're making a difference, learning more and raising awareness. But our financial challenge is significant.

How we answer that challenge will affect the wildlife and wild places that make our state special.

These creatures and habitats also affect our well-being and our economy. And they will for generations come.

Here's how you can help:

- Purchase or renew a nongame wildlife license plate.
- Contribute through the state income tax checkoff – line 26 on Form 500 and line 10 on Form 500-EZ.
- Attend **Weekend for Wildlife**, held each winter at Sea Island.
- Donate directly to the Nongame Wildlife Conservation Fund.
- Join TERN, <http://tern.homestead.com>.

Learn more about supporting wildlife conservation at [georgiawildlife.com/conservation/support](http://georgiawildlife.com/conservation/support).

Bald eagle (Curtis Compton/The Atlanta Journal-Constitution)



Southern hognose snake (John Jensen/GaDNR)





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