

Conserving Georgia Wildlife

2012

FISCAL YEAR REPORT



More than 1,000 plant and animal species in Georgia are species of conservation concern. Nearly 320 of those, from bald eagles to hellbenders, are protected by state or federal law.

Big numbers.

But for the Nongame Conservation Section, the big issue is what those numbers represent: Georgia's wildlife diversity. It's our job to make sure that rich diversity is conserved for generations to come. This mission covers all of Georgia's native nongame wildlife, or species not legally fished for or hunted.

Yes, it is a challenge.

In the fiscal year ending June 30, 2012, our work took us from prescribed fires in the Piedmont to beach patrols for nesting loggerhead sea turtles, gentle giants showing signs of significant recovery.

We set up a volunteer network to monitor bats, teamed with partners to survey for state-endangered blackbanded sunfish and protect a Turner County pitcherplant bog, and searched mountain streams for the eastern hellbender, a massive salamander proposed for listing under the federal Endangered Species Act.

These are only examples of the work needed to assess Georgia's nongame wildlife populations, restore their habitats and raise awareness about the importance of conserving them.

It is work that is strategic – guided by the **State Wildlife Action Plan** – and far-reaching, benefiting native species and the people who appreciate them. In 2011, wildlife-watching activities in our state involved an estimated 2.2 million Georgians and more than \$1.8 billion in spending.

More big numbers.

Conserving the wildlife that make all of our lives richer is a big job. And it doesn't happen without you.

Although part of the Georgia DNR, the Nongame Conservation Section does not receive state appropriations for nongame work. Instead, we depend on direct donations, fundraising and grants.

That means we need you – to buy nongame wildlife license plates, contribute to the Wildlife Conservation Fund income tax checkoff, attend Weekend for Wildlife or make direct donations to the Wildlife Fund.

This report offers a glimpse of what we do and how you can help. Download copies of this report, as well as a summary version, at : www.georgiawildlife.com/conservation/AnnualReport.

Let me know what you think at mike.harris@dnr.state.ga.us. And, as always, thank you for your support.

Mike Harris | Chief, Nongame Conservation Section

Georgia Department of Natural Resources | Wildlife Resources Division | Nongame Conservation Section



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Cover photos:

Cloudless sulphur on rare Radford's mint (*Dicerandra radfordiana*) (James Holland)
Loggerhead sea turtle nesting
Swabbing bat (Jerry Wallace)
Hellbender survey (Brant Sanderlin/*The Atlanta Journal and Constitution*)
Growing season burn at Moody Forest (Philip Juras)
Southeastern American kestrel (Charlie Muise/*Georgia Important Bird Areas Program*)
All photos without credits are by Georgia DNR.

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 the protection of critical nesting and resting areas that are free from disturbances. One of the areas, Little Egg Island Bar, supports one of the largest colonies of nesting seabirds on the south Atlantic Coast.

For beach-nesting birds, the summer of 2012 proved tough. A series of very high tide events flooded many nests along the coast. One event in early May and another associated with Tropical Storm Beryl later that month proved particularly destructive. In late June, Tropical Storm Debby brought significant rains and flooded some nests, including at least 50 least tern nests at one site.

A number of sites also suffered high depredation rates. Predators varied from fish crows and great-horned owls to coyotes, raccoons, mink and ghost crab.

Between flooding and predators, the productivity of many shorebirds and seabirds was relatively low on Georgia's coast in 2012.



Least tern feeding chick on Little Tybee Island

But these birds are resilient. Beryl washed over a brown pelican colony with 538 nests on Little Egg Island Bar, leading to abandonment of the colony. Yet a smaller pelican colony of 228 nests was established in a new site behind Little Cumberland Island. While this colony suffered some flooding, it was not abandoned, and at one point biologists counted 49 large chicks. Also, after several years of inactivity, St. Catherines Island Bar had one of the summer's largest seabird colonies, with nests from 230 black skimmers, 65 gull-billed terns and 46 least terns.

A dredge-spoil island near the Brunswick shipping channel



Wilson's plover

created by the U.S. Army Corps of Engineers in 2007 and owned by the state continued as an important nesting site for waterbirds. In 2012, 674 royal tern nests were documented on the island, along with 93 sandwich terns, 65 black skimmers and 65 laughing gull nests. The Nongame Conservation Section is working with the corps to maintain this site in an unvegetated state to promote beach-nesting seabirds and discourage gull nesting.

In other updates:

- A Georgia Ornithological Society grant allowed the Nongame Conservation Section to provide electric fencing to Little St Simons Island and support a University of Georgia graduate student working with least terns. Fences were established at Little Saint Simons, Cumberland and Andrew's islands, significantly improving nesting success of least terns and black skimmers by reducing mammalian predation rates.
- Ongoing surveys of migrant and wintering shorebirds highlighted the variability of available resources at key feeding areas. Heading into fall 2012, forage for migrant shorebirds appeared low, leading to fewer migrating shorebirds at several sites.
- Researchers documented 107 pairs of American oystercatchers on the Georgia coast. DNR and its partners banded 17 chicks, most of which fledged.

Birds



American oystercatcher chick

- Two graduate students worked with Wilson's plover during summer 2012, studying nesting ecology including how males and females share 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.
- Three whimbrels were radio-tagged in spring 2012, thanks to the support of TERN and help from other partners. One bird, "Gould," was the first whimbrel from Georgia documented in the western breeding population around the Mackenzie River Delta. A second bird, "Postel," was wintering in coastal Brazil after spending the breeding season just west of Hudson's Bay.
- DNR and partners continued a sharp-tailed sparrow banding project, providing data on the basic winter distribution of two species – Nelson's and saltmarsh sparrows – and five subspecies of these little-known birds.
- DNR and several coastal partners initiated the Georgia Shorebird Alliance in 2012. Involving state, federal and private groups, members of the new organization hope to make significant progress in management, monitoring, research and education programs benefiting 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 woodpecker populations 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 take and 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 families, 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 – 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, 157,042 acres are enrolled in Safe Harbor management agreements covering 105 baseline groups of woodpeckers and supporting 34 surplus groups, or additions to the woodpecker populations. Most of these properties are in the Red Hills Region near Thomasville, an area that supports the largest population of red-cockaded woodpeckers on private lands. The Nongame Conservation Section worked with Safe Harbor participants in 2012 to monitor and band woodpeckers and maintain suitable habitat through installing and replacing nest cavities.

Since the inception of Safe Harbor in 2000, the Red Hills population has grown from about 175 family groups to more than 190.

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 single male in 1999. Through the translocation of 64 young birds, the property now has 22 family groups.

In 2008, DNR acquired 8,400 acres near Bainbridge to create Silver Lake Wildlife Management Area, the

first state-owned property to feature red-cockaded woodpeckers. This state property has extensive stands of mature longleaf pine habitat.

To supplement the red-cockaded woodpecker population, Nongame Conservation Section staff translocated six woodpeckers from Apalachicola National Forest, Fla., to Silver Lake in fiscal 2012. The WMA now has 25 family groups, one more than the previous year. Also in 2012, 29 young woodpeckers were banded at Silver Lake.



DNR biologist Joe Burnam checks red-cockaded woodpecker nest (ChristinaPerez/University of Georgia)

Through more frequent controlled burning, installing more recruitment clusters and careful forest management, the WMA will eventually sustain about 50 family groups.

Partners in Flight

In Georgia, Partners in Flight, an international bird conservation effort, 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.

Results from survey work focused on secretive marshbirds – rails and bitterns – indicate these birds are fairly common on some state properties in suitable habitats. Differences in occupancy rates may be due to differing management regimes on otherwise similar sites. (Details in following sections.)

Surveys for another secretive and little known bird, Henslow's sparrow, began in winter 2010-2011 and continued in 2012, in partnership with Tall Timbers Research Station. (Details in next section.)



Southeastern American kestrel

Work with southeastern American kestrels included comprehensive surveys by ground and air of known kestrel populations across the state. The population was estimated at about 157 breeding pairs, almost exactly the number detected in 2011. This consistency suggests aerial surveys are effective in censusing kestrels and that species numbers may be stable statewide despite declines in the western sandhill population. The number of nests was up slightly in 2012, a first since census work began in 2006.

Even more exciting was the discovery of attempted second nests in the area of Fall Line Sandhills Wildlife Management Area. Kestrels regularly nest summer-long near good habitat at the U.S. Army's Fort Gordon, but this consistency has never been detected in the western sandhills. Recent timber harvests and growing-season fires at Fall Line Sandhills have dramatically improved habitat and may have allowed several pairs to nest throughout the summer.

A cooperative effort also was initiated to install kestrel boxes on Fort Benning, after a pilot project detected at least four nesting pairs on the Army base near Columbus.

The Nongame Conservation Section 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 at Joe Kurz Wildlife Management Area near Woodbury and Panola Mountain State Park near Stockbridge kicked into high gear in 2012. In cooperation with the Georgia Ornithological Society, Georgia Power Co. and DNR's Game Management Section, nearly 200 acres are being restored on Joe Kurz. At Panola Mountain State Park, the acres of restoration doubled in 2012.

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. However, surveys will begin in summer 2013 to document changes in warbler distribution.

The Brawley Mountain project will provide almost 300 acres of early succession habitat. This controversial project on the Chattahoochee National Forest 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 10,000 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 2012, 1,903 nests were documented in 17 colonies in Georgia. A dry fall and winter resulted in some typically large colonies never being established. Ongoing drought in southwest Georgia led storks to abandon colonies and nests.

Coastal colonies fared better. Nongame staff and partners from the U.S. Fish and Wildlife Service, Savannah River Ecology Laboratory, St. Catherines Island and the Georgia State Parks and Historic Sites Division monitored nine coastal wood stork colonies for productivity. Nearly 300 nests were monitored throughout the nesting season. Despite several colonies that failed because of falling water levels, productivity was fairly high for these colonies. Storms proved the most significant problem, knocking some nests from trees.

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.



Bald eagle with fish (Curtis Compton/The Atlanta Journal and Constitution)

■ 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. A ban on the use of DDT in the U.S. in 1972, habitat improvements following enactment of the Clean Water and Clean Air acts, protection through the Endangered Species Act, increased public awareness, and the restoration of local populations through release programs all helped bald eagle



Swallow-tailed kite

populations rebound here and elsewhere. During the 2012 nesting season, the Nongame Conservation Section documented 163 occupied nesting territories. Of these, 121 were successful, fledging 198 eaglets. In comparison, there were 55 known nesting territories in the year 2000, nine in 1990 and only one in 1980. Biologists worked with landowners to manage nesting areas, including a new site at Berry College near land planned for a football field.

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.

■ 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.

Twenty-one kite nests were monitored in 2012. Numbers appear to have rebounded since the low nest numbers the previous year. Biologists also documented high nesting success in 2012, with 76 percent of monitored nests successfully fledging at least one chick. In addition to the confirmed nests, nesting was highly likely at six additional sites based on observed bird behavior.

An artificial nest platform/decoy array erected in 2010 was used by two pairs of kites during 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.

The Nongame Conservation Section also started working in fiscal 2012 with several private landowners to provide permanent protection for important kite nesting sites.

■ Henslow's Sparrows

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, this species has declined precipitously, likely due to habitat loss on its breeding and wintering grounds.

Henslow's 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 initiated surveys in winter 2010-2011. Birds were captured in mist nets along several powerline corridors at Paulk's Pasture Wildlife Management Area in Glynn County, Townsend Wildlife Management Area near Ludowici and Moody Forest Wildlife Management Area in Appling County. Volunteers used a technique known as flush netting. The birds were banded with numbered leg bands for identification.

From December 2011 through early March 2012, staff conducted surveys at these same sites and several other locations. Seventy-four Henslow's sparrows were captured and banded at the original sites. A single bird was captured and banded at a new site, Sansavilla Wildlife Management Area in Glynn and Wayne counties. Eight of the 64 birds banded during the winter of 2010-2011 were recaptured in winter 2011-2012. All were caught very close to where they were first captured, usually within 100-200 meters.

Surveys will continue for at least a few more years to find more Henslow's sparrow sites, identify micro-

habitat, and determine site fidelity and response of this species to habitat management.

■ Secretive Marshbirds

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 2012, the Nongame Conservation Section conducted a second 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 levels including by habitat or wetland type, physiographic province, state, region, country and continent.

Sites surveyed included Altamaha, Silver Lake, Chickasawhatchee, Dixon Memorial Forest and Clayhole Swamp wildlife management areas, all in south Georgia, and the Georgia Department of Transportation's Bowen Pond mitigation site in Brooks County. Surveys were conducted at 59 survey points known as stations. Because these birds are very secretive, three replicate surveys were conducted at each station to increase the chances of detecting any birds present.

Staff documented a significant number of king rails and least bitterns at Altamaha WMA and several least bitterns at Silver Lake WMA. No rails or bitterns were found at Chickasawhatchee, Dixon Memorial Forest, Clayhole Swamp or Bowen Pond.

No black rails were detected at any of the sites. Special surveys for black rails will be initiated in coming years to try to determine their distribution and habitat preferences in the state.



King rail

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 NOAA Marine Fisheries Service recovery plan for loggerheads, Georgia DNR management efforts focus on surveying and protecting loggerhead nests and managing nesting beach habitat. DNR's 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 1,000 nests per year. In 2012, some 2,220 loggerhead nests were documented on Georgia beaches, the most recorded in 25 years. Cooperators found 1,760 and 1,992 nests in 2010 and 2011, respectively.

According to the federal recovery plan, 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.

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 1,750 loggerhead females using the Georgia coast for nesting.



One of the many discoveries 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 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 2012, 177 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 important sources of mortality, accounting for 47 percent and 10 percent of strandings, respectively.

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.

During 2012, Nongame Conservation Section staff in cooperation with the University of Georgia's Warnell School of Forestry and Natural Resources and Odum School of Ecology deployed 200 traps at nine sites in the state, including all eight known bog turtle sites and a neighboring bog. Totalling at least 11,200 trap nights, the effort resulted in 61 captures at eight sites and 23 different bog turtles – 33 percent of all bog turtles known from the wild in Georgia. The work is part of a study in which researchers are gauging the trapping effort necessary to determine bog turtle presence in a potential bog wetland.

In other highlights, two bog turtles originally released in 2005-2006 as part of a "headstart" population establishment effort were captured by trapping in a nearby bog where traps had not been set before. Both turtles were fitted with transmitters. Radio telemetry will be used to study their movements and use of the habitat.

Biologists collected genetic tissue samples from three turtles in 2012 for the Georgia Museum of Natural History genetic archive collection and the U.S. Geological Survey. In the past three years, tissue has been collected from 43 bog turtles in the state.

Also, breeding of a captive population of Georgia bog turtles – five females and four males – housed at Chattahoochee Nature Center continued. The young of these turtles will be released into restored habitat on the Chattahoochee National Forest after a two-year head-starting period. The program began in 2011.

U.S. Fish and Wildlife Service's Molly Martin watches loggerhead hatching on Blackbeard Island

Reptiles and Amphibians

Gopher tortoise at Yuchi WMA study site

Gopher Tortoise and Eastern Indigo Snake Surveys

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

During fiscal year 2012, the Nongame Conservation Section funded gopher tortoise population inventories at 17 sites, mostly on private lands, to determine tortoise population sizes and demographics. As with inventories from previous years, 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.

To date, 36 sites in Georgia have been inventoried for tortoises. Twelve more sites are slated for surveys in 2013.

Eight of the sites surveyed in 2011–2012 had estimated populations in excess of 250 tortoises, a number the U.S. Fish and Wildlife Service has established as the minimum to ensure a long-term, sustainable population. Yuchi Wildlife Management Area, a DNR tract identified as having an unsustainable population size in its current state, was established as a recipient site for tortoises displaced by development. Since, 36 tortoises have been released at Yuchi. Radio telemetry conducted on 10 of them has shown strong fidelity to the release site. Future augmentation efforts are aimed at increasing the WMAs combination of native and translocated tortoises to more than 250.

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

During 2012, the study’s second year, staff surveyed 40 sandhill sites on public and private lands in the basin. Indigo snakes were detected at 20 percent of the sites, a slight increase over the initial year’s detection rate (18 percent). Several sites in which indigos were not detected in the first year had detections in the second, and vice versa, which could be due to differences in

detectability between years, weather, chance or actual changes in occupancy by the snakes.

Planned long-term monitoring of the sites will determine the reasons for these differences, and how persistent indigo snake populations are at these sites.

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 two 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. The Nature Conservancy preserve 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 2012, in partnership with Atlanta Botanical Garden, the University of Georgia, The Nature Conservancy, Zoo Atlanta and the Joseph W. Jones Ecological Research Center, 445 juvenile gopher frogs were released. That brought the six-year total released at Williams Bluffs to 4,316 individuals.

Extensive drought left the release pond completely dry in 2012, complicating efforts. Rather than releasing juvenile frogs into the pond, frogs were released directly into gopher tortoise burrows in the surrounding uplands.

While researchers had hoped to monitor breeding success of returning adult gopher frogs, the lack of water prevented any breeding activity in 2012. Gopher frogs are fairly long-lived and periodic drying of their breeding ponds is typical. Monitoring of breeding activity has been rescheduled for 2013.

Eastern Hellbender Conservation Surveys

The state-protected eastern hellbender – North America’s largest salamander – inhabits clear, cold-water streams in the north Georgia mountains. Status surveys of hellbender were identified as a high-priority conservation action in the State

Wildlife Action Plan. A 2005 survey checked stream segments in proximity to historical occurrence records in 21 areas. Previous studies of known hellbender populations and documentation of new occurrence records were mainly opportunistic, piecemeal efforts of organizations and individuals.

In 2011, the Nongame Conservation Section initiated a long-term, landscape-level survey and population monitoring effort. Primary objectives included monitoring known populations over time and documenting additional populations from stream basins that had not been sampled before.



Hellbender (Brant Sanderlin/The Atlanta Journal and Constitution)

In summer 2011, 16 stream segments on seven streams were sampled, 34 hellbenders captured, and data collected from 16 hellbenders. Biologists determined that hellbenders were extant within three streams with historical occurrences and within one undocumented stream segment.

In 2012, 24 streams (35 segments) were sampled, 133 hellbenders captured and data collected from 121 individuals. Work during this most recent summer revealed that hellbenders were extant in 18 streams with historical occurrences and one undocumented segment.

Each hellbender captured was weighed, measured, photographed and marked with a Passive Integrated Transponder tag for future identification. Genetic tissue samples were collected from the 16 hellbenders in 2011 and 121 in 2012 for the Georgia Museum of Natural History genetic archive collection and for use in a genetics/habitat fragmentation study with The Orianne Society. Since 2011, amphibian chytrid fungus (Bd) and Ranavirus samples have also been collected. 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. The U.S. Fish and Wildlife Service used data collected from Georgia in 2011 and 2012 to assess the species’ status for a petition to list it under the federal Endangered Species Act.

The hellbender surveys and population monitoring is featured in this DNR video, <http://bit.ly/XrDU5G>.

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 400 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. Yet, only seven calves were documented during 2012, the lowest number reported since 2000.

While the population is increasing at an annual rate of 2 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 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.

Since 2004, staff has helped disentangle 10 right whales entangled in commercial fishing gear ([YouTube video](#)), and participated in six 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 the Wildlife Resources Division's Law Enforcement Section in education and outreach, policy efforts, and enforcement of federal right whale protections. (Also see the Law Enforcement for Nongame section.)

Mammals



DNR biologist disentangling a right whale (NOAA permit 932-1905)

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 improve the understanding of marine mammal biology, investigate human impacts on marine mammals, monitor population health, provide rapid and humane response to live stranded marine mammals, and educate the public about marine mammal issues.

From 2001 through 2011, the network documented 263 marine mammal strandings, ranging from 13 to 46 a year. Bottlenose dolphins are the most commonly species stranded in Georgia, making up 73 percent of strandings, followed by pygmy and dwarf sperm whales (16 percent, combined). Other species that have been 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.

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, some 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 could impact manatees and their habitat.

Watercraft collisions are the leading anthropogenic cause of manatee mortality. Other impacts include attraction to industrial warm-water outfalls and

entanglement in fishing gear. Nongame staff documented 41 manatee mortalities in Georgia between 2001 and 2011. Thirty-seven percent died from watercraft collisions. The cause of death was undetermined in 41 percent of the cases.

Since 2007, the Nongame Conservation Section has conducted aerial surveys with funding from the Navy to estimate manatee abundance and habitat use in waters surrounding Cumberland Sound and Kings Bay Naval Submarine Base. Peak abundance has been estimated as high as 40 manatees during May and June.

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, given a thorough veterinary examination

(samples were collected for contaminant analysis) and tagged with VHF transmitters to track post-capture 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.

The Nongame Conservation Section resumed photo-identification monitoring in the Brunswick area during summer 2011, with the goal of estimating dolphin calf survival. Assistance was 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 Conservation

A federal grant supporting 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.

A University of Georgia graduate student and former Nongame Conservation Section intern

began the graduate project in spring 2012. Very little is known about the yellow bat throughout the species' range. It is a species of concern in several states and Georgia has very 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 northern yellow bat habitat selection for foraging.

The project required many nights of netting and radio-telemetry to track bats captured and outfitted with transmitters to their roost. Two individuals were hired as field technicians: one worked on Sapelo Island, the other on Little St. Simon's Island. Both helped the graduate student trap bats, while also tracking bats to roosts and collecting vegetation data at roosts.

In the initial year of the project, 18 bats were tagged and tracked to roosts on both islands. This represents the largest study of its kind for northern yellow bats across the species' range.

Also in 2012, Nongame Conservation Section biologists launched a volunteer effort to record bat vocalizations across Georgia. The statewide Anabat survey used volunteers to drive transects and collect bat calls. A [new web page](#) described the

project, and provided an [instructional video](#) and interactive routes map for volunteers. All routes were assigned to volunteers and most routes were completed once or twice during 2012.

The calls collected will be analyzed to determine species and numbers of bats along 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.

On another front, surveys for white-nose syndrome, or WNS, were completed during winter 2011-2012. WNS was not found in Georgia but was identified in adjacent counties in Tennessee and Alabama. The disease has likely moved into Georgia and may soon begin affecting wintering bat populations here.

According to U.S. Fish and Wildlife Service estimates, this devastating disease has killed 5.7 million to 6.7 million bats and been documented in 19 states and four Canadian provinces. DNR staff will continue to monitor sites during winter. Biologists have focused on educating the public and the caving community to help prevent the spread of WNS and promote bat conservation efforts.



DNR intern Julia Nawrocki with northern yellow bat on Cumberland Island



DNR's Trina Morris, left, and Nikki Castleberry conduct WNS monitoring in Sitton's Cave (Jerry Wallace)

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 snails, mussels, fishes and crayfishes. Unfortunately, Georgia is also ranked among the top states in the number of imperiled aquatic species. More than two-thirds of the state's freshwater mussels are extinct, endangered, threatened or considered species of special concern. Approximately 30 percent of Georgia's freshwater fishes and 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 this information into the DNR database, and assisting with conservation planning for rare aquatic species.

Each year, staff completes hundreds of surveys around the state, documenting or monitoring important populations of high-priority aquatic species. In the past year, surveys focused on species considered for listing under the U.S. Endangered Species Act. For example, historic locations for Altamaha shiner, bluestripe shiner and holiday darter were re-surveyed to make sure the species are



The Nature Conservancy's Katie Owens with a speckled madtom at Raccoon Creek (Sherry Crawley/TNC)

still present. The surveys also resulted in the discovery of new populations of Altamaha shiner and Altamaha arc mussel. Staff also conducted annual monitoring of Etowah and Cherokee darters in Raccoon Creek and sicklefin redbone in Brasstown Creek.

A continuing project to assess the status of Coosawattee River fishes includes surveys for holiday darters and goldline darters in Talking Rock Creek, the Coosawattee River and Mountaintown

Creek. Biologists are compiling historic and recent fish collection data to assess the status and habitat requirements of the federally threatened goldline darter. This information will be used to identify high-priority habitats for conservation, and to develop a long-term monitoring program for this species.

Staff also brought live fishes to an outdoor festival in the watershed and shared information about the project for an article in the local newspaper.

Freshwater Aquatic Species



Blackbanded sunfish



Holiday darters on the Conasauga River (Amos Tuck)

The Nongame Conservation Section 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.

In 2011, staff developed a project to assess the status of the state-endangered blackbanded sunfish in south Georgia. This species was recently documented in the Okefenokee Swamp and a small private lake in the Aucilla River system. Other Georgia records of blackbanded sunfish date prior to 1980, and the species is thought to be declining in many parts of its range.

The goal of the project, carried out by Valdosta State University in cooperation with Nongame Conservation Section researchers, is to survey historic blackbanded sunfish sites and document new populations that can be conserved. To date, more than 70 locations have been surveyed three to four times. Surveyors recorded the first new population of blackbanded sunfish documented in Georgia since 1980 and confirmed the persistence of one of the historic populations.

As part of a project to assess the impact of extreme drought conditions on mussel populations, staff led sampling efforts in drought-impacted waters in southwest Georgia. Efforts in 2012 included a modeling analysis of mussel detection

and occupancy for the mainstem Flint River. The Nongame Conservation Section also continued an ongoing mussel population monitoring project in tributaries of the Flint in response to extreme low flows caused by drought and water use.

More than 2,900 mussels, including the federally listed shinyrayed pocketbook and oval pigtoe, were collected from Spring Creek near Colquitt. The work was part of an effort to assess the response of mussel populations to experimentally augmented flows in a reach of the southwest Georgia stream.

Nongame staff presented results of research at several regional and national symposia, and assisted the Freshwater Mollusk Conservation Society as host of an environmental flows workshop in Athens. Staff also contributed to several multi-state and national efforts to assess the taxonomy, status and distribution of species in North America.

Data from these 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 database contains about 2,100 distribution records representing important populations of 186 rare aquatic species from around the state.

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.

About 115,000 hatchery-reared robust redhorse have been stocked into the Broad, Ocmulgee, Oconee and Ogeechee rivers in Georgia. South Carolina DNR has stocked 54,000 fingerlings in the Broad and Wateree rivers.

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 step toward recovery.

Other recovery activities include a major gravel augmentation project on the Oconee, telemetry studies on the Ogeechee, Broad and Pee Dee rivers, and a population dynamics study on the Ocmulgee.

The gravel augmentation 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 is planned for spring 2013.

Sandhills Conservation

In 2006, the Nongame Conservation Section began a project to inventory sandhill habitats in the state. The habitats include longleaf pine/turkey oak ecosystems along the Fall Line and along larger streams in southern Georgia, as well as similar habitats associated with former barrier islands in inland coastal Georgia. These areas harbor a number of rare species, including the southeastern pocket gopher, gopher tortoise, eastern indigo snake, gopher frog, Bachman's sparrow and striped newt.

The sandhills inventory had several objectives. The first was a map of sandhills and sandhills associated habitats throughout the state. The second was a field-based assessment of ecological condition, rare (and other) species present, and potential for restoration. The third objective was an estimate of gopher tortoise populations on selected sites.

All phases of the project are complete, although gopher tortoise population estimates are still being refined.

In all, nearly 100 public and private sandhills sites representing more than 12,000 acres of habitat were visited. Approximately two-thirds of these sites had active gopher tortoise populations, accounting for approximately 2,600 tortoise burrows. Precise tortoise population estimates have been obtained for more than 30 state, private and federal conservation properties, largely through a contract with the Joseph W. Jones Ecological Research Center at Ichauway.

Sandhills in Georgia and other states have also 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. Georgia set 10,000 acres as its goal.

DNR and state wildlife agencies in Florida, Alabama, Mississippi and Louisiana were awarded a \$981,000 State Wildlife Grant in 2011 for additional habitat restoration on sandhills and upland longleaf pine habitats. Restoration targets exceed 51,000 acres across the five states, and more than 18,000 acres in Georgia.

With support from the two grants, in 2012 DNR and its partners conducted prescribed burns on 13,200 acres of priority sandhill habitats in Georgia, mechanically treated invasive hardwoods and sand pine on 600 acres, and planted longleaf pine on 590 acres. 2010 totals included 4,700 acres of prescribed burns, 1,100 acres of mechanical treatments and 90 acres of herbicide treatments. In 2011, prescribed burns totaled 5,335 acres; mechanical treatments, 380 acres; herbicide treatments, 90 acres; and, longleaf pine plantings, 240 acres.

Plants and Natural Habitats

Rare Plant Surveys on Public and Private Lands

Nongame Conservation Section botanists continued to explore state lands in 2012, with a focus on newly acquired properties. Surveys are conducted throughout the state to identify and inventory locations of rare plants and provide guidance on appropriate management activities. This work is done with consultants, private 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.

Numerous rare plant discoveries resulted from surveys conducted by DNR staff and contractors, nature photographers and field botanists, including Steve Bowling, Alan Cressler, Lee Echols, Michele Elmore, Philip Juras, Patrick Lynch, Richard Reaves and Matt Richards.

Atlantic white-cedar swamps were surveyed in the sandhills near Fort Benning. This find resulted in newly documented populations of sweet pitcherplant, clearwater butterwort and Carolina birds-in-a-nest in Marion County. Spotted Joe-Pye weed, a state record, was recorded from a roadside seep in Lumpkin County.

Other discoveries were made on the Brasstown Seeps, a wetland that borders the western edge of Brasstown Valley Resort and Spa in Towns County. Most of the habitat is maintained as a powerline right-of-way and is seepy with serpentine bedrock high in magnesium, an open habitat generally referred to as a serpentine glade. Two state records were found here: an orchid known as Loesel's twayblade and glade spurge.

Brasstown Seeps harbors numerous other plants of conservation concern in the Blue Ridge Mountains, including grass-pink orchid, roundleaf sundew, Canada lily, Virginia mountain-mint, bigleaf grass-of-Parnassus and Virginia bunchflower.

Additional sites for federally listed plants were found. Two new populations of pond spicebush were documented, one on a quail plantation in Calhoun County and the other on Mayhaw Wildlife Management Area in Baker County. A new array of granite outcrops with solution pits containing pool



DNR botanist Lisa Kruse monitoring habitat at Big Dukes Pond WMA

sprite and mat-forming quillwort was discovered near Rocky Comfort Creek in Warren County.

Along the Flint River in Taylor County, remnant hardwood slopes were documented with fringed campion, and population limits were expanded for relict trillium. At a largely pristine, private development in Pickens County, a new population of small whorled pogonia was verified. This discovery represents the southernmost known occurrence of the federally listed orchid, and the only one in Georgia on private property.

A floristic study of the South Atlantic Coastal Plain limestone forest was undertaken on slopes and bottomlands along the Ocmulgee River and tributaries in and around Oaky Woods and Ocmulgee wildlife management areas. This plant association is regarded as a globally imperiled (G2) hardwood forest known only from the upper Coastal Plain of central Georgia. New localities for 19 rare plants were also documented, including fringed campion, marl spleenwort, yellow spinypod, fivelobe cucumber, Ocmulgee skullcap and three-flower hawthorn.

Private lands also provide essential habitat for Georgia's most endangered plant species. For example, the federally endangered Canby's dropwort grows in cypress savannas often surrounded by agricultural fields. Important steps toward site protection and cooperative landowner agreements for prescribed fire were made for several Canby's dropwort sites in the last fiscal year. Of special note, a partnership with the U.S. Department of Agriculture's National Resource Conservation Service has enabled the placement

of permanent conservation easements on six tracts in Dooly County to protect Canby's dropwort habitat.

Safeguarding efforts involving the establishment of rare plants at protected sites are ongoing throughout the state. Recent examples include placement of American barberry in fire-maintained montane longleaf woodland at Sprewell Bluff in Meriwether County and transplantation of Georgia aster salvaged from a construction site into an upland, shortleaf pine-mixed oak-hickory woodland at Picketts Mill State Historic Site in Paulding County.

Collaboration with the terrestrial orchid conservation project at the Atlanta Botanical Garden continues. Generally, when new sites for rare orchids are found, seeds are collected and plants propagated in a tissue culture lab. One new population of monkeyface orchid was found on a private development in Pickens County. Additional sites for Chapman's yellow-fringed orchid were sampled northeast of the Okefenokee Swamp in Brantley and Camden counties.

Possibly the most significant rare-plant achievement in 2012 was permanent habitat protection of an 8.5-acre pitcherplant bog in Turner County. The bog contains hooded, parrot and yellow fly-trap pitcherplants, purple honeycomb-head, wiregrass dropseed, and numerous other bog and upland plants.

Nongame staff assisted with site inventory and encouraged the effort, but protection was facilitated by a conservation-minded landowner, dedicated volunteers, many private financial donations and the Abraham Baldwin Agricultural College Foundation.

Coastal Habitat Assessment and Conservation

The Coastal Habitat Assessment project encompasses the 11 first- and second-tier coastal Georgia counties and is part of the greater Coastal Georgia Land Conservation Initiative, a collaborative effort of the Georgia Conservancy, Association County Commissioners of Georgia and DNR. The habitat assessment portion of the project was completed in January 2011 and included land cover/vegetation maps of the

11 counties. The larger initiative is intended to facilitate efforts by county governments, municipalities and conservation organizations to protect critical natural communities and wildlife habitat while promoting sustainable development in the region.

In fiscal year 2012, the Coastal Habitat Assessment maps continued to inform Nongame Conservation Section's efforts on the coast. The maps were used for projects such as creating vegetation/land cover maps for seven new management plans for state parks in the region, directing surveys for a conservation easement documentation report for Julienton Plantation in McIntosh County, and helping Nongame and DNR Coastal Resources Division staff assess proposed development, timber harvest and road projects.

Federal, state and local governments as well as non-profit groups used the Coastal Habitat Assessment mapping products. The list of agencies and organizations included consultants updating the coastal National Wetlands Inventory and NWI+, Chatham County Resource Protection Commission for directing conservation land acquisition efforts, regional commissions incorporating priority habitats as regionally important resources and the U.S. Fish and Wildlife Service developing management strategies for coastal refuges.

The Georgia Department of Transportation also used the products to minimize impacts of transportation projects on priority habitats, while the Georgia Conservancy used them to prioritize conservation easement efforts. The mapping helped barrier island managers develop management plans. The Nature Conservancy prioritize conservation efforts on the coast and University of Georgia graduate students identify coastal research projects.

Surveys for priority coastal species and habitats were also conducted during this period.

Nongame biologists conducted surveys for night-blooming wild petunia, floodplain tickseed, pondspice, bottomland post oak and pitcherplant species. Coastal assessment maps were used to inform surveys for night-blooming wild petunia and bottomland post oak. Seeds of floodplain tickseed were collected for propagation purposes. A survey for the species was completed

with Wildlife Resources Division Game Management Section staff at Clayhole Swamp Wildlife Management Area in Glynn County.

Populations of Radford's mint and gopher tortoises were marked and mapped for protection from sand pine removal restoration work at Townsend Wildlife Management Area in Long and McIntosh counties. Staff also visited some previously undescribed calcareous cedar hammocks along the Altamaha River in Toombs County. Future surveys are planned to collect vegetation and soils data for the creation of a new NatureServe association for the hammock community.

Nongame Conservation Section staff continued to work as part of the Cannon's Point Conservation Task Force. The Cannon's Point site on St. Simons contains extensive maritime forest communities and important historical resources. It is being acquired for long-term protection. Nongame staff helped create a site management plan and conservation easement baseline document, assisted with field surveys, and evaluated sites that will be protected as Special Natural Areas.



Cloudless sulphur on Radford's mint (*Dicerandra radfordiana*) (James Holland)

On Little Saint Simons Island, a long-term vegetation monitoring project was established in *Muhlenbergia* dune grasslands. These grasslands are rare natural communities that provide critical habitat for island glass lizards and eastern diamondback rattlesnakes. The project will assess whether fire is a useful management tool for these grasslands.

Preliminary results show that after one year, fire reduced cover of *Muhlenbergia* grass, increased cover of other herbaceous species, and increased open sand areas. Study sites will be monitored annually to determine changes in the community over time.

Nongame staff consulted with barrier island conservation managers concerning priority coastal habitats and rare plants. Biologists provided advice to staff of Little Saint Simons on methods for monitoring impacts of fallow deer on maritime forest communities. Staff also led a field trip to familiarize Jekyll Island State Park staff with rare plants on the island. Nongame biologists consulted on a vegetation monitoring project in a disturbed longleaf pine community on St. Catherines Island and assisted with establishing vegetation plots.

Staff also assisted with development of a conservation easement for Julienton Plantation in McIntosh County. This site contains extensive maritime forest, coastal flatwoods and freshwater wetland communities and has long been a priority site for protection. Nongame biologists created maps and conducted surveys to complete the baseline documentation report. In early 2012, Julienton Plantation was protected with a permanent conservation easement.

Several field visits with Coastal Resources Division Ecological Services staff were made to determine impacts of coastal development projects and evaluate sites for protection. Coastal assessment habitat maps and site visits were used to determine potential impacts of proposed development projects on priority habitats and species.

Nongame biologists conducted land cover/vegetation mapping on coastal state parks. Maps were completed for Crooked River, Fort McAllister, Gordonia-Alatamaha and George L. Smith state parks, and Hofwyl-Broadfield Plantation and Wormsloe historic sites.

Preliminary maps were completed for Laura S. Walker and Stephen C. Foster state parks.

The maps will be incorporated in long-term management plans for the sites.

Presentations on the Georgia Coastal Assessment mapping project and important natural communities of barrier islands were given to university ecology classes and local teacher workshop groups.

Restoration of Mountain and Coastal 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 20 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.
- Creating a bog turtle "headstart" and population establishment program that involves the Chattahoochee Nature Center and the Tennessee Aquarium. (Seventeen captive-reared bog turtles have been released in restored mountain bogs.)



Montane purple pitcherplant (Alan Cressler)

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 robust 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.

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 is dependent 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.

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 conducted by a local volunteer steward.

Drought in 2011 may have caused severe impacts to the purple pitcherplant population at the bogs. In the spring of 2012, DNR staff led a prescribed burn at one of the bogs with the Interagency Burn Team. Results of this burn include an increase in the apparent diversity of native wildflowers and new occurrences of pitcherplants and orchids within the site.

Habitat Improvements on State Lands and the Interagency Burn Team

The Nongame Conservation Section employs a variety of land-management techniques to improve rare species habitats on state parks, natural areas and wildlife management areas. These practices include removing invasive species, planting native species, thinning timber and prescribed burning.

Prescribed fire remains the most effective tool for conserving and restoring fire-adapted habitats that support numerous species of conservation concern. Working with Interagency Burn Team partners, the Nongame Conservation Section applied prescribed fire to key habitats on state, federal and private lands in 2012. Burn team partners include the Georgia Forestry

Commission, The Nature Conservancy, The Orianne Society, the U.S. Forest Service and U.S. Fish and Wildlife Service.

Nongame staff led or assisted on prescribed burns totaling almost 16,845 acres in 2011-2012. This work involved staff from other Georgia Wildlife Resources Division sections and DNR's State Parks and Historic Sites Division, as well as from volunteers trained by the Nongame Conservation Section to federal fire standards.

A seasonal fire crew carried out the bulk of the work in the dormant season. The crew's dedication, flexibility for travel and ability to work long hours led to more acres burned – 6,003 in 2012. In addition to the seasonal fire crew, Nongame Conservation Section burn crew members helped the team burn an additional 10,842 acres. The Interagency Burn Team also offered training opportunities for partners and conducted public outreach, with press releases, newspaper articles and outreach during burns on high-profile areas.



DNR's Ashley Harrington working prescribed burn

The seasonal fire crew burned at many high-priority conservation sites across the state. Highlights include state-owned lands such as the Ballard Tract, Black Creek Natural Area, Crooked River State Park, George L. Smith State Park, Joe Kurz Wildlife Management Area, Little Ocmulgee State Park, Moody Forest Wildlife Management Area, Ohoopie Dunes Wildlife Management Area, Panola Mountain State Park, Reed Bingham State

Park, Seminole State Park, Sprewell Bluff Wildlife Management Area and Tallulah Gorge State Park.

Other sites for prescribed burns included preserves owned and managed by The Nature Conservancy – Broxton Rocks, Charles Harrold, Coosa Valley Prairies, Long Branch and Reed Branch Wet Meadow. Other burn sites included private lands, like the Broxton Meyers tract, Manassas Bog, Mopani Preserve and Thompson tract, and federally-owned land in the Chattahoochee 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, shortleaf pine/mixed oak woodlands and Table Mountain pine. Many high-priority species identified in the State Wildlife Action Plan benefitted from these restoration efforts.

As sites transition from restoration to maintenance, the Nongame Conservation Section 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 3,067 acres in 2012.

Nongame staff also monitors select sites to ensure that adaptive management is as effective as possible. This effort varies from photo-monitoring in burn units to more sophisticated measurements in longleaf pine restoration areas. Research at Reed Bingham State Park is providing insight for the debate over using seed versus plugs in wiregrass and native groundcover restoration. Monitoring continues at Big Dukes Pond Wildlife Management Area in small scale gaps replanted with longleaf. Based on the monitoring results at the Jenkins County WMA, DNR plans to thin the loblolly plantation again and install more gaps.

Other restoration projects are in the works on state lands. Most target restoration of grassland and pine savanna habitats, including longleaf/wiregrass systems. Native groundcover is crucial to these efforts and has been the focus for several years.

In 2012, 40,000 Indian grass plugs were planted on Fall Line Sandhills Wildlife Management Area in Taylor County. At Panola Mountain State Park, Joe Kurz WMA, and Chickasawhatchee Wildlife Management Area near Albany, 250 acres of native grass were planted. At Sprewell Bluff WMA near Thomaston, 350 acres of forest were marked for timber thinning in preparation for longleaf pine and oak woodland restoration. Invasive plants were targeted, including spraying 350 acres of understory to control the encroachment of sweetgum. Forty acres of invasive exotic species were also controlled.

In southwest Georgia, restoration of native pine savannas continued. At Chickasawhatchee WMA, staff mulched 50 acres to remove mid-story hardwoods and create new habitat for Bachman's sparrows. Native grasses were planted on another 50 acres in pine plantations.

On Mayhaw Wildlife Management Area in Miller County, staff worked to complete restoration started seven years ago on the WMA's pine savannas. "Over-story" hardwoods have been degrading habitat for native grasses planted and established in 2005. Staff successfully treated 100 acres in 2012 to remove these oaks. Work will continue in 2013.

Monitoring and spraying also continued on 100 acres of restored habitat at Doerun Pitcherplant Bog Natural Area, near Moultrie. The area restored had been covered with Chinese privet. Staff will monitor and selectively treat areas to prevent the privet from recurring. Two new invasives – crotalaria and Japanese climbing fern – have also been found onsite, prompting increased monitoring.

The Nongame Conservation Section is researching and evaluating innovative restoration techniques, including herbicide trials for groundcover restoration on Silver Lake Wildlife Management Area near Bainbridge, Fall Line Sandhills and Sprewell Bluff. At four sites, staff also is investigating the establishment and survival of underplanting longleaf pines in pine flatwoods, sandhills and montane longleaf habitats. This methodology holds the promise of using less herbicide (thus preserving groundcover) and avoiding clearcutting. Monitoring for the project was completed in 2012 and data entry and analysis has begun.

In partnership with Georgia Power and the State Parks and Historic Sites Division, Nongame biologists have also established more than 70 acres of native genotype, warm-season grasses on Panola Mountain State Park. These efforts have created a native seed source for other native warm-season grass restoration efforts throughout the Piedmont.

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 almost 13,000 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 2012, staff added 488 records, edited 462 and deleted 192. Significant efforts were made in updating information on gopher tortoises, sandhill communities and natural communities of the Georgia coast. Efforts were also made to identify species proposed for listing under the federal Endangered Species Act, and records updated to reflect the species' conservation status in the state.

Staff also responded to 553 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 also being developed. These tools will 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 will provide for real-time record updates and improve 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.



DNR biologist John Jensen with eastern indigo snake (Joe Abene)

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 61 active recovery projects for imperiled plant species. Thirty-one of these are in safeguarding programs at botanical gardens, in seed banks or as introductions within the original range of the species.

Trained GPCA volunteers known as "botanical guardians" contributed 875 hours of conservation work during calendar year 2011. GPCA has assisted the research of nine 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 Carolina, Texas, Arizona, Colorado and, most recently, Kentucky.

A current GPCA project that exemplifies the importance of partnerships is the creation of the GPCA safeguarding database. Through funding from DNR, the U.S. Forest Service, Atlanta Botanical Garden and the State Botanical Garden of Georgia, former Nongame Conservation Section employee Carrie Radcliffe is creating a comprehensive database of plant collections established since GPCA's founding, including in situ and ex situ living collections and safeguarding populations in the wild.

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

Ginseng Management Program

American ginseng is regulated under The Convention on International Trade in Endangered Species, which is administered by the U.S. Fish and Wildlife Service. States where this perennial herb is harvested must have a program for regulating its harvest and sale.

The Nongame Conservation Section administers the Georgia Ginseng Management Program, which monitors the size of the legal ginseng economy. Staff works with ginseng dealers, growers and the Wildlife Resources Division's Law Enforcement Section to make ginseng regulation a transparent and simple process.

Ginseng is most often used in Chinese and American Indian cultures. Many people believe ginseng provides medicinal benefits. Yet, over the Georgia Ginseng Program's 26 years there has been an overall decline in ginseng harvest and trade. The harvest in 2011 was the lowest in Georgia since 2005. This is likely due to development of lands where ginseng grows, as well as possibly an overall decrease in ginseng populations and other factors.

However, the ginseng trade in Georgia remains strong enough to merit continued regulation. The program certifies new ginseng dealers and growers every year.

Private Land Activities

Because some 93 percent of the Georgia landscape is privately owned, conservation activities on private lands are vitally important 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 2012.

That work included cooperating with a landowner and Fort Stewart's Fish and Wildlife Branch to mulch about 80 acres of sand pine and hardwoods on a degraded sandhill in Wheeler County. Teaming with The Orianne Society, the mulched area was burned in May 2012 to promote native groundcover and prepare the site for replanting to low-density longleaf pine. This area has a high density of gopher tortoises and will be periodically burned to promote restoration of the sandhill community.

The Nongame Conservation Section also worked closely with private landowners, Mississippi State University and conservation organizations to survey rare plant and insect communities on private sites across Georgia. Staff participated

in Natural Resources Conservation Service State Technical Committee and Local Work Group meetings to identify wildlife conservation priorities relevant to Farm Bill programs for private landowners. Staff took part in field tours to evaluate private properties as candidates for protection under the Wetlands Reserve Program.

Nongame cooperated with the Game Management Section's Private Lands Program and the Natural Resources Conservation Service to establish temporary wildlife biologist positions in Albany and Fitzgerald, using a grant from the National Fish and Wildlife Foundation and Southern Company. These biologists will work with local landowners to implement National Resources Conservation Service programs aimed at restoring and managing longleaf pine systems, including the new Working Lands for Wildlife initiative that targets gopher tortoises.

Landowner and land manager education was conducted through Master Timber Harvester workshops, Southeastern Wood Producers workshops and landowner outreach events. Technical assistance was provided through site visits. Further, the Nongame Conservation Section worked with corporate forest landowners to

improve wildlife conservation through the Forestry for Wildlife Partnership and Sustainable Forestry Initiative programs.

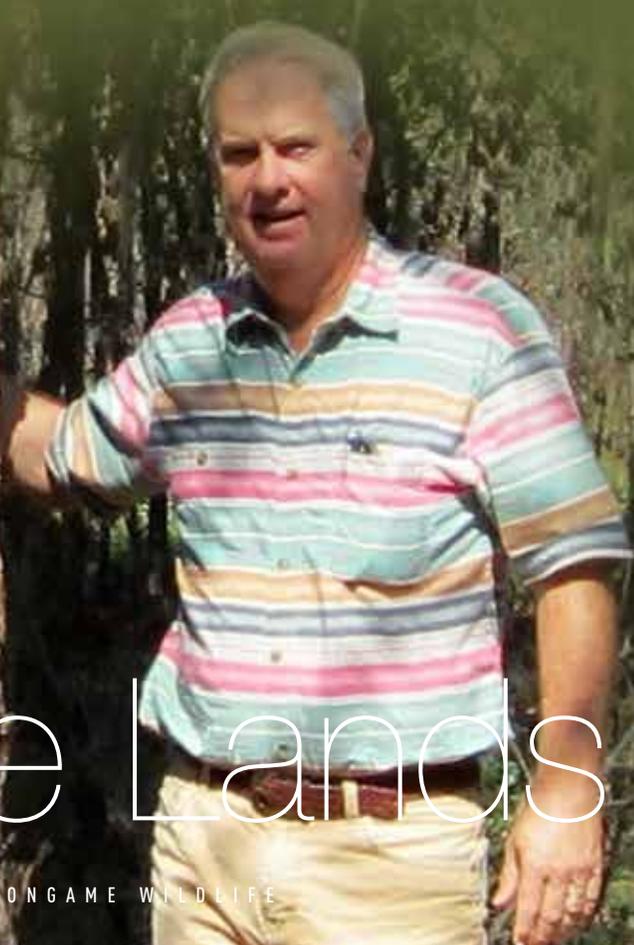
Along with Game Management and Parks personnel, staff also visited all 25 DNR-held conservation easements to ensure compliance with easement terms and to renew relations with landowners.

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 Lands

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.

Plum Creek, Georgia Power and Wells Timberland, the newest partner, were the 2011 Forestry for Wildlife partners.

On a related note, in May 2012, The Environmental Resources Network, or TERN, sponsored a meeting including program partners, DNR staff and U.S. Fish and Wildlife Service representatives. Presentations covered topics varying from pine savanna restoration and the Bobwhite Quail Initiative to Georgia's Wildlife Action Plan and federal agreements to help manage rare species on private lands.

Highlights of partners' conservation work during fiscal 2012 included:

- Plum Creek maintained habitat at Paulk's Pasture Wildlife Management Area near Brunswick for Henslow's sparrows, a secretive songbird. With 10,000 acres in central Georgia, the company also teamed with DNR and the University of Georgia to study the region's black bear population.
- Georgia Power helped the DNR relocate gopher tortoises displaced by development, including restoring 300 acres of longleaf pine as a future site for tortoises. Staff also worked with the state to place nest boxes critical for southeastern American kestrels on transmission towers near Butler, Tifton and Douglas.
- Wells Timberland protected habitat for rare fringed campion in Talbot County, thinned pine plantations to allow native understory plants to grow and benefit wildlife, and joined with the National Wild Turkey Federation in restoring longleaf pine in sandhill habitats in Marion County.

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.

This past year, the section was 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 and serving on the group's steering committee.

Community Wildlife Projects

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 some 2,000 certified backyards, 450 of which were certified with two or more adjoining neighbor's backyards to attain a Neighborhood Backyard Certification.

Law Enforcement for Nongame

During 2012, DNR Wildlife Resources Division rangers conducted 71 commercial vessel boardings along Georgia's coast to check for compliance with turtle excluder device, or TED, regulations. Rangers issued eight state TED-

related warnings, 15 state citations, seven federal warnings, three federal citations and four referrals for prosecution to NOAA.

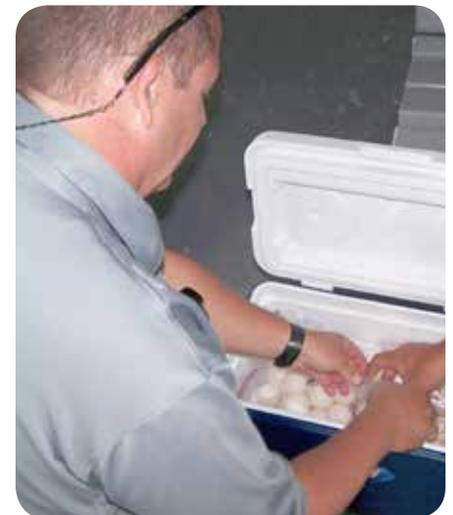
The TED checks were part of 482 hours that Law Enforcement spent at sea in fiscal 2012. Related activities included protecting marine mammals such as manatees and dolphins. In addition, rangers logged 117 hours patrolling for violations of laws protecting North Atlantic right whales – one federal warning was given – and 132 hours at Gray's Reef National Marine Sanctuary.

In May 2012, rangers foiled an attempt to poach sea turtle eggs from nests on Sapelo Island. Using a DNR K-9 trained to sniff out wildlife contraband, Wildlife Resources Division officers checked the baggage of passengers leaving Sapelo on the island's ferry.

The K-9, named Gauge, "alerted" on the suspect's duffel bag. Officers opened it to find 156 sea turtle eggs packaged in plastic bags.

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. DNR officers involved included Ranger Jeremy Reese, Cpls. Chris Ridley and Jimmy Finn, Sgt. Wayne Hubbard and Ranger 1st Class Tim Hutto, handler of Gauge.



DNR Cpl. Chris Ridley with sea turtle eggs stolen from Sapelo

Invasive Species Assessment and Management

Georgia's State Wildlife Action Plan emphasizes the need to expand efforts to detect, monitor and control invasive species in order to conserve native wildlife species and their habitats. Following the completion of the Georgia Invasive Species Strategy in 2009, the Nongame Conservation Section sought funding from the State Wildlife Grant program 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 assessment and control of invasive nonnative species on public lands and other conservation lands. A second objective is to provide better technical and informational resources to land managers to facilitate invasive species control. A third objective is to promote appropriate use of native plant species by public and private land managers.

During fiscal 2012, Nongame Conservation staff funded by this grant did the following:

- Initiated a three-year control project to eradicate common reed (*Phragmites australis*) from the Altamaha River delta.

- Coordinated a volunteer pull of water hyacinth (*Eichornia crassipes*) in the Altamaha River and several applications of herbicide to treat water hyacinth in and around the Butler Island waterfowl impoundments.
- Helped direct two Student Conservation Association interns on invasive species removal projects and aerial mapping of tamarisk (*Tamarix canariensis*) infestations.
- Brought representatives from more than 40 state, federal and county agencies, non-profit organizations, and citizen groups together to initiate the formation of a Cooperative Invasive Species Management Area for Georgia's coastal region.
- Initiated citizen science programs in the Brunswick and Savannah areas to teach individuals how to identify and map locations of invasive species in coastal Georgia using the EDDMapS. (The Early Detection and Distribution Mapping System was developed by the UGA Center for Invasive Species and Ecosystem Health.)
- Confirmed reports of invasive species submitted through EDDMapS and identified priority animal species to add to the list for Georgia.
- Served on the board of Coastal Wildscapes, a nonprofit group that promotes gardening with natives. DNR Wildlife Resources Division staff worked to increase volunteer opportunities in both native seed collection and invasive species

identification and removal. 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.

- Worked with the Cannon's Point Conservation Task Force to incorporate invasive species information into the management plan for Cannon's Point on Saint Simons Island.
- Conducted preliminary reconnaissance work to confirm reports of invasive apple snails in Camden and Chatham counties.
- Attended quarterly Savannah Area Pest Risk Committee meetings led by the Customs and Border Patrol office in Savannah, and shadowed their agricultural inspectors as they inspected shipping containers.
- Worked with the First Coast Invasive Working Group in northeast Florida on a tamarisk removal project.
- Worked with the U.S. Fish and Wildlife Service to assess the level of tamarisk invasion near Wolf Island and surrounding areas, and coordinate treatment on state and federal lands where adjacent.
- Gave talks on invasive species assessment and management to the Ogeechee Audubon group, the Environmental Education Alliance, Coastal Wildscapes, the Georgia Exotic Pest Plant Council and others.

Invasive Species

Clearing phragmites off Ga. 17.

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's habitats, wildlife and natural resources. As growth and development increasingly require stewardship and conservation, the need for wildlife education is paramount.

The division operates seven 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 62,000 students and adults visited the centers in fiscal year 2012, a 14 percent increase over the previous year.

2012 highlights included:

Charlie Elliott Wildlife Center added a new shotgun range, allowing visitors to learn gun safety and proper use of a shotgun. Charlie Elliott also expanded programs such as Project WILD and Hunt and Learn.

Project WILD started an advanced camp for teachers called the Outdoor Wildlife Leadership School, or OWLS. Through OWLS, teachers throughout the state learned about wildlife habitats in the Piedmont and Coastal Plain by canoeing in Bond Swamp, trapping bats on Oconee National Forest and hiking at Ochopee Dunes Natural Area.

Hunt and Learn, started in 2011, is designed to teach children hunting skills and conservation knowledge. The program is an advanced hunter education program and part of a Wildlife Resources Division effort that, through shooting sports and Hunter Education, served 39,000 people in 2012. Hunt and Learn programs teach hunting skills

including for deer, squirrels, turkeys and, via falconry, for rabbits.

Charlie Elliott Wildlife Center and Project Wild both expanded and improved their websites, www.CharlieElliott.org and www.GAProjectWild.org. Charlie Elliott also started what has become a very popular Facebook page, at www.facebook.com/CharlieElliottWildlifeCenter.

Smithgall Woods' education department continued to offer a variety of onsite and outreach programs for students and adults. Even with budget cuts and loss of staff, Smithgall Woods conducts high-quality, skill-based activities that spotlight the beauty and resources of the center for students from as close as surrounding counties to as far away as Jacksonville, Fla.

Demand was high for "in-school field trips" during the 2011-2012 school year, with requests from new contacts in Gwinnett, Fulton and DeKalb counties. Counting requests from regional libraries and

Education and Outreach

Interpretive wildlife specialist Sheila Humphrey with students at Smithgall Woods

middle school teachers, "Snakes Alive" remained the most requested program, but "CSI: Mammal ID" ran a close second. Outreach is a mainstay for the education department.

Also, Smithgall Woods interpretive wildlife specialist Sheila Humphrey was named 2012 Georgia Project WILD Facilitator of the Year. Humphrey was honored with nine other facilitators from throughout the country at the National Project WILD Coordinators' annual meeting in May 2012 in Galveston, Texas. The award is given to top facilitators who are deeply involved in Project WILD, conducting workshops, promoting the program and developing innovative ways to teach wildlife conservation.

At McDuffie Environmental Education Center, an education building was built to replace two portable buildings used since 1999. The new building, opened and dedicated in spring 2012, features two classrooms under one roof and provides improved handicap accessibility. The Thomson-McDuffie County Visitors Bureau raised part of the construction funds.

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 2011-2012 school year, 7,890 students and 589 adults were reached.

A central focus for Floyd County third-graders was implementing the study of Georgia habitats. The subject has become an important learning objective for third-graders, and one well received by teachers because so many habitats can be observed through on-site field trips.

For the 10th consecutive year, local students also took part in releasing lake sturgeon into the Coosa River basin. Students look forward to the release each year, and it helps them learn about river systems in Georgia.

Arrowhead also has reached thousands in the community as an exhibitor at local events such as the Coosa River Basin Initiative's 12th Waterfest, an environmental education and spring paddle sports event. Staff had an exhibit at the Trout Unlimited Chili Cook Off, sponsored by the Coosa Valley Chapter of Trout Unlimited. Some proceeds are donated annually in support of the environmental education center. Arrowhead also participated in DNR's Outdoor Adventure Day.

Staff took part, as well, in the 2012 Claxton Wildlife Festival, presenting educational programs in area school classrooms and at the festival, a former rattlesnake "roundup." The importance of environmental education was demonstrated as thousands of children and adults learned about the significance of the sandhill longleaf pine-wiregrass community and its keystone species.

At Grand Bay Wetland Education Center, staff of Georgia DNR and Valdosta State University continued cooperative summer courses with teachers in the Coastal Plains Regional Educational Service Agencies area. Courses included wildlife and plant ecology and environmental issues. Staff also helped teachers learn how to integrate science with other subjects.

Even with the downturn in the economy, Grand Bay continued to maintain a full schedule for the school year. In 2011-2012, Grand Bay's calendar filled within four days. 2012-2013 booked in one-and-a-half days. While the schedule does not allow for outreach programs, staff conducts Project WILD and WET programs for Valdosta State University on Saturdays on request.

In other outreach, Nongame Conservation Section employees responded to requests from schools, civic groups and other agencies for information about rare species and habitats. This effort included formal presentations to citizens and scientific audiences, as well as many emails and phone calls.

Events varied from CoastFest in Brunswick to an Earth Day celebration at the Schools at Carver in Atlanta.

Youth Birding Competition

In its seventh year, the annual Youth Birding Competition drew another enthusiastic crowd. For this 24-hour birding event, 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 Georgia.

The competition in spring 2012 attracted some 95 participants from pre-school ages to teens. These young birders cataloged scores of

species (the top team saw or heard 143) and raised nearly \$1,180 for conservation projects throughout the state.

In addition, the event's T-shirt Art Contest attracted 264 drawings and paintings of native Georgia birds, the most ever entries for the contest.

Give Wildlife a Chance Poster Contest

Kindergarten through fifth-grade students submitted more than 1,700 posters for the 2012 Give Wildlife a Chance Poster Contest. That number was down from the previous year. Yet, this unique event, which marked its 22nd year in 2012, remains popular and continues to successfully encourage students to explore the wonders of Georgia's native plant and animal species through art.

The posters of 2012 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, friends group of the Nongame Conservation Section.

Social Media

The DNR Wildlife Resources Division's social media sites – Facebook, Twitter, Flickr, YouTube and a blog – continue to grow in popularity, spreading awareness of conservation and the division's work. Facebook recorded nearly 2,000 likes in fiscal 2012. By year's end, Twitter had a total of 1,888 followers and the YouTube channel had reached 35,874 views.

The division's blog, which has a conservation-specific section, registered 14,600 hits in its first full year.

Another outreach, the nongame e-newsletter Georgia Wild, added almost 10,900 subscribers during the year, increasing circulation to 16,290.

The online ventures and the e-newsletter broadened the reach of the Nongame Conservation Section's communications efforts, while also enhancing interactivity and customer service.

Land Acquisition and Conservation Planning

Howell Tract
Sheffield Forest WMA
(1,050 acres, Paulding County)



The Nongame Conservation Section facilitated one land conservation project during fiscal 2012, resulting in the acquisition of 1,050 acres of wildlife habitat. This project conserves priority habitat identified in Georgia's State Wildlife Action Plan.

Sheffield Forest Wildlife Management Area – Howell Tract

Closed on June 21, 2012, the acquisition adds more than 1,000 acres of high-quality wildlife habitat to Sheffield Forest WMA. The Howell Tract protects Raccoon Creek, which is important for two federally listed fish, the Etowah darter and Cherokee darter, as well as upland habitat containing montane longleaf pine.

The acquisition involved multiple agencies and support from the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, Mountain Conservation Trust, National Wild Turkey Federation Foundation, Georgia Land Conservation Center and the Dobbs Foundation.

The tract will be managed as part of Sheffield Forest WMA, providing outdoor recreation including hunting, fishing and birding.

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, also known as SWAP, within 10 years. The revision process began in 2010.

Over the next two years, the plan will be revised to reflect the most current assessment of Georgia's wildlife conservation needs. Emphasis will be placed on development of new 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 will be 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.

Nongame Conservation Section staff will coordinate 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 will be completed by September 2014.

Financial and Administration

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 Georgia Nongame Wildlife Conservation and Habitat Acquisition Fund, sometimes referred to as simply the Nongame Wildlife Conservation Fund.

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

For fiscal 2012, the Nongame Conservation Section totaled \$2.37 million in income from the Nongame Wildlife Conservation Fund (not counting federal and other grants) and \$2.3 million in expenses. The fund had a balance of \$7.06 million at the end of the fiscal year.

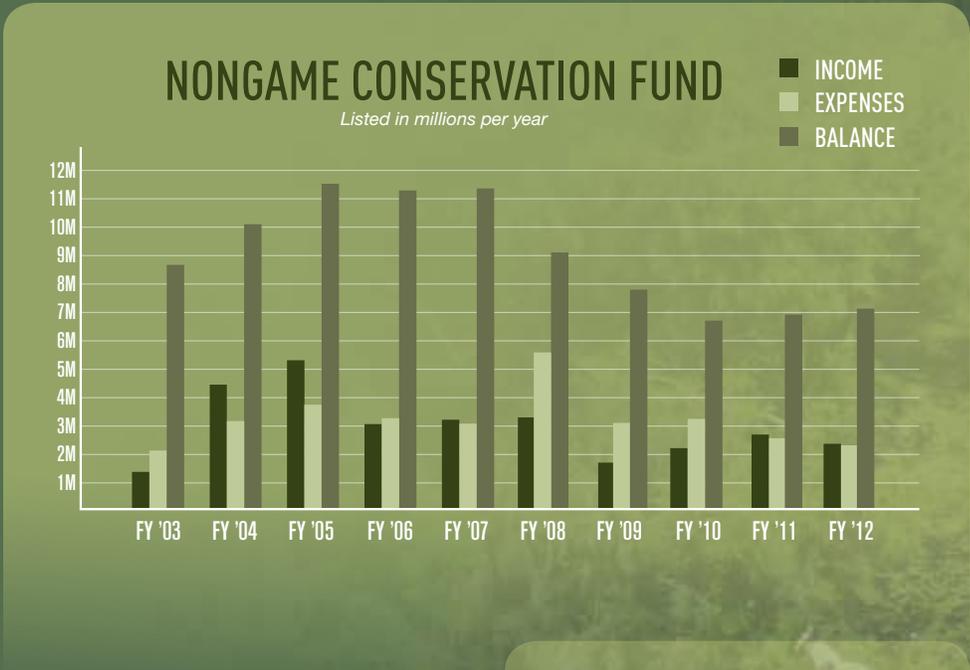
Weekend for Wildlife

Grossing more than \$8 million since its start in 1989, this annual event draws 200-400 guests to the prestigious Cloister at Sea Island for a weekend of outdoor trips, auctions and dining.

The 2012 celebration, the 24th annual Weekend for Wildlife, grossed \$530,670.

'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.

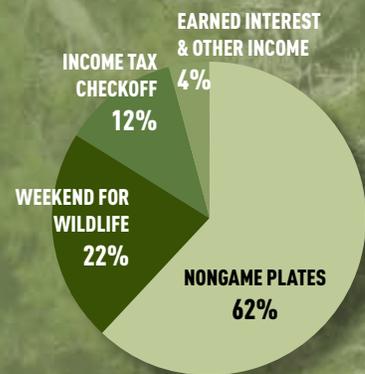
The revenue received for fiscal year 2012 reached \$287,728, an increase over the previous fiscal year of about \$45,000. More recent information shows a significant decline in checkoff revenue for the current fiscal year.

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).

Nongame License Plates

The bald eagle and ruby-throated hummingbird automobile tags remain the Nongame Conservation Section's largest funding source, raising \$1.46 million in fiscal year 2012. That total marked the second year of license plate income since the

FISCAL YEAR 2012 FUNDING



Wood stork colony in Brooks County

state Legislature changed the fee and revenue-sharing structure for specialty plates.

This legislation, which took full effect in September 2010, 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 the addition of an annual renewal fee increased revenue in fiscal 2011 and 2012, the price increase and added 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 2012, that total had plunged by nearly 60 percent to slightly more than 142,600 plates.

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



TERN members with Volunteer of the Year Bill Baker (center) (Chris May)

TERN

The Environmental Resources Network, a nonprofit organization founded to support DNR's nongame conservation activities, funded 14 proposals totaling \$62,447 in 2012. Requests that were funded included fish sampling equipment, juvenile gopher tortoise ecology research, 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.



TERN, online at <http://tern.homestead.com> and on Facebook (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.

Federal and Other Funding

The Nongame Conservation Section received \$5.46 million in federal and other grants during fiscal 2012.

Notable funding includes a \$981,000 grant from the State Wildlife Grants Competitive Program that Georgia is sharing with Alabama, Florida, Mississippi and Louisiana. The multi-year project will increase the quality, quantity and connectivity of prime sandhill and upland longleaf pine habitats. The grant is a follow-up to \$1 million awarded in 2009 to Georgia, Alabama, Florida and South Carolina for similar work.

Federal budget cuts have trimmed the State and Tribal Wildlife Grants program by 31 percent since fiscal 2010. Since 2000, the 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 70 million wildlife watchers, a group that spends more than \$60 billion a year on wildlife-related recreation, according to State Wildlife Grants advocate Teaming with Wildlife.

In Georgia, State Wildlife Grants are critical to helping the state conserve wildlife and natural places for current and future generations.

The Nongame Conservation Section received \$94,830 in interest and other income in fiscal 2012.

Administration

During fiscal 2012, DNR's Real Estate Unit and Charlie Elliott Wildlife Center were folded into the Nongame Conservation Section. These moves were largely organizational, with some budgeting impact on the section, which partially funds the Real Estate Unit. (Charlie Elliott Wildlife Center receives state appropriations and donations.)

GEORGIA DEPARTMENT OF NATURAL RESOURCES

Wildlife Resources Division

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 georgiawildlife.wordpress.com

Also sign up for nongame's free e-newsletter, Georgia Wild. Click the  at www.georgiawildlife.org.

How You Can Help

If you're supporting wildlife conservation, we appreciate that trust and promise to continue using those resources efficiently and effectively. We gain about \$1 in grants for every 25 cents spent from the Nongame Wildlife Conservation Fund.

If you are not supporting wildlife conservation in Georgia, please consider joining this mission.

- Purchase or renew a nongame wildlife license plate (*a new design is coming out in 2013!*).
- 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 February at Sea Island.

- Donate directly to the Nongame Wildlife Conservation Fund.
- Join TERN, <http://tern.homestead.com>.



The challenge of conserving the animals, plants and places that help make Georgia special is not going away. But with *your help*, it can be met.

Learn more about giving at www.georgiawildlife.com/conservation/support.