

Conserving Georgia's Nongame Wildlife

2011 REPORT



At the **Nongame Conservation Section**, our mission is conserving Georgia's nongame wildlife – those species not legally fished for or hunted. That means working daily to preserve the vibrant diversity of native animals and plants and their habitats found across this state.

We do this in many ways: research and surveys, conservation programs, education, land acquisition, habitat management and watchable wildlife programs. We also raise funds. That's because we are funded solely by direct donations, fundraising initiatives and grants. Unlike other state programs, the Nongame Conservation Section receives no money through state appropriations.

Our roadmap is the **State Wildlife Action Plan**. Completed in 2005, this comprehensive strategy guides the conservation work of Georgia DNR and its partners. The plan outlines critical areas of need, and focuses on keeping native wildlife from declining to the point of requiring federal protection as threatened or endangered species.

More than 1,000 of Georgia's plant and animal species are considered species of conservation concern; 318 are protected by federal or state law. Through key objectives and actions, the State Wildlife Action Plan targets the needs of rare or declining species, emphasizing measures to preclude imperilment.

The Nongame Conservation Section goes further, however, implementing recovery efforts for federally listed species, conducting education and outreach programs to increase public awareness of wildlife conservation needs, coordinating research and surveys to better understand the distribution and abundance of Georgia's native species and natural habitats, and developing biodiversity databases that support conservation planning.

From July 1, 2010, to June 30, 2011, that work varied from beach patrols that documented a record sea turtle nesting season and Coosawattee River surveys that discovered rare darters and raised prospects for the species' recovery, to groundwork on a conservation easement that will protect one of Georgia's largest populations of imperiled eastern indigo snakes near the Canoochee River for generations to come.

For nongame creatures large and small – North Atlantic right whales to Henslow's sparrows – we think we fulfilled our mission in fiscal 2011. But you be the judge.

This report provides highlights. Let me know what you think. And thank you for your support.

Mike Harris | Chief, Nongame Conservation Section

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Waterbird Conservation Initiative

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

- protecting important colonial waterbird nesting habitats;
- surveying to determine status and habitat needs of other resident, migratory and wintering waterbirds;
- identifying habitats important for these species; and,
- 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 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. In 2011, there was a large brown pelican colony on Little Egg Island Bar with more than 1,000 nests. The colony produced the **only documented chicks** from adult birds that had been rehabilitated following the Deepwater Horizon oil spill in the Gulf of Mexico. Nongame staff is monitoring several of the chicks on the Altamaha River.

A dredge-spoil island near the Brunswick shipping channel created by the U.S. Army Corps of Engineers in 2007 and owned by the state has become an important nesting site for Georgia's waterbirds. In 2011, 3,936 royal tern nests were documented on the island along with 330 laughing gull and eight brown pelican nests. The Nongame Conservation Section is working with the corps to maintain this



Rehabilitated brown pelican with chicks/Tim Keyes/GaDNR

site in an un-vegetated state to promote beach-nesting seabirds and discourage gull nesting.

The most diverse natural seabird colony in 2011 was Pelican Spit, where least tern, gull-billed tern and black skimmer chicks fledged, despite several over-wash events. Nongame staff worked with a University of Georgia graduate student studying least terns, and assisted her in monitoring six colonies.

Surveys on migrant and wintering shorebirds

documented the continued importance of staging areas for red knots in the late summer and fall. Staff monitored red knots on the Altamaha River twice a week from August through October. Peak counts topped 5,000 birds and more than 800 uniquely marked birds were documented. This effort represented the first systematic survey of red knots in Georgia, and will allow scientists to better understand the importance of this area to this species.

During fiscal 2011, the Nongame Conservation Section also tracked American oystercatchers in the Altamaha River and had more than 2,500 sightings of banded birds, sightings that represented more than 300 individually marked birds from seven states. Staff collaborated with several partners on American oystercatcher nesting studies and banded 19 chicks, ranging from Little Tybee Natural Area to Little St Simons Island.

Of the whimbrels tagged in May 2010, one bird – named Chinquapin – was still transmitting. Chinquapin has since made two trips to the Arctic, and even **made headlines last fall** when the whimbrel flew into Hurricane Irene and survived. At the close of the year,



American oystercatcher with chick/Tim Keyes/GaDNR

Birds



First recorded roseate spoonbill nest in Georgia/Tim Keyes/GaDNR

Chinquapin was wintering in Suriname in the same coastal marsh the bird used in 2010.

In another highlight, the wood stork colony in St. Mary's yielded the first record of a roseate spoonbill nesting in Georgia. Nongame staff confirmed one nest, but documented fledged chicks consistent with three or four nests. The roseate spoonbill is a tropical species that has been expanding its breeding range in recent years.

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. Habitat for these woodpeckers now occurs primarily on military bases, national forests and other public lands, although populations remain 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 is targeted at 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 baseline number of woodpecker family groups on a property at the initiation of the agreement. In exchange, the landowner's responsibility will not increase if the woodpecker population increases.

In Georgia, 156,997 acres are enrolled in Safe Harbor management agreements covering 105 baseline groups of woodpeckers and supporting 32 surplus groups. 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. 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, a successful effort is underway to restore the red-cockaded woodpecker population at Ichauway Plantation in Baker County. This 29,000-acre property supported a single male in 1999. Through the translocation of 64 young birds, the property now supports 22 family groups.

In 2008, DNR acquired the 8,432-acre Silver Lake Wildlife Management Area near Bainbridge, the first state-owned property to feature red-cockaded woodpeckers. The tract contains extensive stands of mature longleaf pine habitat. To supplement the population, Nongame Conservation Section staff translocated 11 woodpeckers from Eglin Air Force Base, Fla., to Silver Lake in 2010. Today, there are 24 family groups on the WMA, three groups more than the previous year. Through more frequent controlled burning, installation of recruitment clusters and careful forest management, the tract can 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. Stakeholder meetings in 2008 identified research and survey questions and conservation needs for the species. The information was condensed into a series of programs for landbird conservation funded by a State Wildlife Grant.

Survey work for secretive marshbirds – rails and bitterns – began in 2010. Initial results indicate that these birds may be abundant 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, the Henslow's sparrow, began in winter 2010-2011, in partnership with Tall Timbers Research Station. (More details in next section.)



Henslow's sparrow/Todd Schneider/GaDNR

Work on southeastern American kestrels continued during the summer of 2011 and included comprehensive population surveys of kestrels across the state. All known populations were surveyed by ground and air. The total population was estimated at about 162 breeding pairs, up from 2010. Intensive work for kestrels on state lands in Taylor and Talbot counties also was continued; however, only 11 nesting attempts were documented on these areas, considerably fewer than in previous years. A partnership is being initiated between stakeholders in Georgia and Florida to better coordinate management for kestrels and share information and resources.

A telemetry study of loggerhead shrikes also continued during 2011. Six shrikes were captured and tagged. Using a new brand of transmitters with longer battery life, Nongame researchers were able to follow some of the birds until December. Most apparently migrated out of the study area by late fall. It appears that Georgia's nesting shrikes may migrate and are replaced in winter by shrikes from northern states. Determining where Georgia's shrikes winter could be an important discovery. Nongame staff rode on Georgia Forestry Commission wildlife spotter planes in an unsuccessful attempt to relocate the survey birds.

The Nongame Conservation Section continued work with Audubon'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 has

proven very successful. Work by the Nongame Conservation Section and the Georgia Important Bird Areas Program, with funding from the Georgia Ornithological Society, is reducing invasive exotic plants and restoring native grasses on these sites. As a result, many declining bird species have taken up residence. Last fall, a rare Le Conte's sparrow was captured on Joe Kurz WMA in the restoration area.

Habitat restoration is nearly complete for the only remaining population of golden-winged warblers in Georgia. When finished, the Brawley Mountain project on the Chattahoochee National Forest in Fannin County will provide almost 300 acres of early succession habitat. This controversial project has been in the planning process for more than 10 years. During that time, Georgia's golden-winged warblers dwindled from five populations to one. It will likely take two to three years for golden-winged warblers to respond to the habitat improvements. Surveys will continue for several more years to evaluate this project.

Bird Surveys

■ Wood Stork Nests



Wood storks on nest (background)/Tim Keyes/GaDNR

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 in increasing numbers in the state.

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. While not matching the record year of 2010, 2011 was a good year in Georgia with 2,136 wood stork nests in 18 colonies. The colonies were documented from the air, with the exception of Harris Neck National Wildlife Refuge, which is monitored from the ground. Drought made several of Georgia's small colonies too dry for use this year, and led to the mid-summer abandoning of two larger colonies in southwest Georgia.

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 eight colonies for productivity. Despite several colonies that failed due to falling water levels, productivity was good for colonies that survived.

With more than 75 percent of all 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 Nests

The bald eagle, once fairly common in Georgia, 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 Act and the Clean Air Act, protection through the Endangered Species Act, increased public awareness, and the restoration of local populations through release programs all helped bald eagle populations rebound here and elsewhere. Georgia's ongoing conservation efforts include monitoring all known eagle nests and working with landowners to protect nest sites from disturbance.

During the 2011 nesting season, the Nongame Conservation Section documented 143 occupied nesting territories. Of these, 113 were successful, fledging 178 eaglets. In comparison, there were 55 known nesting territories in the year 2000, nine in 1990 and only one in 1980.

Nongame Conservation Section biologists continue to monitor nesting activity and work with landowners to manage nest sites. Following federal de-listing in 2007, primary legal protection for nesting eagles comes under the Bald and Golden Eagle Protection Act.



Swallow-tailed kites at Altamaha roost/Tim Keyes/GaDNR

■ 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 of the large southern rivers. Most nests in Georgia are on private land, particularly industrial timberlands. DNR 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.

Seventeen nests were found and monitored in 2011. This significant drop from the previous year's 40 nests is troubling and unexplained, unless birds with high nest failure rates in 2010 moved to new nest areas that staff did not find. While numbers were low, nest success was higher (58 percent) than in 2010, and biologists documented that 12 chicks fledged.

Two kites fitted with radio telemetry harnesses in 2005 and 2006 were relocated in 2010 in Georgia, but not in 2011. (The transmitters are well past the predicted battery life.) In collaboration with the Avian Research and Conservation Institute, Nongame Conservation Section staff trapped and mounted a satellite transmitter on a kite as part of an ongoing roost survey. At last check, the bird was transmitting from southern Brazil.

A first-ever range-wide roost survey was coordinated in 2009 with South Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas and Florida. This survey was followed up in 2010 and 2011. The focus in Georgia in 2011 was on the Savannah, Altamaha and Satilla rivers. The high count was 349 birds on July 25. Also, a satellite-tagged bird from Florida led Nongame staff to a small roost on the Ocmulgee, far from traditional roost survey sites.

■ Henslow's Sparrows

The Henslow's sparrow is a small songbird that nests in grasslands of the Midwest and Northeast and spends winter 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 December 2010. Birds were captured in mist nets along several powerline corridors by staff and volunteers using a technique called flush netting. The birds were banded with numbered leg bands for identification. Also, researchers from Tall Timbers Research Station surveyed suitable habitat in pine flatwoods and pitcherplant bog sites on a few wildlife management and natural areas in the southwest corner of the state.

More than 60 individual birds were caught and banded at the powerline sites. No Henslow's sparrows were seen at the flatwoods and pitcherplant bog sites. Until these surveys were conducted the only site where these birds had been regularly seen during the past 10-15 years was Paulk's Pasture Wildlife Management Area in Glynn County. During the surveys, three previously unknown populations were discovered at sites including Townsend Wildlife Management Area near Ludowici, Moody Forest Natural Area in Appling County and a second location at Paulk's Pasture. Surveys will continue for at least a few more years with the objective of pinpointing more Henslow's sparrow sites.

■ 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. Preliminary work on these species in 2010 included locating survey sites and testing the effectiveness of survey methodologies.

In spring 2011, the first standardized surveys were conducted using the Continental Marsh Bird Monitoring Program survey protocol. This standardized methodology allows data collected to be shared, aggregated and analyzed at many different levels including by habitat or wetland type, physiographic province, state, region, country and continent.

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. One king rail was heard at Clayhole Swamp, but no king rails or least bitterns at the other sites. No black rails were detected at any of the sites; however, little suitable habitat was present for this species.

Surveys will be conducted annually at these sites over the next several years and Nongame Section staff will search for additional survey sites, including black rail habitat, which is very limited in Georgia.



Banding Henslow's sparrows / Todd Schneider/GaDNR

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 2011, 1,992 loggerhead nests were documented on Georgia beaches, the most recorded in 22 years. 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. Cooperators found 997 and 1,760 nests in 2009 and 2010, respectively.

To develop a comprehensive understanding of the number and relatedness of loggerheads nesting on Georgia beaches, DNR and the University of Georgia have developed a catalog of unique genetic profiles for Georgia's nesting female turtles. A UGA graduate student working with DNR has identified more than 1,500 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 2011, 175 dead or injured turtles were documented on Georgia beaches, slightly below the 23-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, respectively, for 29 percent and 16 percent of strandings.

Bog Turtles

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

During 2011, Nongame Conservation Section staff, working with the University of Georgia and The Orianne Society, deployed 285 traps within 10 different sites including all eight known bog turtle sites and two potentially suitable sites in the state. Thirty different bog turtles were trapped at seven sites, representing nearly 45 percent of all bog turtles known from the wilds of Georgia. Among the 30 were seven turtles that had not been captured before, including two from a site that had never been trapped. As part of the bog turtle trapping effort, UGA, in cooperation with the Nongame Section, initiated a detectability study aimed at determining the trapping effort necessary to determine bog turtle presence in a bog wetland with 95 percent confidence.

Reptiles and Amphibians



Bog turtle/GaDNR

Also, genetic tissue samples were collected from 22 turtles in 2010 and 18 turtles in 2011 for the Georgia Museum of Natural History genetic archive collection and the U.S. Geological Survey.

Four female turtles captured in 2011 were confirmed gravid by radiograph (a Blairsville veterinarian conducted the radiographs pro bono). Added to the Bog Turtle Headstart program, the females laid their eggs – three to four eggs each – at Chattahoochee Nature Center in June. Seven eggs hatched and, to date, all seven hatchlings have survived. The maternal females will be part of the program for two years and then released back into the bog where they were caught.

Breeding of a captive population of Georgia bog turtles housed at Chattahoochee Nature Center also was initiated in 2011. Though these turtles produced no eggs, future progeny of the six female and four male captive bog turtles will be released into restored habitat on the Chattahoochee National Forest after a two-year “headstarting” period. Eggs collected in 2011 were used in the start of a multi-year cooperative study between the Nature Center and the Nongame Section. The goal is to determine the mechanism of sex determination in bog turtles by incubating eggs at different temperatures. A private grant was received to build an outdoor enclosure for captive bog turtles at Chattahoochee Nature Center and buy egg incubators for the study.

Gopher Tortoise and Eastern Indigo Snake Surveys

In 2008-2009, the Nongame Conservation Section funded gopher tortoise population surveys at 20 sites, primarily state-owned lands. In 2011, staff identified 18 more high-quality sites, mostly on private lands, to determine tortoise population

sizes and demographics. As with the previous project, 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.

Final results are expected in 2012. According to preliminary results, the DNR-owned portion of Townsend Wildlife Management Area, near Ludowici, has about 700 gopher tortoises, the largest population on state lands. Also, based on site evaluations made during the original survey, staff began augmenting the Yuchi Wildlife Management Area population by establishing an acclimation pen and, as of 2011, releasing 18 tortoises displaced by development. The gopher tortoise population at Yuchi, in Burke County, is not considered viable without augmentation.



Eastern indigo snake/Dirk J. Stevenson

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 imperiled 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 federally threatened species.

During 2011, the study's initial year, staff surveyed 34 sandhill sites on public and private lands in the Altamaha drainage. Results demonstrated that the probability of indigo snake presence is greatest at sites containing large numbers of active or inactive tortoise burrows.

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, which is within the species' historical range. The goal: Establish a self-sustaining breeding population of gopher frogs, a range-wide first for this imperiled amphibian.

In 2011, in partnership with Atlanta Botanical Garden, University of Georgia, The Nature Conservancy and the Joseph W. Jones Ecological Research Center, 1,203 juvenile gopher frogs were released, bringing the five-year total released at Williams Bluff to 3,958 individuals. Gopher frogs reach breeding maturity in two to three years. Nongame biologists are monitoring Williams Bluff to document any successful breeding of the frogs.



Prepping gopher froglets for release/GaDNR

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 decimated the whales. Since whaling was banned in 1935, mortality from ship collisions and entanglement in commercial fishing gear has limited the population's recovery.

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 24 calves has been documented each year since 2001, compared with 11 calves per year from 1980-2000. Twenty-one calves were documented in the winter of 2010-2011. 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 each December through March to document calf production and warn ships about whale locations. The 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, Nongame 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.

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 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.

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 2000 through 2010, the network documented 281 marine mammal strandings, ranging from 13 to 46 a year. Bottlenose dolphins are the most commonly species stranded in Georgia, making up 72 percent of strandings, followed by pygmy



North Atlantic right whale breaching/GaDNR

Mammals

and dwarf sperm whale (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, an unknown number of manatees migrate into Georgia and return to Florida in the fall as water temperatures cool.

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

in Georgia. Management actions focus on reducing human-related mortality and protecting manatee habitat. Specific recovery tasks include documenting causes of manatee mortality and injury, rescuing injured and out-of-habitat manatees, monitoring manatee distribution and habitat use, educating boaters about watercraft impacts, and reviewing permits and policies that 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 44 manatee mortalities in Georgia between 2000 and 2010. Thirty-four percent died from watercraft collisions. The cause of death was undetermined in about half of the cases.

Since 2007, the Nongame Conservation Section has conducted aerial surveys to estimate manatee abundance and habitat use in waters surrounding Cumberland Sound and the Kings Bay Naval Submarine Base, with funding from the Navy. 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 top predators that are long-lived and tend to accumulate persistent environmental contaminants in their lipid-rich blubber. In 2006, the Nongame Conservation Section began cooperating 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 any location previously documented. 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 in each area 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 during the summer of 2011 with the goal of estimating dolphin calf survival. Assistance was provided by Coastal Resources Division, the Georgia Sea Turtle Center and the National Ocean Service, with funding from NOAA Fisheries.



Manatee and calf/GaDNR

Bat Conservation



Seminole bat on Cumberland Island/Trina Morris/GaDNR

A State Wildlife Grant project focused on bat conservation and initiated in 2008 provided funding for field surveys, research projects, and planning and implementation of management efforts to benefit Georgia's bat species. Much of the current focus of bat conservation in Georgia is preparation for the possible arrival of white-nose syndrome, or WNS. According to U.S. Fish and Wildlife Service estimates, this devastating disease has killed at least 5.7 million to 6.7 million bats and been documented in 16 states – including as far south as Tennessee – and four Canadian provinces.

Nongame Conservation Section biologists have set up a WNS page on the Wildlife Resources Division website with information on how citizens can help collect and report information on WNS. Nongame staff will continue to monitor sites for the disease during winter. Biologists have focused on educating the public and the caving community to prevent the spread of WNS and promote bat conservation efforts.

Two interns were hired during summer 2011 to work on bat and other small mammal conservation projects. Along with Nongame Section biologists, the interns completed emergence counts at caves containing summer roosts for gray bats and Southeastern myotis. The information will help the Nongame Section monitor bat populations at

these sites and any impacts to populations from white-nose syndrome. The interns also established and completed many acoustic transects across the state. This process is part of a nationwide effort to establish long-term acoustic monitoring transects for bats.

Biologists and the interns completed a coastal bat survey. Early in the summer, the team spent several days on Little St. Simons Island, and during two weeks in July visited six islands: Ossabaw, Skidaway, Sapelo, St. Catherines, Cumberland and Jekyll. Staff conducted an acoustic transect on each island. On five of the seven, mist nets were used to capture bats, helping verify the presence of species recorded during acoustic surveys and provide other information on coastal bat populations. The Nongame Section is also working on a range-wide survey of the northern yellow bat. The northern yellow bat is a priority species in the State Wildlife Action Plan and has been captured at only four locations in Georgia in recent history. However, very little work has been completed on this or other bats species in coastal Georgia. Further investigation is necessary to determine the status of northern yellow bats in the state.



Swabbing tri-colored bat for white-nose/GaDNR

Aquatic Conservation Initiative

Georgia is one of the richest states in aquatic biodiversity, ranking among the top five in the number of native species of snails, mussels, fishes and crayfishes. Unfortunately, Georgia is also ranked among the top states in aquatic fauna at risk. 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. Primary objectives of this effort are to identify important populations of rare aquatic species through surveys and research, incorporate this information into the DNR database, and assist with conservation planning for rare aquatic species.

The Nongame staff has completed hundreds of surveys around the state, documenting or monitoring important populations of high-priority species such as the Altamaha spiny mussel, Southern elktoe, bluenose shiner and sicklefin redhorse.

Staff conducted a third year of fish sampling in the Coosawattee River system in 2011, completing



Amber darter in Coosawattee River/Todd Crail

an effort to survey all major tributary streams within the range of the federally threatened goldline darter. This survey has documented important populations of the goldline darter in the Cartecay, Ellijay and Coosawattee rivers, as well as in Mountaintown Creek. Unexpectedly, researchers also documented the first occurrences of the federally endangered amber darter and the state endangered freckled darter in the Coosawattee River. Before the survey, these two species were only known from the Conasauga and Etowah river

systems, a discovery that raises prospects for the fishes' eventual recovery.

The Nongame 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

Freshwater Aquatic Species



ongoing since 1998 and data collected has been invaluable for conservation planning, species status assessments and scientific publications documenting relationships between fish populations and environmental stressors.

Nongame staff developed a new project in 2011 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, which is being carried out by Valdosta State University in cooperation with Nongame researchers, is to survey historic blackbanded sunfish sites and document new populations that can be conserved.

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 2011 included a much-needed survey of mainstem Flint River mussel populations in which staff made what is likely the single largest collection of the state-endangered Southern elktoe. The Nongame Section also continued an ongoing mussel population monitoring project in tributaries of the Flint River in response to extreme low flows caused by drought and water use. More than 1,300 mussels, including the federally listed shinyrayed pocketbook and oval pigtoe, were collected from Spring Creek as a part of staff-designed plan to monitor mussel population responses to a collaborative project augmenting flows in a reach of the southwest Georgia stream. Nongame staff also presented results of research at several regional and national symposia, including the yearly Southern Division of the American Fisheries Society conference and the biennial Freshwater Mollusk Conservation Society conference. Staff contributed as well 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



Robust redhorse/GaDNR

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.

The Nongame Section collaborates with conservation partners to meet critical research and conservation needs for rare aquatic species. Staff is working with the Conasauga River Alliance and the Tennessee Aquarium to improve spring habitat for the state-endangered coldwater darter. In collaboration with Wildlife Resources' Game Management Section, Georgia Power and The Nature Conservancy, Nongame staff are monitoring populations of Etowah and Cherokee darters following a stream channel restoration project in Raccoon Creek (Paulding County). Nongame employees also participated in the State Water Planning process by attending Water Plan Council meetings and providing information on rare aquatic species found in each water-planning region.

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 identification in 1991 by DNR Wildlife Resources Division fisheries biologists sampling below Lake Sinclair, this species had not been collected 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 component of this effort has been capturing and spawning of 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, the Wildlife Resources Division helped develop a hatchery program in 1993.

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 healthy growth and survival rates in all stocked rivers in Georgia and South Carolina, and observed spawning behavior in fish stocked in the Ocmulgee and Broad rivers. Researchers are trying to document survival of wild-spawned fish in stocked populations and their recruitment into the juvenile and adult population. In 2011, large numbers of robust redhorse were observed spawning at several sites within the Broad River. Establishment of additional self-sustaining populations will represent a major step toward recovery.

Other recovery activities include a major gravel augmentation project on the Oconee River and radio telemetry studies on the Ogeechee and Broad rivers. The gravel augmentation is aimed at improving the abundance and quality of spawning habitat. The telemetry studies are tracking the movement of adult fish in hopes of identifying unknown spawning areas.

Sandhills Conservation

In 2006, the Nongame Conservation Section began a project to inventory sandhill habitats in the state. These 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. The areas harbor a number of rare species, including the southeastern pocket gopher, gopher tortoise, 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. Additionally, tortoise population estimates were obtained for 20 mainly state-owned conservation properties through a contract with the Joseph W. Jones Ecological Research Center at Ichaaway.

Sandhills in Georgia and other states have been benefited from two competitive State Wildlife Grants. DNR received the first, 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 follow-up 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.

In 2010, DNR and its partners conducted prescribed burns on 4,700 acres of priority sandhill habitats in Georgia, mechanically treated invasive hardwoods and sand pine on 1,100 acres, treated 90 acres with herbicide, and planted 240 acres of longleaf pines. In 2011, prescribed burns totaled 5,335 acres; mechanical treatments, 380 acres; herbicide treatments, 90 acres; and longleaf pine plantings, 587 acres. The Nongame Conservation Section will easily exceed the original restoration target of 10,000 acres of sandhill habitat in Georgia.

Rare Plant Surveys on Public and Private Lands

Several new locations for rare plants were reported during 2011. A second population of Carolina trefoil was verified from a forest opening near Scull Shoals in Greene County. Additional sites for floodplain

tickseed, also known as Chipola dye-flower, were documented on Clayhole Wildlife Management Area, which is near Sterling, and in wetlands just east of Okefenokee Swamp. Corkwood was found in a shallow pond at Chickasawhatchee Wildlife Management Area, public land in Dougherty, Calhoun and Baker counties. Michigan lily was confirmed from calcareous flatwoods near Dalton. Numerous other discoveries were derived from surveys conducted by DNR staff and a network of contractors and field botanists, including Richard Carter, Wilson Baker, Richard Ware, Richard Reaves, Lee Echols, Ron Determann, Brad Wilson and Matt Richards.

Two floristic studies conducted by University of Georgia Herbarium staff resulted in important discoveries. Purple milkweed was observed at Kennesaw Mountain National Battlefield Park. On Cumberland Island National Seashore, the maritime purple foxglove was documented for the first time in Georgia.

Also important are sightings of plants previously not seen for more than 20 years in Georgia. On a Georgia Botanical Society field trip to Camden County, the white-flowered, night-blooming wild petunia was found, a plant not seen in Georgia since the 1970s. Silverling was rediscovered on a sandstone cliff face on the Cumberland Plateau. This plant had been known from an ambiguous site on Lookout Mountain in the 1960s and otherwise known to be extant along the Appalachian Trail on Brasstown Bald. In summer 2011, surveys for green pitcherplant at Reed Branch Wet Meadow Preserve along Lake Chatuge

Plants and Natural Habitats

documented the presence of rosy tickseed on the shoreline of the lowered lake. Remarkably, rosy tickseed had not been seen since May 1815 when found and described for the first time by Thomas Nuttall some 20 miles north of Savannah on the Old Augusta Road. Such discoveries continue to reward the field botanist exploring wild Georgia.

Meanwhile, populations of protected plants are flourishing on state lands. Georgia aster continues to expand on the [Big Hill Prairie](#) at Oaky Woods Wildlife Management Area, near Perry. Cottongrass was relocated in a pitcherplant bog at Fall Line Sandhills Wildlife Management Area. This natural area located in the Fall Line sandhills of Taylor County also supports a small stand of Atlantic white cedar salvaged from a construction site southwest of Butler. Three populations of federally listed American chaffseed are now known in fire-maintained uplands at Doerun Pitcherplant Bog Natural Area, in Colquitt County. A new site for ovate catchfly was found on Echeconnee Creek Natural Area in Bibb County.

Safeguarding activities where rare plants are established at new protected sites continue throughout the state. Examples from 2011 include the placement of Cuthbert's turtlehead and Canada burnet in mountain bogs, Georgia rockcress [at new places](#) on The Nature Conservancy's Black Bluff Preserve in Floyd County, Alabama leatherflower on the Coosa prairies of Floyd County and swamp black-eyed Susan in flatwoods on the Coastal Plain. The Endangered Plant Program at Brenau University in Gainesville uses the rare mustard sun-loving draba, the rare fern marl spleenwort, and, one of our most endangered wildflowers, fringed gentian, as subjects for class projects. Primary objectives of the program are germinating seed in tissue culture, growing plants to maturity and eventually augmenting natural sites.

Collaboration with the terrestrial orchid conservation project at the Atlanta Botanical Garden also continues. On the steep, moist cliffs of Tallulah Gorge, rare north Georgia populations of rose pogonia, grasspink and monkeyface orchids were observed in 2011. Seeds were collected for propagation in the tissue culture lab. Later, propagules will be placed in safeguarding sites. Monitoring continued on other orchid projects, including Kentucky lady slipper in Laurens County, all monkeyface orchid sites on the Piedmont and spreading pogonia in a restored mountain bog.



Georgia rockcress/Michele Elmore/The Nature Conservancy

A newly described native azalea, Coleman's May pink azalea, was recently documented from west-central Georgia. The plant has a range similar to that of plumleaf azalea, being restricted to the Chattahoochee River ravines mostly south of the western terminus of Pine Mountain. The species may deserve protected plant status as threatened, but further field observations are needed.

Coastal Habitat Assessment

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 Georgia DNR. The habitat assessment portion of the project was completed in January 2011. The larger initiative will be used by county governments, municipalities and conservation organizations to maximize the conservation of critical and imperiled natural communities and wildlife habitat, while promoting sustainable development in the coastal region.

The habitat assessment entailed aerial photo interpretation of ecological community types based on the U.S. National Vegetation Classification System and accompanied by field data collection. Work began in December 2007. Significant findings include the discovery of seven previously undescribed natural communities and the discovery of bottomland post oak (*Quercus similis*), a species never before recorded in

Georgia. More than half of the associations from the habitat assessment fall in the G3-G1 categories, ranging from globally vulnerable to extinction to critically imperiled.

In the past three years, the Nongame Conservation Section has coordinated with private landowners, conservation organizations, soil scientists, other state employees and experts in botany and community ecology; enlisted the help of volunteers; and given talks to conservation groups, forestry professionals and college classes. The habitat assessment maps have been used widely by local planners and conservation groups. Data from this regional assessment are being used to develop decision-support tools to guide land-use planning that will help conserve the region's significant ecological resources.

In addition, eight state parks have been mapped in the coastal region, 897 community element occurrences were submitted to biotics from the first-tier counties, and an additional 15 communities from the second tier are being evaluated for inclusion in the biotics system. Rare species surveys were conducted and are ongoing. Nongame staff will continue to work with DNR's Coastal Resources Division to aid in technical assistance and interpretation of the habitat data. Nongame worked with the Saint Simons Land Trust, The Nature Conservancy, the Coastal Resources Division and Little St. Simons Island to help draft a conservation plan for Cannon's Point in Glynn County.

Restoration of Mountain and Coastal Bogs



Nichols bog substrate/GaDNR

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, Carolina bog laurel, Canadian burnet and Cuthbert's turtlehead.

For 19 years, the Nongame Conservation Section, working independently and as a member of the Georgia Plant Conservation Alliance, has been engaged in mountain bog restoration that includes:

- locating mountain bogs with restoration potential;
- restoration at eight of these bog sites;
- rearing and outplanting rare mountain bog plants; and,
- creating a Bog Turtle Headstart and population establishment program that involves the Chattahoochee Nature Center and the Tennessee Aquarium. (Since, 17 captive-reared bog turtles have been released in restored mountain bogs.)

The natural disturbance factors needed to maintain mountain bog habitats are now largely missing from the landscape, and the few remaining bog habitats must be maintained by mimicking these natural effects using techniques such as manual clearing and prescribed fire. A 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. The installation of the final round of initial treatments to all six plots within three different sites was completed in summer 2011. The study is slated to conclude in 2015.

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 with an emphasis on prescribed fire and invasive species control.

However, much pitcherplant bog conservation is dependent on work with private landowners, since bogs often occur in small patches on private property. 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.

Habitat Improvement on State Lands and the Interagency Burn Team

The Nongame Conservation Section continues to use a number of land management techniques to improve rare species habitats on state parks, natural areas and wildlife management areas. These practices include removing exotic and invasive species (including the use of herbicide and mechanical treatments), planting native species (including trees and native groundcover), thinning timber and prescribed burning.

Prescribed fire remains the most effective tool in conserving and restoring fire-adapted habitats that support numerous species of conservation concern. Working with Interagency Burn Team partners, the Nongame Section applied prescribed fire to key habitats on state, federal and private lands. Staff led or assisted on prescribed burns totaling almost 15,000 acres in 2011. This work also involved staff from other Georgia Wildlife Resources Division sections, the state Parks and Historic Sites Division, and International Burn Team partners, as well as volunteers trained to federal standards.

The Nature Conservancy continues to play a key role in fire training and management. Funds

were brought in from a number of sources, including the State Wildlife Grants Program, the Wildlife Conservation Society and the U.S. Fish and Wildlife Service. The funding allowed the Nongame Conservation Section to hire a seasonal fire crew through the Student Conservation Association. The crew proved extremely productive thanks to their mobile nature and dedication to conservation. Members worked statewide on short notice, burning more than 5,600 acres and helping out other conservation projects.

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 taking more sophisticated measurements in longleaf pine restoration areas.

Other restoration projects are in the works on state lands. Most efforts target restoration of grassland habitats, including longleaf/wiregrass systems. Native groundcover is crucial to these efforts and has been the focus for several years. In 2011, 100,000 wiregrass plugs were planted at Elmodel Wildlife Management Area in Baker County and 25,000 Indian grass plugs on Fall Line Sandhills Wildlife Management Area in Taylor County. At Panola Mountain State Park, Joe Kurz Wildlife Management Area and Chickasawhatchee Wildlife Management Area (near Albany), 290 acres were thinned and 320 acres of native grass were planted. At Fall Line Sandhills and Sprewell Bluff Wildlife Management Area (near Thomaston), 110 acres of longleaf pine were planted. Additional activities included removing invasive plants, including spraying 350 acres of understory to control the encroachment of sweetgum and restore pine woodland/savanna habitats. Invasive exotic species were also controlled. Nearly 400 acres of sand pine were removed at Black Creek, as well as kudzu, sand pine, chinaberry, Bermuda grass, Johnson grass and Chinese privet from Joe Kurz WMA, Fall Line Sandhills and Panola Mountain.

The Nongame Section is researching and evaluating innovative restoration techniques, including herbicide trials for groundcover restoration on Silver Lake WMA 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



Prescribed fire at Ochopee Dunes/GaDNR

longleaf habitats. This methodology holds the promise of using less herbicide (thus preserving groundcover) and avoiding clearcutting. In partnership with Georgia Power Co. and the State Parks and Historic Sites Division, the Nongame Section has also established more than 50 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 and provides web access to information on occurrences of special concern species and significant natural communities.

During 2011, staff added 1,740 records, edited 3,593 and deleted 311. Significant efforts were made in updating information on indigo snakes, diamondback rattlesnakes and natural communities of the Georgia mountains. Also, methods were developed to load large amounts of data into the database. Staff also responded to 500 formal requests for data, not counting in-house environmental reviews and data obtained by the public through the website.

Another important focus has been updating and adding records of species of concern and important natural communities from the 11-county coastal region of Georgia. This information is being used to help better direct conservation efforts and plan development along the coast.

Lists of rare and protected plants, animals and natural communities are available at www.georgiawildlife.com/conservation/species-of-concern.

Georgia Plant Conservation Alliance

The Georgia Plant Conservation Alliance, or GPCA, is an innovative network of 20 public gardens,

government agencies, academic institutions 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, rare plant propagation and outplanting (i.e., safeguarding), and public education.

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.

A key example of a high-priority GPCA project is the restoration and management of oak/pine mafic woodlands in the northern Piedmont. This fire-dependent and globally imperiled habitat supports rare flora such as the federally endangered smooth coneflower, state-protected Georgia aster and Fraser's loosestrife, and the rare curlyheads.

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 in which 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 estimates the status of ginseng populations in the state and monitors the size of the 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. Over the Georgia Ginseng Program's 26 years, there has been an overall decline in ginseng harvest and trade. This is likely due to development of lands where ginseng grows, possibly an overall decrease in ginseng populations and other factors. However, the ginseng trade in Georgia remains strong enough to merit continued regulation.

Private Land Activities

Because most of Georgia is privately owned, conservation activities on private lands are vitally important to Georgia's wildlife and natural communities. The Nongame Conservation Section worked with private landowners in southeast Georgia on a variety of conservation activities in fiscal 2011.

In cooperation with interested landowners, staff found and flagged more than 500 gopher tortoise burrows on priority sandhill sites. In partnership with Fort Stewart's Fish and

Wildlife Branch and a private landowner, staff also mulched approximately 80 acres of sand pine and hardwoods on a degraded sandhill in Wheeler County. The property will be replanted to low-density longleaf pine and periodically burned to promote native groundcover and restore the sandhill site.

The Nongame Section worked closely with private landowners, the U.S. Department of Defense, Mississippi State University, and Ecology and Environment Inc. 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 for private landowners relevant to Farm Bill programs, and took part in field tours to evaluate private properties as candidates for protection under the Wetlands Reserve Program. Landowner outreach and education was conducted through Master Timber Harvester workshops and landowner outreach events, and technical assistance provided on site visits to private properties. Further, the Nongame Section worked with corporate forest landowners to improve wildlife conservation through the Forestry for Wildlife Partnership and Sustainable Forestry Initiative programs.

Young longleaf pine/Linda May/GaDNR

Private Lands

Staff also assisted the Georgia Land Conservation Program on conservation easements protecting more than 5,000 acres and provided tax credit certifications for 57 easements representing 25,000 acres of perpetually-protected land.

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 fiscal 2011, Fort Stewart, Georgia DNR, Georgia Land Trust and other ACUB partners teamed to permanently protect 6,341 acres adjacent to Fort Stewart, in southeastern Georgia. The tracts include a 983-acre conservation easement purchased through a federal Recovery Land Acquisition Grant. The primary goal of the easement is to protect Georgia's highest known density of the federally threatened eastern indigo snake by conserving important riverine sandhill habitat along the Canoochee River. In addition to appropriated ACUB funds, Fort Stewart ACUB partners worked to secure more than \$1.3 million in competitive federal and private conservation grants for land conservation during 2011.

Other ACUB efforts involving the Nongame Conservation Section include the development of public access trails on the Chatham County Blue Sky Tract along the Ogeechee River. These trails, planned and mapped by the Nongame Section, also spur connectivity with the Coastal Georgia/East Coast Greenway. Staff participated in an advisory role in the Chatham County Metropolitan Planning Commission committee meetings, conducted ecological assessments and surveys on three public conservation properties in the ACUB area, and worked with ACUB partners to conduct prescribed fire on private lands adjacent to Fort Stewart. Nongame staff also helped The Nature Conservancy with ACUB efforts at Fort Benning, near Columbus.

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, and 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 1,800 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 2011, Wildlife Resources Division officers spent approximately 112 hours checking commercial vessels on the water for compliance with turtle excluder device regulations. (This total does not include dockside inspections.) Enforcement of the TED regulations is one possible explanation for a decline in marine turtle strandings since 2003.

Conservation rangers also investigated violations involving nongame wildlife, including illegal taking of black vultures, a red-tailed hawk and an eastern screech owl.



Checking sandhill rosemary on Canoochee easement/Rick Lavender/GaDNR



Education & Outreach

Regional Education Centers

The 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. Through its history, Wildlife Resources 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 Wildlife Resources Division operates seven regional education centers in partnership with local school systems, Regional Educational Service Agencies (RESAs) and other state and federal agencies to deliver wildlife-based education to students, adults and families. The centers include Charlie Elliott Wildlife Center in Mansfield, the Go Fish Education Center in Perry, Smithgall Woods in Helen, McDuffie in Dearing, Arrowhead in Rome, Grand Bay in Valdosta and Sapelo Island National Estuarine Research Reserve. About 55,450 students and adults visited these centers in fiscal 2011, learning about conservation and wise use of natural and cultural resources through hands-on experiences.

In addition to the grand opening of the Go Fish Education Center in October 2010, other highlights included new programs such as Conservation Leaders for Tomorrow, Growing Up WILD, and Hunt and Learn started at Charlie Elliott Wildlife Center. Charlie Elliott is now the Southeast training area for Conservation Leaders for Tomorrow, a professional development program designed for student and professional leaders within the natural resource sciences. The four-day workshops focus on conservation education and hunting awareness among academic programs and government agencies, blending classroom discussion and field experiences, all led by top natural resource professionals and conservationists. Charlie Elliott held one workshop in 2011 and plans to hold two in fiscal 2012.

Growing Up WILD is an early childhood education program that builds on children's sense of wonder

about nature and invites them to explore wildlife and the world around them. Through activities and experiences, Growing Up WILD provides a foundation for developing positive impressions about the natural world and lifelong social and academic skills. This program is a new part of the Project WILD curriculum. At Wildlife Resources' education centers, staff have been trained as facilitators, and they are training early childhood teachers in the curriculum.

Hunt and Learn is a new series 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 24,000 people in 2011.

Also during 2011, the Nongame Conservation Section provided more than \$130,100 for staff salaries and programming at Smithgall Woods, McDuffie, Arrowhead and Grand Bay. Local cooperators also provided financial assistance to some of the centers.

In other outreach, Nongame Conservation 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. To expand that reach and improve efficiency, the Nongame Section developed a user-friendly webpage in 2011 that includes rare species profiles for all of Georgia's protected plants and animals. Each profile at www.georgiawildlife.org/rare_species_profiles includes pictures and information on identification, ecology, range and conservation needs.

Youth Birding Competition



Winning artwork by Rosemary Kramer/Linda May/GaDNR

In its sixth year, the annual Youth Birding Competition drew another enthusiastic crowd. In the 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 2011 competition attracted some 100 participants from pre-school ages to teens. These young birders cataloged scores of species (the top team saw or heard 133) and raised nearly \$1,500 for conservation projects throughout the state.

In addition, the event's T-shirt Art Contest attracted 166 drawings and paintings of native Georgia birds, almost double the number in 2010.

Give Wildlife a Chance Poster Contest

Kindergarten through fifth-grade students submitted more than 4,400 entries for last year's Give Wildlife a Chance Poster Contest. This unique and popular event encourages students to explore the wonders of Georgia's native plant and animal species through art.

The posters of 2011 state-level contest winners were displayed at the Go Fish Education Center in Perry.

The contest is organized and sponsored by Georgia DNR, The State Botanical Garden of Georgia and The Environmental Resources Network, Inc. (TERN), a friends group of the Nongame Conservation Section.

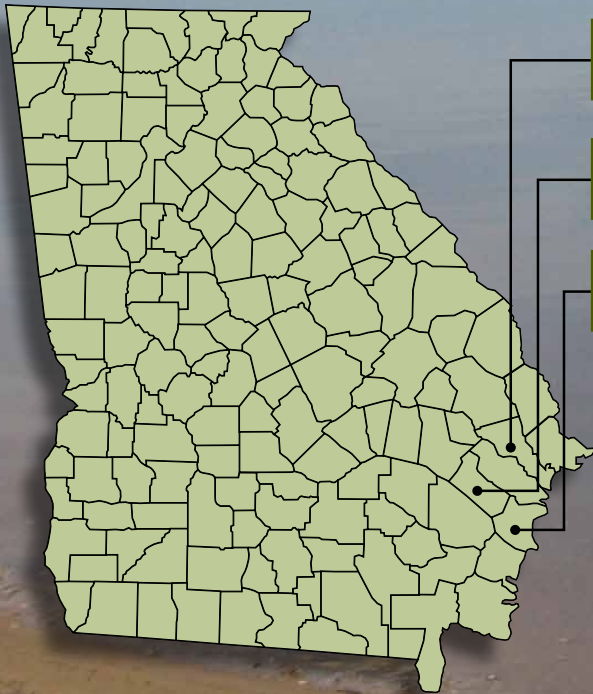
Social Media

The popularity of the Wildlife Resources Division's social media sites – Facebook, Twitter, Flickr and YouTube – continued to increase during 2011, spreading awareness of conservation and the division's work. By the close of the fiscal year, totals included 3,700 likes on Facebook, 950 on Twitter and 18,000 YouTube views.

Another outreach, the nongame e-newsletter, Georgia Wild, added 644 subscribers during the year, increasing circulation to nearly 5,400 subscribers. 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

Walker Lake Tract along the Altamaha / Matt Elliott / GaDNR



**Canoochee River
Corridor Easement**
(983 acres, Bryan County)

Murff Tract Phase II
(6,191 acres, Long County)

Walker Lake Tract
(1,055 acres, McIntosh County)

The Nongame Conservation Section facilitated three land conservation projects during fiscal 2011, resulting in the acquisition of 7,246 acres and a conservation easement on 983 acres of priority wildlife habitat. Each project involved significant collaboration with partners including The Nature Conservancy, the U.S. Fish and Wildlife Service, the U.S. Marine Corps and Army, Georgia Land Trust and others. All of the projects conserved priority habitat identified in Georgia's State Wildlife Action Plan.

Murff Tract Phase II

(6,191 acres, Long County)

The second phase of acquisition of the Murff Tract closed on Sept. 28, 2010. This project added 6,191 acres of high-quality habitat to the Townsend Wildlife Management Area along the lower Altamaha River in Long County.

The tract features many prime habitats, including mature bottomland hardwood forests, inland maritime forests and sandhills with longleaf pine forest. The property supports a large number of species of concern; among them, the gopher tortoise, eastern indigo snake, swallow-tailed kite and numerous neo-tropical migratory songbirds.

The acquisition was a multi-agency effort with support from the U.S. Forest Service through a Forest Legacy Grant, the National Oceanographic and Atmospheric Administration through the Coastal Estuarine Land Conservation Program, The Nature Conservancy, Nongame Wildlife Conservation Fund and the U.S. Marine Corps.

This tract will be managed as part of Townsend WMA, providing outdoor recreation including hunting, fishing and birding.

Walker Lake Tract

(1,055 acres, McIntosh County)

The Walker Lake Tract, closed on June 16, 2011, adds high-quality floodplain forest to Altamaha Wildlife Management Area. These 1,055 acres provide habitat for wood storks, swallow-tailed kites and many priority neo-tropical migrant songbirds. Walker Lake is in the Altamaha River Conservation Opportunity Area identified in the State Wildlife Action Plan.

The property was acquired with State Wildlife Grant funding and with funding from the Marine Corps

and The Nature Conservancy. Conservation of the tract not only protects important wildlife habitat but also maintains a buffer for Townsend Bombing Range, a key training asset for Marine Corps aviators. The acreage also connects Altamaha and Townsend WMAs, greatly improving public recreation and habitat management in this area.

Canoochee River Corridor Easement

(983 acres, Bryan County)

Completed in cooperation with the U.S. Fish and Wildlife Service, the Army's Fort Stewart, and Georgia Land Trust, this conservation easement protects 983 acres of riverine sandhill and river corridor along the Canoochee River in Bryan County. DNR will hold the easement.

The tract has high-quality sandhills that provide habitat for gopher tortoises and eastern indigo snakes. Because the land is adjacent to Fort Stewart, it serves as an important buffer for the base while also contributing to an expanded habitat corridor for the federally threatened indigo snake. The site supports one of the largest indigo snake populations in Georgia.

Conservation Planning

A key roadmap for conservation – Georgia's State Wildlife Action Plan – 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 Wildlife Action Plan, better 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 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 developing 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.



Gopher tortoise/Linda May/GaDNR

Financial & Administration

The Nongame Conservation Section receives no state appropriations, depending instead on grants, fundraising and donations to conserve Georgia's nongame wildlife, rare native plants and natural habitats. With fundraising a necessity, the section has three primary avenues: Weekend for Wildlife, the Give Wildlife a Chance state income tax checkoff and the nongame wildlife license plates. All contributions go into the Nongame Wildlife Conservation and Habitat Acquisition Fund.

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

For fiscal 2011, the Nongame Conservation Section totaled \$2.79 million in income (not counting federal and other grants) and \$2.69 million in expenses. The Nongame Wildlife Conservation Fund had a balance of \$6.99 million at year's end.

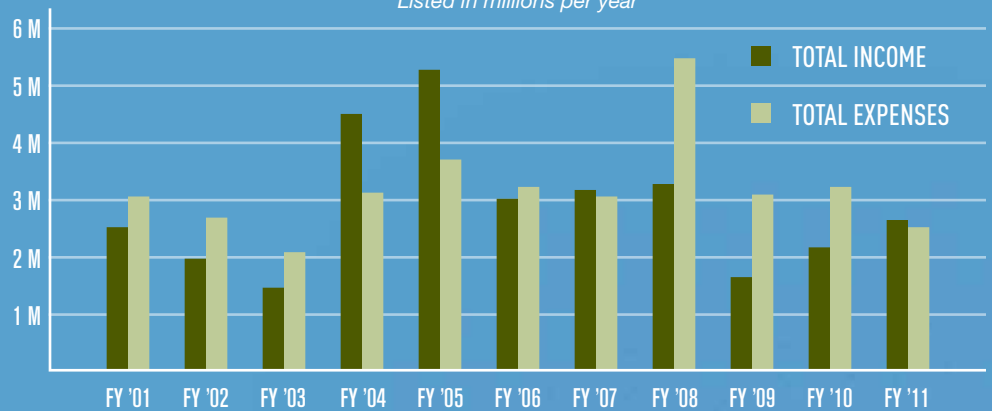
Weekend for Wildlife

Weekend for Wildlife is one of the country's most successful fundraisers for conservation, grossing nearly \$8 million since its start in 1989. The annual event draws 200-400 guests to the prestigious Cloister at Sea Island for a weekend of outdoor trips, auctions and dining. The 2011 celebration grossed \$488,300.

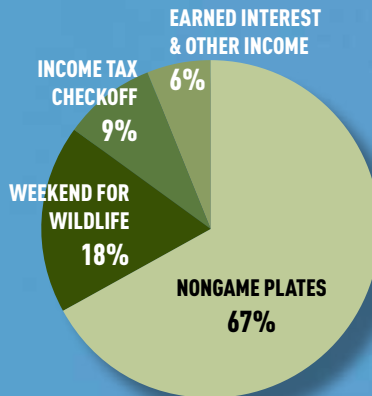


NONGAME CONSERVATION FUND

Listed in millions per year



FISCAL YEAR 2011 FUNDING



Loggerhead shrike/Todd Schneider/GaDNR

'Give Wildlife a Chance' State Income Tax Checkoff

The state income tax checkoff offers Georgians a convenient way to contribute to the Nongame Wildlife Conservation Fund. Since the checkoff's creation in 1989, net contributions have averaged slightly more than \$305,000, with a high of \$510,910 collected in 1991 and a low of \$184,065 in 1994. The revenue for 2011 reached \$242,032, an increase over the previous year of nearly \$40,000.

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 \$1.88 million in fiscal year 2011. That total, significantly more than in fiscal 2010, marked the first year of license plate income since the state Legislature changed the fee and revenue-sharing structure for specialty plates. This legislation, which did not take full effect until 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 fee goes to the Georgia Nongame Wildlife Conservation Fund.

While the addition of an annual renewal fee increased revenue in fiscal 2011, the price increase and added fee led to a sharp drop in "active" eagle and hummingbird plates – only 58 percent were in circulation at the close of the fiscal year – and low renewal rates. Both factors are cause for concern over the long-term viability of these wildlife plates as a critical source of revenue.



TERN

The Environmental Resources Network, a nonprofit organization founded to support nongame conservation activities by the Georgia DNR, made \$83,518 available for projects in 2011. These projects varied from providing essential equipment for safe and effective habitat management and for surveying mussels in our larger rivers to facilitating conservation education through supplies, workshops and awards. 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 \$5.65 million in federal and other grants during fiscal 2011. Georgia is sharing a \$981,000 grant from the State Wildlife Grants Competitive Program with Alabama, Florida, Mississippi and Louisiana for a multi-year project to increase the quality, quantity and connectivity of prime sandhill and upland longleaf pine habitats. This 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 a third of the State and Tribal Wildlife Grants program, reducing it to fiscal 2010 levels. Since 2000, this program has been the main federal funding source to help keep common species common and protect others before they become critically imperiled and more costly to recover. State Wildlife Grants are critical to helping Georgia conserve wildlife and natural places for future generations.

The Nongame Conservation Section received \$180,865 in interest and other income in fiscal 2011.



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