I’m honored to be the new Co-Chair of the Gopher Tortoise Council and excited about hosting next year’s annual meeting at Archbold Biological Station. In my role as Archbold’s Restoration Ecology & Herpetology Program Director, I have spent the last nine years leading wetland restoration efforts, studying seasonal pond communities, and facilitating research on herpetofauna associated with the imperiled Florida scrub ecosystem. I have also had the great pleasure of monitoring Gopher Tortoise populations at both Avon Park Air Force Range and Archbold. Extending the tortoise mark-recapture study at Archbold, which was initiated by Dr. James Layne 50 years ago, has been a particularly rewarding, though unexpected, aspect of my job. Prior to joining Archbold’s science staff I spent more than a decade focusing on ecology and conservation biology of amphibians. Despite the tutelage of Dr. Whit Gibbons, my postdoc advisor at the University of Georgia’s Savannah River Ecology Lab, and rubbing shoulders with numerous accomplished turtle biologists through the years, I managed to stay focused on amphibians and not get distracted by turtles. However, capturing my first old, marked tortoise at Archbold in 2008 changed all that! Like many of you, I am now completely captivated by these amazing creatures and their sandy world.

For GTC members, the 2018 meeting will be an opportunity to experience the subtropical part of the Gopher Tortoise’s range in south-central Florida. We will work hard to make it as productive and stimulating as the meeting we just experienced at the opposite end of the species’ range in South Carolina. We enjoyed a keynote talk by Whit Gibbons highlighting still-unsolved mysteries of upland snakes and gained many valuable updates and information from the 24 talks and 12 posters. Kudos to Co-Chair, Will Dillman, and a host of GTC officers and volunteers for their organizing efforts! We are also very grateful to the National Wild Turkey Federation and their staff for providing us with such a stellar facility to hold our meeting. NWTF’s shooting complex and the Aiken Center for the Arts were fun, contrasting venues for our evening socials. Finally, congratulations to the student and education award winners and thanks to all who contributed to another productive silent auction with the high-bid item being a 32 million-year-old Stylemys fossil donated by Dick Franz!

As you know, GTC has been going strong since 1978. This is an impressive feat for an all-volunteer organization and a testament to a succession of dedicated officers. I joined many of the latter at the Joseph W. Jones Ecological Research Center in November for a three-day workshop aimed at identifying the number and distribution of viable Gopher Tortoise populations necessary for the stability and desired representation of the species. We were guided in this challenging task by three Rs: the need for representation, resiliency, and redundancy. It struck me that these same principles are relevant to the health of GTC. To be effective, we need continued representation of all stakeholders throughout the six-state range of the species. And the more members we can attract, the more resilient we will be as a function of having greater resources, including ideas, expertise, and (yes) money. Building redundancy is perhaps the greatest challenge. If the responsibilities of running an
Message from a Co-chair...continued

organization fall to the same small handful of people year after year then its sustainability is at risk. Ideally, there should be enough people involved in the operations and willing to take on leadership roles so that there is always someone qualified to step in and carry the ball. Thus, I’d like to encourage folks to think about whether they have skills and time they could contribute to GTC and, if so, to contact the relevant committee chair (http://www.gophertortoisecouncil.org/who/council.php). I’ll definitely be putting out some calls for volunteers as we get farther along in planning next year’s meeting.

One last thought inspired by the population targets workshop... as I looked around the room at the 25 or so participants it occurred to me that the future of the Gopher Tortoise will depend to a large degree on the efforts of a relatively small (but very passionate) group organized and supported by GTC. Judging by the depth of discussion and opinions expressed, it was clear that a) great progress has been made with respect to understanding the status of Gopher Tortoise populations, and b) no one is content to let this species slide toward functional extinction without a fight!

Betsie

2017 Annual Meeting Highlights

A big shout-out to Co-Chair Will Dillman and all the folks who helped make this year’s annual meeting a big success! The National Wild Turkey Federation graciously provided use of their beautiful facility in Edgefield, SC. Thanks to all the presenters who shared their findings at this year’s meeting!
2017 Annual Meeting Highlights... continued

Our host for the big event-Co-Chair Will Dillman (standing)
Photo courtesy of Jen Howze

State reps present their annual reports (photos courtesy of Jen Howze)
2017 Annual Meeting Highlights... continued

Awesome talks are a feature of every GTC Annual Meeting! This year was no exception!

A slide from the presentation entitled “Go Find It! A Scent Dog’s First Venture into Gopher Tortoise Conservation” presented by Lauren Moscar and Rachel Smith (Disney’s Animal Kingdom)

Photo courtesy of Jen Howze

Instead of “The Tortoise and the Hare” it’s “The Tortoise and the Burrowing Owl” in a talk presented by John Herman of Florida Gulf Coast University on interactions between these two species

Photo courtesy of Jen Howze
2017 Annual Meeting Highlights...continued

Jess McGuire speaks while baby Colin sleeps!
Photo courtesy of Jen Howze

Kurt Buhlmann leads a field trip to the Aiken Gopher Tortoise Heritage Preserve and talks about the successful GT reintroduction program and management of the property
Photo courtesy of Jen Howze
2017 Annual Meeting Highlights...continued

The GTC thrives on recognizing the hard work of students! Each year awards are presented for the best student research proposal and the best student talk.

The Research Advisory Committee, led by Jeff Goessling, accepts proposals for the J. Larry Landers Student Research Award. Proposals were reviewed by Steve Godley and Jennifer Howze. This year’s winners were:

Philip Schulte, Auburn University-“Inferring social network dynamics in relocated gopher tortoises (Gopherus polyphemus)” (Philip is pictured below receiving his award!)

Tim Gemesi, University of South Florida-“Observation of eco-tunnels used by local gopher tortoise population”

Congratulations Philip and Tim!

The Council also presents a travel award, now known as the Bob Herrington Student Travel Award, to help defray expenses for students to present their research findings at the annual meeting. This year’s winners are Tom Radzio and Heather Gaya.

Congratulations Tom and Heather!

Student Presentation Awards were presented to Nicole White (University of Georgia)-First Place, Tom Radzio (Drexel University)-Second Place, and Tom Prebyl (University of Georgia)-Third Place

Congratulations!

Pictured below: From left to right-Jeff Goessling presents the J. Larry Landers Award to Philip Schulte, and Student Presentation awards to Tom Prebyl, Nicole White, and Tom Radzio. Photo courtesy of Jess McGuire
Nicole, Tom R. and Tom P. hanging with a couple of turkeys at the beautiful National Wild Turkey Federation facility!

Photo courtesy of Jess McGuire

---

**The Donna J. Heinrich Environmental Education Grant**

This year’s winner is the Georgia Dept. of Natural Resources for their project to create a traveling gopher tortoise habitat exhibit to carry the conservation message to various venues around Georgia. Congratulations!

---

**Changing of the Guard-New Officers and Committee Chairs**

Welcome to Betsy Rothermel, our new Co-Chair! Betsy is a research biologist with more than 14 years of experience conducting applied ecological research in the southeastern U.S. Since 2008, she has directed the Restoration Ecology and Herpetology Program at Archbold Biological Station, Florida, where she focuses on ecology of gopher tortoises and other threatened species in the fire-maintained Florida scrub ecosystem, as well as ecology and restoration of freshwater wetlands. Stay tuned for details on next year’s annual meeting to be held at Archbold!

Rachel Smith (Disney’s Animals, Science and Environment Program) is our new Secretary!

Matt Stoddard (Georgia DNR Wildlife Resources Division) joins us as the new Georgia State Representative!

Welcome back Rachael Sulkers and Jess McGuire as Co-Chairs of the Public Outreach and Education Committee—both have been active with GTC outreach efforts over the years!

A big thanks to out-going officers and committee chairs for your outstanding service to GTC!

---

**THANK YOU TO THE CALIFORNIA TURTLE AND TORTOISE CLUB!**

The Council wishes to thank the California Turtle and Tortoise Club for their generous donation toward conservation of the gopher tortoise!

For more information on this organization, check out their website at https://www.tortoise.org/cttcmemb.html
Upland Snake Conservation Initiative

Check out the recently updated Eastern Diamondback Rattlesnake brochure! Available for download soon at

http://www.gophertortoisecouncil.org/edu/snakeinitiative.php

**Eastern Diamondback Rattlesnake**

**Distribution and Status**

The eastern diamondback rattlesnake (*Crotalus adamanteus*) is in decline over most of its historic range, which extends along the coastal plain of southeastern North Carolina to eastern Louisiana.

**Habitat**

The eastern diamondback can be found in a variety of natural communities in the southeastern Coastal Plain including sandhills, oak scrub, dry hammocks, marshes, and coastal dunes. However, it is strongly tied to open canopy pine savannas where prescribed fire is used as a management tool.

Gopher tortoise burrows, stumps holes, root channels, rotting logs, palmetto thickets, and even burrows of the nine-banded armadillo (*Dasyurus novemcinctus*) provide important shelter from extreme temperatures and prescribed fire.

Continued next page...


Remembering Old Friends... We celebrate the lives of one of our GTC founding members, Dr. Bob Mount, and another early member, Ms. Ellen Nicol. Please see below the loving tribute to Dr. Mount and anecdotes shared by GTC friends of Ms. Nicol.

Robert Hughes Mount

December 25, 1931 - September 10, 2017 Robert Hughes Mount, 85, Alabama herpetology legend, died September 10, 2017 following two hip-replacement surgeries and complications due to COPD. He is preceded in death by his son, Robert Mount, Jr., sisters Katherine Greenblatt and Luanne Cutchins, father Logan Mount, step-mother Ann Mount, and mother Frances Mount. He leaves behind his wife Jane of 40 years; daughter Logan Mount and her husband Joe; granddaughters Sarah Davis (Blanton), Emma Dansak, and Anna Dansak; great-granddaughters Annabelle and Ruby Davis; and best friend Kenneth "Husky" Kirkwood. Bob was born on December 25, 1931, in Lewisburg, Tennessee. Following the death of his mother when he was four, he was cared for by his father and a great aunt until the latter's death in 1937. He then went to live with an aunt and uncle in Waynesboro, Tennessee. His father visited weekly and taught him to appreciate the natural world. Waynesboro, with its crystal clear streams and surrounding forests teeming with wildlife, was an idyllic setting for a budding naturalist. Bob's father re-married when he was ten, and he along with his father and loving stepmother settled in Jackson, Tennessee until moving to Albany, Georgia, where he attended high school. Following graduation, Bob enrolled at Auburn Polytechnic Institute, now Auburn University, where he received BS and MS degrees. He then served in the Army as a medical entomologist for two years in the U.S. and Korea, after which he enrolled at the University of Florida as a Ph.D. student under the direction of the late Archie Carr. There he studied zoology, and after graduating, spent five years teaching at Montevallo College in central Alabama. At Montevallo, Bob began his research on reptiles and amphibians and continued his research after transferring to Auburn University in 1966. His research ultimately resulted in the 1975 publication, The Reptiles and Amphibians of Alabama. It was during his tenure that the majority of reptile and amphibian collections at Auburn University grew. The herpetological collection at the AU Museum of Natural History is named after him. As a professor, Dr. Mount was known for his lab assignments which required students to visit remote areas of Alabama's wilderness and collect specimens of reptiles and amphibians. Largely due to population studies conducted by Dr. Mount and his students, two Alabama species, the Flattened Musk Turtle and the Red Hills Salamander, are now protected under the Endangered Species Act. Bob influenced a host of youngsters through community work with Boy Scouts and other organizations as well as students. His own children were allowed numerous pets including dogs, ferrets, rats and other rodents, beavers, goats, a possum, squirrels, a very special crow, orphaned birds, an alligator, snakes, turtles, lizards, frogs, praying mantises, horned lizards, tarantulas, a rabbit, and once a visiting fox. His grandchildren have fond memories of time spent at his house in the country with their Papa and Janie, going on evening woods-walks, calling frogs from the frog-calling porch, flying June bugs from strings in the summertime, and playing Bessie Bug roulette. Bob retired from teaching in 1987, yet remained an advocate for natural history education and the environment. In 2001 he began writing newspaper columns with topics ranging from snake stories to politics, always as a defender of the preservation of Alabama's rich herptofauna and its natural resources. More than one reader has remarked that they no longer kill snakes indiscriminately, a testament to Bob's legacy. Additionally, Bob enjoyed frequent coffee and conversation with a group of men known as the Order of the Geezers. Bob held offices in a number of professional and environmental organizations, and received several awards including the Dudley Beaumont Fellowship for Outstanding Natural History Research, 1960; Outstanding Environmental Writer Award by the Alabama Environmental Council, 1995; J. Kelly Mosely Award for his work with the Red Hills Salamander, 1987; the Gopher Tortoise Award, 1987; and a Lifetime Environmental Achievement Award by the Southern Appalachian Coalition, 1999. The family extends thanks to the staff of EAMC and Bethany House, where Bob lived out his final six weeks of life in comfort, surrounded by dedicated caretakers and family, with frequent visits from friends, dogs, and a beautiful Eastern Indigo snake. Bob continues to serve in an educational capacity after death by being a whole-body donor to UAB's Medical School. Bob's family requests that you carry on his mission by fighting for the protection of our environment, including the creeping, crawling, and slithering critters with whom we share the planet.
Ellen Patterson Nicol passed away in Ocala, Florida, in March 2016. Ellen was also a GTC pioneer, as noted by Lora Smith, and served for some time as the GTC secretary and as newsletter editor back in the early 1980s. Suzanne Wahlquist, another early member of GTC, who was treasurer during the time Ellen served as secretary, shared Ellen’s obituary at http://www.legacy.com/obituaries/democratandchronicle/obituary.aspx?pid=178110423

Suzanne and Lora both note Ellen’s artistic ability including drawings from a 1983 edition of The Tortoise Burrow and several lovely paintings.
Alabama is the only state in the range of the gopher tortoise to have both federally listed and non-listed populations, with Mobile, Washington, and Choctaw counties residing in the listed portion of the range. The Division of Wildlife and Freshwater Fisheries (DWFF) continues to work on tortoise conservation issues in Alabama and across the tortoise’s range.

DWFF continues efforts to derive a more accurate gopher tortoise population estimate and distribution within the state. Line Transect Distance Sampling has continued on public lands with the hope of completing surveys in October 2017. DWFF received a grant from the U. S. Fish and Wildlife Service (USFWS) to begin private land surveys. We are currently in the planning phase to determine how best to approach these surveys. In Alabama, roughly ninety-five percent of gopher tortoise habitat is in private ownership; the remaining habitat occurs on land owned by state or federal agencies.

Longleaf pine restoration work continues under the Multi-State Sandhill/Longleaf Pine Ecosystem Restoration State Wildlife Grant. Approximately 450 acres have been reforested to longleaf pine on the Geneva Wildlife Management Area (WMA). Prescribed burning efforts on WMAs continue with emphasis on summer burns, when applicable. Invasive plant control and feral hog management has also continued on public lands.

Fifteen gopher tortoises were relocated to permanently protected lands (DWFF WMA) due to inappropriate possession by a rehabber who took in nuisance tortoises from the public. A temporary enclosure was built to hold the tortoises for 12 months, at which time the enclosure will be removed. DWFF partnered with The Nature Conservancy (TNC) and a consultant to relocate nine tortoises from a development site to a new enclosure on TNC property (permanently protected lands). Enclosure costs and labor were provided by the consultant.

DWFF continues to participate in the Gopher Tortoise Candidate Conservation Agreement (GT CCA), a voluntary partnership with the U. S. Department of Defense, state agencies, and non-governmental agencies in the unlisted portion of the range.

Multiple partners released twenty-six threatened eastern indigo snakes into Conecuh National Forest in South Alabama on July 14, 2017. The snakes were released as part of an on-going reintroduction research project funded by the USFWS through a State Wildlife Grant administered by the DWFF. Before reintroduction efforts began in 2011, there had been no confirmed sightings of a wild eastern indigo snake in Alabama since the mid-1950s. The release was coordinated by Auburn University and represents a collaboration among the following partners: Auburn University, Alabama Natural Heritage Program, Alabama Department of Conservation and Natural Resources, Central Florida Zoo’s Orianne Center for Indigo Conservation, USFWS, U.S. Forest Service, and many others.

DWFF continues to increase education and outreach activities promoting gopher tortoise conservation in Alabama. April 10, 2017 was Alabama’s second Gopher Tortoise Day and included events in six locations across the state. Several handouts were created and a poster was developed from original artwork by Carolyn Taylor of The Birmingham Zoo. Several landowner workshops and presentations took place throughout the year that supported gopher tortoise conservation and habitat management.

The eastern diamondback rattlesnake has been petitioned for review by the USFWS. Until recently, this species was the only species listed as a Priority 1 or 2 in Alabama that has not received some form of state protection. In an effort to place this species under conservation protection, DWFF passed a regulation, effective October 1, 2017, that requires anyone wanting to possess a live eastern diamondback rattlesnake to first obtain a permit through the Division of Wildlife and Freshwater Fisheries in Alabama.

Continued next page...
Ongoing research in Alabama includes:

A multi-state (Georgia [GA], Florida [FL], Alabama [AL]) project. The primary objective of this research is to evaluate outcomes of Natural Resources Conservation Service practices designed to enhance or maintain habitat for gopher tortoises. M. S. student at the University of Georgia (UGA) Thomas Prebyl (Major professor C. Moore).

A multi-state (South Carolina [SC], GA, FL, AL, Mississippi [MS], Louisiana [LA]) project to review range-wide efforts needed to form a network of partners, synthesize available information, develop status assessment models, and conduct collaborative decision-making to identify optimal conservation actions for each of five species (gopher tortoise [Gopherus polyphemus], striped newt [Notophthalmus perstriatus], gopher frog [Rana capito], southern hognose snake [Heterodon simus], and Florida pine snake [Pituophis melanoleucus mugitus]). The products of this effort will enable regional partners to implement effective, efficient, and equitable conservation strategies and inform species listing decisions of the USFWS. Postdoctoral Research Scientist at UGA Brian Crawford (Major professor C. Moore).

Completed FY16-17. State Wildlife Grant project to survey public lands. Auburn University (PI S. Hermann).

Completed FY16-17. Gopher Tortoise Habitat Structure/Quality project. M.S. student at Auburn University Rebecca Pudner (Major professor S. Hermann).

GEORGIA

The Gopher Tortoise Initiative

The Gopher Tortoise Initiative (GTI) is a Georgia-based effort to conserve the gopher tortoise in hopes of making its listing under the U.S. Endangered Species Act unnecessary. Members include the Georgia Dept. of Natural Resources (DNR), the Georgia Forestry Commission, U. S. Fish and Wildlife Service (USFWS), Natural Resources Conservation Service (NRCS), the U.S. Department of Defense, The Nature Conservancy (TNC), The Conservation Fund, Georgia Conservancy, The Orianne Society (TOS), Georgia Chamber of Commerce, Knobloch Family Foundation, Robert W. Woodruff Foundation, and Bobolink Foundation. GTI partners know they can be proactive and work to avoid federally listing gophers, or reactive and face the consequences of increased federal regulation affecting key parts of the state’s economy, including commercial growth, agriculture, forestry and military base activities. To help preclude the need for listing – a decision that members know will not rest solely on efforts in Georgia – the initiative is focused on permanently protecting many of the state’s gopher tortoise populations. Georgia has 122 known viable populations. Permanent protection of populations is being achieved through a combination of fee simple acquisitions and conservation easements. When the effort started, Georgia had 36 permanently protected gopher tortoise populations. At the close of fiscal year 2017, the total was 41. The initiative is trying to protect 65 populations; work that will require raising an estimated $150 million. The funding is expected to come equally from three sources-state, federal, and private donations. As of early fiscal year 2018, the GTI was completing projects that will increase the tortoise habitat conserved in Georgia to more than 38,000 acres and the number of permanently protected populations to at least 46.

Gopher Tortoises

During fiscal year 2017, the Georgia DNR Nongame Conservation Section’s tortoise survey crew completed line-transect distance sampling (LTDS) surveys on 12 sites with sampling aimed at estimating tortoise density and abundance. Sites included Alapaha River Wildlife Management Area (WMA) in Irwin County, Alligator Creek WMA...
in Wheeler County, Bullard Creek WMA in Jeff Davis and Appling counties, Ohoopee Dunes WMA in Emanuel County, Altamaha Plantation WMA in Glynn County, George L. Smith State Park in Emanuel County, General Coffee State Park in Coffee County, TNC’s R. G. Daniels Preserve in Candler County, and two large private tracts in Atkinson and Wayne counties. Highlights included four newly surveyed populations in excess of the 250 adult gopher tortoises needed for a minimally viable population, as defined by the USFWS, and an estimated population at Alapaha River WMA of nearly 2,400 tortoises, making it by far the largest population on state lands with a 21 percent population increase since the site was last surveyed in 2012.

The Nongame Conservation Section began doing LTDS surveys for gopher tortoises in 2007. Surveys have been completed on 92 sites statewide and comprise public and private-owned lands. Survey results are incorporated into conservation strategies aimed at precluding the need to federally list the tortoise under the Endangered Species Act.

**Eastern Indigo Snakes**

In a study funded and supported by Nongame Conservation, TOS continued occupancy monitoring of imperiled eastern indigo snake habitat to determine population trends. In southern Georgia, indigos overwinter in xeric sandhill habitats where they den in the burrows of gopher tortoises. The study began with focus on the Altamaha River basin, considered a population stronghold for eastern indigos, but in the last two years the study has been expanded to include sandhills along the Alapaha and Satilla rivers.

TOS staff surveyed 19 sandhill sites on public and private lands and detected indigos at 26 percent. The degree of detections in 2017 increased significantly from the previous year; however, nine of the sites sampled in 2017 had not been surveyed in previous years and are likely not comparable.

**Gopher Frogs**

Because of widespread upland and wetland habitat alteration throughout their range, gopher frogs are now limited to fewer than ten sites in Georgia.

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

In fiscal year 2017, portions of five egg masses were collected and raised resulting in the release of 755 froglets at Williams Bluff and 810 at the source pond on Sandhills WMA near Butler. Because of reduced recruitment at the source pond over the last few years, staff decided to offset any potential negative impact of removing eggs by returning just over half of the head-started metamorphs. Additionally, 45 metamorphs were moved to The Blue Heron Nature Preserve in Atlanta where they will be used for an experimental captive breeding effort conducted by The Amphibian Foundation. If successful, the captive colony will provide a reliable source of eggs and lessen dependency on wild populations to support reintroductions.

**Southeastern Pocket Gophers**

Supported by a Multi-State Wildlife Grant initiated in 2015, a University of Georgia (UGA) doctoral student continued research focused on the southeastern pocket gopher. Overall, the goal is to conserve and restore southeastern pine savanna in Georgia, Alabama and Florida. One way to accomplish this is by better understanding, as well as recommending and restoring conditions to promote southeastern pocket gophers, a

Continued next page...
critical species in this habitat and one that has suffered significant population declines across its historical range. In summer 2016, pedestrian transect surveys were conducted on several WMAs and state parks. Unfortunately, evidence of pocket gopher activity on the protected lands surveyed was found only at Georgia Veterans State Park near Cordele and the Joseph W. Jones Ecological Research Center at Ichauway in Southwest Georgia’s Baker County. During the season, 25 pocket gophers were trapped at Ichauway and six at Georgia Veterans State Park.

Red-cockaded Woodpeckers

The red-cockaded woodpecker population at Silver Lake WMA continues to grow with 34 family groups (30 potential breeding groups and four single-bird groups) documented in fiscal year 2017 - an increase of three groups from the previous year. Attaining 30 potential breeding groups is a population milestone. The Silver Lake population is now considered stable enough that it is no longer eligible to receive translocated birds. DNR banded 37 young at Silver Lake produced by these groups and installed one new recruitment cluster, or recipient site. Through continued prescribed fire, installation of additional recruitment clusters and careful forest management, Silver Lake WMA will eventually sustain about 50 family groups. In fiscal year 2017, Nongame Conservation biologists installed a recruitment cluster on Corps of Engineers land adjacent to Silver Lake. The cluster immediately attracted a new breeding pair and those birds successfully nested. In the coming year, more recruitment clusters will be installed at Lake Seminole WMA to encourage the further expansion of red-cockaded woodpeckers.

At Moody Forest WMA near Baxley, staff installed two recruitment clusters and refurbished cavity inserts in three others. DNR also conducted two separate translocations to Moody Forest in fiscal year 2017. The first involved pairing a female from Silver Lake with a newly discovered single male at Moody Forest. This marked the first red-cockaded woodpecker translocation between state-owned properties in Georgia. The second translocation involved moving two woodpecker pairs from Fort Stewart. At least three of the five translocated birds remained on Moody Forest into the nesting season with all three becoming breeders. As of spring 2017, the WMA had three potential breeding groups, two more than the previous year.

Two new properties totaling 10,038 acres were enrolled in Safe Harbor during fiscal year 2017. Statewide, 175,397 acres are enrolled in Safe Harbor management agreements covering 105 baseline groups of red-cockaded woodpeckers and supporting 38 surplus groups, or additions, to those woodpecker populations.

Southeastern American Kestrels

The nest box program for southeastern American kestrels finally had a good year in fiscal year 2017 after experiencing many years of declines. Nest box use was up substantially in all regions. In Tifton, a new research partnership with Abraham Baldwin Agricultural College began that may shed light on the habitat needs of this species; students found eight of 32 boxes occupied. In the western Fall Line sandhills, 41 boxes were occupied, up from 31 in 2016. Only one nest was lost to predation, compared to five early in 2016.

The Nongame Conservation Section partnered with a regional power distribution company to erect 22 boxes high on the company’s transmission line towers in 2016. These boxes are placed about 100 feet above the ground, compared to about 15-20 feet for boxes on wooden power poles. In 2017, kestrels nested in at least 15 of these high boxes, a 66 percent occupancy rate that is far beyond what the agency has observed in many years of checking boxes placed at lower heights. This dramatically added to the number of active nest boxes in the program and inspires hope that the new approach may rescue Georgia’s smallest falcon from extinction in the state.

Continued next page...
Sandhill Restoration
Two competitive State Wildlife Grants in Georgia and other states have benefited sandhill and upland longleaf pine habitats that support gopher tortoises. A third grant, awarded in calendar year 2015, continued that progress in fiscal year 2017.

DNR received the first grant of $1 million in 2009 to work with Alabama, Florida and South Carolina on restoring high-priority sandhills. 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 the targeted habitats, referred to as phase two of the original project. In fall 2015, Georgia, Florida, Alabama, South Carolina, Mississippi and Louisiana began phase three, powered by a competitive $500,000 grant awarded earlier that year.

In phase one, completed at the end of fiscal year 2013, all states exceeded their project goals and nearly tripled the original goal for overall acreage treated (95,000 acres treated vs. the proposed 38,600 acres). In phase two, completed in fiscal year 2015, restoration goals were exceeded again with 76,666 acres treated versus the goal of 51,575. This work is expected to yield significant habitat benefits—largely through improvements in herbaceous understory coverage—for priority species throughout the sandhills such as the gopher tortoise and northern bobwhite. Goals for phase three, a two-year part of the project, include restoring or enhancing more than 33,000 acres of sandhill or upland longleaf habitat across the six states in the gopher tortoise’s range.

Georgia has thus far used funds from phase three to hire a seasonal fire crew in Southeast Georgia, plant longleaf pine seedlings at Townsend WMA near Ludowici and the new Alligator Creek WMA in Wheeler County, and contract with TNC for additional prescribed burning on priority lands in Southeast Georgia.

Prescribed Burning
The acreage of prescribed burns on lands managed by DNR’s Wildlife Resources Division had almost doubled in the last decade, rising from 29,036 acres in 2008 to a high of 58,700 in 2016. That total dipped in 2017 to 38,873 acres, down 35 percent from the previous year and the fewest acres burned in four years. In summer 2016, drought conditions began developing across the state; conditions that persisted and even worsened during fall 2017. Continued drought and delayed moisture recovery in the first five months of 2017 resulted in unexpected fire behavior and fire effects. Prescribed fire staff had to choose burn days carefully and there were significantly fewer suitable days than in years past. Despite these factors and the threat of potential outbreaks of Ips bark beetles in stressed pines, the prescribed burns done on DNR lands were successful, benefitting many game and nongame species.

Moore and Hepinstall-Cymerman Labs, University of Georgia
The lab groups of Drs. Clint Moore and Jeff Hepinstall-Cymerman have been working on several fronts related to sandhills species conservation and conservation of the gopher tortoise. Postdoctoral researcher Dr. Bryan Nuse and PhD student Tom Prebyl are concluding work to map habitat suitability for the tortoise within Georgia, relying on novel predictions of ground habitat conditions developed by Prebyl. This work, along with demographic modeling work and connectivity analyses led by Dr. Nuse will be incorporated into a Southeast Climate Science Center-funded decision support application for targeting acquisition of specific land parcels for building conservation reserves for the gopher tortoise in Georgia. Prebyl has completed one field season of work to assess the role of the NRCS Working Lands for Wildlife Program for conservation of the gopher tortoise on enrolled private lands. M.S. student Heather Gaya finished her first field season of work on a project that seeks to improve assessment of tortoise populations by complementing the LTDS survey methodology with limited focused...
searches. Postdoctoral researcher Dr. Brian Crawford is nearing completion of a first draft of mapping products to predict distributions of five species of herpetofauna (gopher tortoise, Florida pine snake, Southern hognose snake, gopher frog, striped newt) that inhabit the sandhills and other parts of the longleaf pine range. This work is being done in partnership with federal and state agencies, as well as other public and private groups in the Southeast, to inform listing decisions and conservation planning that will help recover and sustain these species. In the coming year, Crawford will be conducting workshops to elicit feedback on model performance and to discover areas for improvement. Dr. Nuse completed analysis of data from a region-wide exercise conducted by Georgia DNR and other state agencies to estimate the response of bird species to sandhills habitat restoration actions. Dr. Crawford is advising the Striped Newt Working Group on conservation approaches for that species. Drs. Nuse, Crawford, and Moore are participating on a multi-agency working group to develop range-wide population conservation targets for the gopher tortoise.

**The Orianne Society**

During 2017, The Orianne Society completed LTDS for gopher tortoises on all three tracts of the Orianne Indigo Snake Preserve (OISP) in Telfair County. This monitoring effort marked the second time that the property has been surveyed for tortoises since it was purchased for conservation (5 years post initial survey). The collected data will be used to estimate tortoise densities and population sizes on the property and begin to assess the effects of habitat management for longleaf pine on tortoise populations. In 2017, just over 600 acres were burned on the OISP and approximately 3,300 acres of private and agency lands. Approximately 250 bulk pounds of native grass seed was collected and planted across 20 acres on the OISP that will serve as a future donor site for native seed collection. Over the past year, sandhill snake taxa were sampled for Snake Fungal Disease on multiple private, state, and federal properties across southern Georgia. Little is known about this disease and these samples will provide more information about the abundance and distribution of this fungal pathogen.

---

**SOUTH CAROLINA**

2017 has been a busy year for South Carolina and there has been a significant amount of work with gopher tortoises and associated upland species. The 39th Annual Meeting of the Gopher Tortoise Council was held at the National Wild Turkey Federation in Edgefield, South Carolina on October 13-15, 2017. Thank you to everyone who attended the meeting, those who presented, and all of the people who helped with the planning, organization, and running of the meeting!

South Carolina Department of Natural Resources (SCDNR) has continued to work on several projects with gopher tortoises and tortoise habitat. Since 2015, SCDNR has conducted five full Line Transect Distance Sampling (LTDS) surveys, seven pilot LTDS surveys, and several site visits on both public and private lands. To date, we have identified two populations that meet the minimum viability criteria, four primary support populations, one secondary support population, and three additional populations that appear to be secondary support. One site surveyed in 2016 has been put under a permanent deed restriction for the protection of the tortoise. This is the first privately owned land to be put in permanent protection for the gopher tortoise. The site is home to a primary support population of approximately 169 tortoises (95% CI: 108-320), and is known to have eastern diamondback rattlesnakes, southern hognose snakes, and Florida pine snakes on the property. We plan to finish our first round of LTDS surveys by the end of December 2017.

SCDNR, in collaboration with the Savannah River Ecology Lab (SREL), has continued efforts to restore the population of tortoises at Aiken Gopher Tortoise Heritage Preserve (AGTHP) utilizing waif tortoises from the
entire range of the species. To date, 300 tortoises, including 160 adults, have been reintroduced to the site using the soft-release procedure. AGTHP has received tortoises from many individuals, numerous states outside of the tortoise’s range, and larger groups of waif tortoises from the Florida Fish and Wildlife Conservation Commission via a Memorandum of Agreement. These tortoises are a critical component of the success of this project.

The reintroduction of tortoises at AGTHP has been in progress since 2006. Now, more than 10 years after the initiation of the project, SREL and SCDNR have received funding to examine long-term site fidelity and survivorship, genetic integration, and current disease status of this unique population. Rebecca McKee (University of Georgia) has been busy identifying tortoise burrows across the property and trapping tortoises over the last year. We look to the results of her work to assess the success of our restocking efforts.

SCDNR released a group of 25 hatchling and 1-year-old head-started tortoises in 2016 and a second group of hatchling, 1-year head-started, and 2-year head-started tortoises at AGTHP this year as part of a survivorship and movement study. We have been following these tortoises via telemetry one to two times per week since early fall 2016. The Longleaf Alliance has recently provided funding to SREL to increase the number of head-started tortoises that can be produced annually. Current plans are to raise up to 100 tortoises for release each year.

Management of AGTHP remains critical to maintaining suitable tortoise habitat and a large block of the property was subject to a growing season prescribed burn that achieved significant reduction in scrub oaks present in the block.

Tillman Sand Ridge Heritage Preserve has the highest density tortoise population in the state and occurs in some of the highest quality habitat we have surveyed. As part of a Multi-State Competitive State Wildlife Grant, we have begun efforts to restore approximately 185 additional acres on this site. Our hope is that creating additional habitat will increase the carrying capacity of tortoises on site and result in a larger and more secure population. Initial timber harvest began in early 2017 and has been followed with targeted herbicide and prescribed fire. Plans include restoration of native groundcover through seed and planting of longleaf pine.

SCDNR has continued efforts to survey and monitor upland isolated ephemeral wetlands for gopher frogs and flatwoods salamanders. Flatwoods salamanders have not been documented in South Carolina since 2010, though surveys of historical sites have occurred in years where conditions were favorable. Gopher frog surveys have been conducted at historical locations and other areas of suitable habitat using automated recording, dip-net surveys, and egg mass surveys. Though gopher frogs appear to have been extirpated from a number of historical locations due to fire suppression, they still occur on two large publicly owned properties. SCDNR has also been conducting surveys for pine snakes and Southern hognose snakes in the coastal plain of SC over the last year. We have begun using the AHDriFT camera trap design outlined in Martin et.al. 2017 and have had success in detecting pine snakes at a number of sites.

2017 has been extremely busy and productive and we look forward to continuing this momentum through 2018.

**“Student Spotlight”** GTC wishes to highlight students who are actively involved in upland conservation projects within the gopher tortoise’s range in the GTC newsletter. The purpose of this feature is to encourage greater student participation in the organization and bring recognition to students and their projects. Projects pertaining to research, management, or policy will be considered. Please submit a brief description of the project and any findings to date. Submissions should be 500 words or less and may be accompanied by photographs. Please send to: cyndi@fghates.com
Louisiana Department of Wildlife and Fisheries (LDWF)-Louisiana Natural Heritage Program (LNHP) is continuing to work on re-surveying all known concentrated tortoise areas to assess the current status of existing populations and survey new areas to document new records on public and private lands. All historical tortoise records are also being examined to assess the status and distribution of isolated populations.

LNHP continues to reach out to private landowners interested in prescribed burning within the gopher tortoise range in Louisiana. Plans are in place for prescribed burns on various privately-owned lands that currently have gopher tortoises on site or are adjacent to properties with tortoises. LNHP is working closely with LDWF Wildlife Division staff on intensive gopher tortoise, bobwhite quail, and wild turkey habitat restoration efforts on Sandy Hollow Wildlife Management Area (WMA). Duston Duffie, a graduate student with Mississippi State University, is currently assessing gopher tortoise response and movement in an intensively managed upland pine landscape on private property in Washington parish in Louisiana.

LNHP has received nine waif tortoises during the past year. Four of these tortoises (all females) were released on the North tract of Sandy Hollow WMA in two separate release pens. One female waif tortoise was found completely blind and was placed in a permanent home. Another female required a rear leg amputation and once fully recovered, will be released in the spring of 2018. The remaining three waif tortoises (two males, one female) will be released in spring of 2018 pending favorable health assessments.

Several education and outreach events promoting gopher tortoise awareness and conservation took place during the past year including festivals and events with various school groups. In March and November of 2017, LDWF assisted with the Louisiana Master Naturalists of Greater Baton Rouge (LMNGBR) public education classroom and field workshops to educate participants on threatened and endangered species conservation, including the gopher tortoise. LNHP continues to work towards emphasizing the importance of not removing gopher tortoises from their natural habitat. LNHP received funding for a State Wildlife Grant to survey for rare herpetofauna statewide including rare snakes. Eight traps were constructed and will be installed on various private and public properties within the tortoise’s range in Louisiana.

Mississippi Status Overview

No major development threats surfaced this year in Mississippi (MS), but the long-term and widespread recruitment deficit at most tortoise colonies continues; the tortoise population is disproportionately comprised of old, smooth-shelled animals. Identification and mitigation of factors threatening this species in the Federally listed portion of its range remains a priority. A morphological condition that might correlate with one or more factors relevant to population vigor is the presence of a mid-plastral yellow spot, the presence of which indicates an underlying plastral fontanelle (there are often carapace fontanelles as well that are less easily detected in a living tortoise). The plastron is easily depressed with a fingertip at this spot (see Figure 1 on next page).

Jim Lee, Matt Hinderliter, Deborah Epperson, and other biologists who work or have worked with tortoises at Camp Shelby have observed this condition in just under half of the adult tortoises, but the condition is also frequently observed elsewhere in the state. The large female in Figure 1 is from Greene County, near Alabama. I have described this condition at the past three annual meetings as well as in previous newsletters, but to date have NOT received an estimate of the incidence of this condition outside Mississippi save for a few observations in Alabama (Jeff Goessling, pers. comm.). This could be a natural condition in a relatively high percentage of tortoises in the bluestem portion of the range of the species, but this seems doubtful given the increased vulnerability of such animals to predation.
Since turtle embryos obtain a significant portion of calcium from the eggshells themselves, there could be a link between the adult fontanelle condition, eggshell thickness, and hatching success, which is apparently much lower in Mississippi than elsewhere (see Camp Shelby report below). We would appreciate information on hatching rates seen elsewhere (in situ protected nests and in labs), the percentage of late-term embryonic mortality, and the frequency of cracked eggshells observed when freshly deposited clutches are excavated. EGGSHELL SAMPLES FROM ELSEWHERE IN THE RANGE (pre-incubation if from cracked, non-viable eggs, and post-hatching—ideally from monitored, protected nests in the field or in the lab) ARE REQUESTED. Contact Tom Mann at tom.mann@mmns.state.ms.us or Dr. Nicole Hodges at nicole.hodges@mmns.state.ms.us. We would also appreciate any information available on a possible relationship between calcium insufficiency/unavailability and burning regimes.

Tortoise Research

Head-starting Project at Camp Shelby—Jim Lee (The Nature Conservancy [TNC], Camp Shelby Tortoise Biologist)
Camp Shelby Field Office (CSFO), Camp Shelby Joint Forces Training Center

This is a continuation of the project begun at Camp Shelby by Matt Hinderliter to rear juvenile tortoises to a size at which they become less vulnerable to mortality from various predators as Camp Shelby has a long-term recruitment deficit.

In 2017, 40 tortoise nests were found at 19 sites on the Camp Shelby Joint Forces Training Center, Forrest and Perry counties, MS. Nests were excavated, and eggs (N=191) were transported to the lab for incubation (186 eggs incubated; 4 were found cracked/broken or predated upon discovery [N=1] and not incubated). Seventeen clutches containing 87 eggs were incubated at 31°C, 15 clutches containing 64 eggs were incubated at 28°C, and 8 clutches containing 35 eggs were incubated at 29.3°C. These incubation temperatures are believed, respectively, to produce females, males, or equal numbers of males and females. The average number of eggs per clutch was 4.8 (+1.91; range: 1-9) and the overall hatching success rate (excluding non-incubated eggs) of 51.1% (95 of 186 eggs), was generally lower than hatch success rates previously reported for lab incubated eggs in southern Mississippi (e.g., 58.8%, Noel et al. 2012; 59.2%, 64.3%, 42.1%, Lyman and Lee 2014, 2015, 2016, respectively). Unlike 2015, eggs incubated this year at higher temperatures had a lower hatching success (37.9% at 31°C, 57.1% at 29.3°C), than eggs incubated at a lower temperature (65.6%). Fifty-nine eggs manifested no
development, nine had partial development, 21 had complete development without hatching (!), and one died while hatching. The 95 hatchlings were placed into an indoor head-start facility where they will be raised at a constant temperature over the next two years (following the methods of Holbrook et al. 2015) prior to release.

Head-started tortoises released this year:

- Twenty-seven 2.5-year-old tortoises were released on 10 April 2017.
- Thirty individuals of three age classes (11 months, 1 year eleven months, 2 years 11 months [10 of each age class]) were released on 5 July 2017.
- Eighty-nine 2-year-old tortoises were released on 20 September 2017.

Each animal was scute notched or drilled and fitted with a floy tag. Additionally, individuals released on 5 July were outfitted with radio transmitters. Head-started 2-year-olds (or older individuals) were, on average, larger than wild 6-year-old tortoises.

"Yellow-spot" Research—Dr. Nicole Hodges (Coordinator, MS Natural Heritage Program)

Nicole will investigate possible environmental correlates of this condition, comparing blood levels of calcium and phosphorus (and calcium content of tortoise eggshells) to the concentrations of these elements in forage vegetation under different burning regimes and local soil. Her study will begin in March 2018.

The importance of fire season and deer competition on gopher tortoises—Dr. Marcus Lashley (Principal Investigator), Brandon Barton (Co-principal Investigator; Mississippi State University)

The interrelationship between different burn regimes, forage quality, and dietary overlap between gopher tortoises and white-tailed deer will be investigated, focusing on the competitive impact of the latter on tortoises, and the degree to which this may be a density-dependent impact.

Habitat usage and movement patterns on land managed primarily for timber production—Dr. Scott Rush (Mississippi State University)

Starting in 2018, tortoises will be tracked on Weyerhaeuser parcels in MS as well as in Louisiana.

Tortoise Surveys

Dr. Nicole Hodges (Mississippi Dept. of Wildlife, Fisheries, and Parks [MDWFP] and Mississippi Museum of Natural Science [MMNS]) organized multi-agency gopher tortoise burrow surveys on six large parcels of private property with a significant component of excessively well-drained sand.

Nicole also organized a multi-agency burrow survey at Dead Dog Bog following a May burn. Seventy-eight burrows were located, including some small juvenile burrows.

Tortoise Habitat Management

DeSoto Ranger District (DRD)—Ed Moody (Biologist)

- 24,673 acres prescribe burned
- 5,182 acres surveyed for tortoises on land slated for future timber sales
- 2,698 acres thinned
- 262 acres restored to longleaf

Collaborated with TNC on the Camp Shelby tortoise head-start and release program

Treated 4 acres to eradicate cogon grass

Partnered with the Land Trust of MS and the MDWFP for waif tortoise releases near Glen’s Pond

Continued next page...
MISSISSIPPI continued...

Tortoise Habitat Management continued

Chickasawhay Ranger District (CRD)—Jonathan Thomas (Wildlife Biologist)

Growing season burns: 6,218 acres
Dormant season burns: 10,928 acres
Thinned: 1,425 acres
Surveyed for gopher tortoises for future timber sales: 3,234 acres
Restored to longleaf pine: 74 acres

The U. S. Fish and Wildlife Service (USFWS) and the MDWFP/MMNS have worked collaboratively with the U. S. Forest Service (USFS) to select tortoise sites for burning during the summer months. A meeting with the USFS is planned for November to discuss the FY 2018 Burn Plan.

Camp Shelby—Melinda Lyman, Coordinator, TNC Office at Camp Shelby

A new strategy to more effectively control cogon grass is being tested at Camp Shelby. Infestations are treated and retreated in the same management units for three consecutive years to see if eradication is achieved. Herbicide rates follow those used in the published study supporting this approach and this is the second year of the study. During the first year, 978 cogon patches (76 acres) were treated. This year, 557 patches (18 acres) within those same management areas needed treatment. Additional areas not in the tested areas were also treated because the time required for re-treatments was reduced (due to the efficacy of year 1 treatment). In total, 874 patches (42.5 acres) were treated.

Natural Resources Conservation Service (NRCS)—Glynda Clardy, State Wildlife Biologist, Jackson, MS

The NRCS administers programs offering assistance to landowners interested in restoration and proper management of longleaf pine habitat, many acres of which will also include areas occupied by tortoises or that are potentially suitable for tortoises:

For FY 2017:

Environmental Quality Incentive Program:

- Longleaf Pine Initiative: 73 contracts, 6,782 acres
- Working Lands for Wildlife Initiative: 95 contracts, 17,633 acres

Mississippi Dept. of Wildlife, Fisheries, and Parks (MDWFP) —John Gruchy

The Fire on the Forty partnership with the Foundation for Mississippi Wildlife, Fisheries and Parks and the USFWS, which provides cost-share for prescribed burning on private lands, is entering its sixth year. Landowners in selected counties are reimbursed for up to 50% of costs for implementing and performing a prescribed burn. Within focal counties which also support tortoises for the 2016 funding cycle (2017 burning season), Fire on the Forty paid for 2,452 acres of burning on 38 tracts. The cost to the grant was $29,677 and the landowner cost was $72,763. Additionally, the partnership was responsible for another 92 acres of prescribed fire that was not reimbursed. This does not include the acres burned on the Mississippi State University-National Fish and Wildlife Foundation longleaf grant. Landowners must submit an application to be considered for this cost-share program. Applications are competitively ranked based on potential habitat benefits; priority sites will be selected for funding by the MDWFP. To download an application, visit www.mdwfp.com/longleaf. For more information regarding the Longleaf Pine Restoration Program, contact the MDWFP at 601-432-2199.
Managed areas with prescribed burns:
Marion County – 3,390 acres (~320 acres burned during the growing season)
Dead Dog Bog – (no acreage provided); MDWF, USFWS, and MDOT all participated in applying a May burn to Dead Dog Bog – a state owned property.

U.S. Fish and Wildlife Service - Ecological Services—Randy Browning, Biologist

866 acres restored to longleaf pine

139 acres of longleaf pine received prescribed fire and 1,259 acres of thinned loblolly and slash pine grasslands were burned through the Fire on the Forty Program

Approximately $135,000 was contributed to longleaf pine restoration and $17,475 was contributed to the Fire on the Forty Projects (not all acreage within the range of the tortoise).

Since 2001, 20,423 acres of longleaf have been re-established and over 24,000 acres of pine timberland has been enhanced through the Fire on the Forty Program.

USFWS Tortoise Recovery Activities—David Felder and Matt Hinderliter

USFWS and state biologists (Nicole Hodges, Tom Mann) are attempting to identify viable tortoise populations (MVPs) in MS, and to develop target conservation units within which we will attempt to conserve viable populations already present. We will also manage populations currently at smaller numbers so that the desired density and population size can be attained.

Nicole Hodges (MMNS) represented MS at the Conservation Targets workshop at the Joseph W. Jones Ecological Research Center at Ichauway in November 2017, when the USFWS and biologists from each state in the range of the tortoise will meet to determine conservation targets for the number and distribution of viable tortoise populations in each conservation unit throughout the range.

Relocations, Waifs

Six adult waif tortoises materialized in 2017: one each from Stone, Hancock, Pearl River, Clarke, Covington, and Harrison counties. Ten hatchlings from an unidentified donor in southern Harrison County were left at a veterinary clinic in Saucier. One of the hatchlings died; the remaining nine have been recruited into Jim Lee’s head-start program at Camp Shelby.

Jim Lee (TNC) and Kathy Shelton (MMNS/ MDWFP) released the adult waifs into 25 x 25 m enclosures at the Ward Bayou Wildlife Management Area, Jackson County (1 male), TNC’s Mike’s Pond property, Jackson County (1 male, 1 female), and on Land Trust Property, Harrison County (1 male, 1 female, 1 unknown).

Dr. James Askew and Missy Dubisson are again thanked for long-term services in care of waif tortoises and Kathy Shelton (MDWFP) is thanked for husbandry services for various waif tortoises in 2017.

The gopher tortoise (Gopherus polyphemus) is a State-designated Threatened species in Florida. To conserve the species and its habitat, the Florida Fish and Wildlife Conservation Commission (FWC) published its first Gopher Tortoise Management Plan (GTMP) in 2007. The GTMP was revised in 2012 and is intended to guide the continued conservation of the gopher tortoise in Florida through 2022. The plan places an emphasis on landowner incentives, habitat management, and maintaining the gopher tortoise as a keystone species through
FLORIDA continued...

commensal species conservation. The FWC continues to coordinate with the stakeholder Gopher Tortoise Technical Assistance Group (GTTAG) on gopher tortoise conservation issues. The continued participation of stakeholders is vital to the long-term conservation of the species.

Research

The FWC partnered with Dr. Anna Savage at the University of Central Florida on a study to assess the impacts of temporary exclusion of gopher tortoises from the Sabal Trail Natural Gas Pipeline project area in central Florida. This research is still in progress but preliminary analyses suggest relocated male tortoises are more likely to return to their original locations than females. A recently completed project conducted at the Kennedy Space Center was funded through Florida’s State Wildlife Grants Program. This project examined the use of corridors by gopher tortoises in response to sea level rise and identified barriers to these movements. The study found that roadsides may be used as corridors for retreat from sea level rise, and railroad tracks may be significant barriers to tortoise movement.

Other studies underway in Florida include monitoring the impact of the non-native Burmese python on gopher tortoise burrows in southwest Florida. The Conservancy of Southwest Florida and University of Florida are tracking female snakes and removing nest balls when found in gopher tortoise burrows. Using camera traps, researchers are also able to view behaviors when gopher tortoises and pythons interact. So far no direct predation has been documented; however, data show that pythons could have a negative effect on tortoise behavior. Additionally, through a collaboration with the University of Florida, a burrow in Marion County was found to be occupied by a spiny-tailed iguana and multiple burrows in Broward County had been taken over by green iguanas.

Research in southeast Florida continues at Abacoa Greenway under Dr. Jon Moore at Florida Atlantic University. Students are monitoring the prevalence of Upper Respiratory Tract Disease and adding to the 13 years of population data taken from the site. Other studies in Florida are studying presence of ranavirus in translocated gopher tortoises, patterns of recruitment in scrub communities, and forage preferences.

Education and Outreach

Efforts have been consistently made to engage Florida residents in gopher tortoise conservation. The FWC currently offers many opportunities for Florida residents to get involved and help conserve the gopher tortoise. These opportunities include submission of tortoise sightings in Florida, mortality data collection, waif tortoise (tortoises of unknown origin) transportation, silt fence installation, and conducting burrow surveys on donor sites for the humane relocation of tortoises associated with incidental take permits.

FWC is recruiting citizen scientists to assist in conservation efforts by submitting photos of their gopher tortoise sighting to FWC using the “Florida Gopher Tortoise” smartphone app (http://myfwc.com/wildlifehabitats/managed/gopher-tortoise/app/). The goal of this app is to increase public awareness of gopher tortoises and citizen participation in conservation at the local level. Citizens can use the app to learn more about the life history of the species, report potential wildlife violations, and test their gopher tortoise knowledge with a quiz. Citizens can view an interactive map online via computer or mobile device that displays where tortoises have been documented by citizen scientists in Florida. To date, FWC has received photos for over 1,934 gopher tortoise locations, 898 of which were submitted during 2016-17.

The mortality data collection program engages Florida residents in conservation efforts by asking citizens to notify FWC if they encounter a deceased or injured gopher tortoise. Mortality data is submitted to FWC via an online web form that may be accessed at https://public.myfwc.com/HSC/GopherTortoise/GTMortality.aspx, or via the Florida Gopher Tortoise smartphone app. These data help FWC determine potential gopher tortoise mortality “hotspots”
throughout the state. During 2016-17, 164 gopher tortoises were reported as sick or dead and vehicles were the leading cause of the mortality. Citizens that reported an injured or ill tortoise were provided with contact information for a nearby licensed wildlife rehabilitator to provide the tortoise with prompt medical attention.

The Incidental Take Permit (ITP) gopher tortoise volunteer relocation program mobilizes volunteers to conduct burrow surveys at development sites permitted for incidental take. During fiscal year 2016-17, FWC staff trained five new volunteers and utilized twelve existing volunteers for the ITP relocation program. FWC volunteers conducted gopher tortoise surveys on properties with active ITPs in Coral Gables (Lee County), Lecanto (Citrus County), and Grand Island (Lake County). A total of 96.5 acres were surveyed and 626 burrows were recorded across the three properties. Volunteers also assisted with the transport of 160 gopher tortoises from an ITP donor site in Land O'Lakes (Pasco County) to Eglin Air Force Base (AFB) in Okaloosa County. The use of volunteers helps reduce the cost of gopher tortoise relocation, recognizing that the developer has previously paid mitigation and is not required to relocate the tortoises under these formerly-issued permits. The Gopher Tortoise program has also utilized student interns from Florida State University since 2011 who help implement gopher tortoise conservation actions. Many of these actions may not have otherwise been accomplished with existing staff resources. This also benefits interns by providing professional experience in wildlife conservation and work in a government agency. Projects completed over the years by student interns are featured online at myfwc.com/wildlifehabitats/managed/gopher-tortoise/internship/. Gopher Tortoise Day outreach in 2017 resulted in the adoption of 16 resolutions proclaiming April 10th as Gopher Tortoise Day in counties and municipalities throughout Florida (gophertortoisedayfl.com).

The FWC frequently distributes fact sheets and brochures to increase knowledge of gopher tortoises in Florida. Approximately 19,800 gopher tortoise brochures and fact sheets have been distributed, including 7,617 entitled “A Guide to Living with Gopher Tortoises” that were distributed to local governments, schools, nature centers, and Florida residents. The poster “Got Gophers, Get Permits” is continuously distributed to planning councils, county and city building departments, and local permitting offices. More than 2,147 “Safe Roads for People and Tortoises” placards have been distributed and are available at Florida visitor centers, state and local parks, and highway rest stops. Over 1,080 children's publications have also been distributed. All publications are available at each of FWC's regional offices and electronic versions are available for download at myfwc.com/GopherTortoise.

The FWC and representatives to the Gopher Tortoise Council hosted and/or participated in 42 outreach events in FY 2016-17 including seven local government workshops, eight Gopher Tortoise Day Proclamation events, several county 4-H events, festivals including the Wakulla Wildlife Festival, St. Marks Stone Crab Festival, and Taloofa Fest, and a summer camp event for the Marion Therapeutic Riding Association in Marion County.

**Permitting**

Since implementation of the recipient site permit program in 2008 (a voluntary program in which landowners may use their lands with suitable habitat to receive gopher tortoises from development sites), 17,700 acres of gopher tortoise habitat have been protected through permanent conservation easements. Under these permits, private landowners can accept gopher tortoises relocated from development sites and assess a monetary charge to the developer for accepting the tortoises. In exchange, recipient site landowners agree to manage and protect the habitat for gopher tortoises in perpetuity. Currently, 38 recipient sites with an available capacity of 13,903 tortoises are permitted. During FY 2016-17, 6,779 tortoises were relocated under FWC-issued permits.

To humanely relocate tortoises from incidental take permitted development sites and restock tortoises on conservation lands where tortoise populations have been depleted, FWC established ITP recipient sites. In 2016-
The Tortoise Burrow

FLORIDA continued...

17, FWC partnered with Eglin AFB and the Department of Defense to approve three ITP recipient sites on Eglin AFB that each contain at least 250 acres of suitable tortoise habitat and can accept at least 250 adult gopher tortoises. Release of ITP site tortoises on Eglin AFB's recipient areas began in October 2016. More than 330 gopher tortoises were relocated to an ITP recipient site on Eglin AFB during 2016-17. An additional 150 tortoises have been relocated from incidental take development sites to other FWC-approved ITP recipient sites at Nokuse Plantation and Avalon Plantation. To address special situations that provide more flexibility and further the objectives of the GTMP, a Memorandum of Agreement between FWC, Nokuse Plantation, the St. Joe Company, the St. Joe Community Foundation, Inc., and the Humane Society of the United States was extended. The purpose of this Agreement is to set forth a structure for humane gopher tortoise relocations associated with FWC-issued ITPs. The amendment extended this Agreement for an additional three years. Outreach efforts to encourage incidental take permit holders to humanely relocate tortoises from development sites were completed this past year.

Population Restoration and Monitoring

To better understand gopher tortoise population distribution and monitor trends in Florida, five public conservation lands were surveyed in FY 2016-17 under a three-year contract with the Florida Natural Areas Inventory (FNAI). Two additional conservation lands, Platt Branch Wildlife and Environmental Area (WEA) and Branan Field WEA, were surveyed by Gopher Tortoise program staff between January and April 2017. Branan Field WEA was the smallest site and contained the highest population density (1.4 tortoises/acre), while the largest site, Kissimmee Prairie Preserve State Park, had the largest population estimate (4,778 tortoises). Of the seven conservation lands monitored during FY 2016-17, five sites met the criteria for a viable population (at least 250 adult tortoises, at least 0.16 tortoises per acre, and at least 250 contiguous acres of suitable gopher tortoise habitat). Future monitoring will focus on surveying additional public conservation lands to locate viable populations statewide, as well as locate populations that may become viable with increased management.

Disease

In 2015 the FWC encountered a large-scale mortality event at Lake Louisa State Park (Clermont, FL). Following the Procedure for Investigation of Large-Scale Gopher Tortoise Mortality Events, a survey of the site produced 91 gopher tortoise shells in an approximately 15-hectare area. Location data were recorded for all located shells, and the stage of shell disarticulation was determined using the stages identified by C. Kenneth Dodd (1995). Results were presented at the 37th Annual Gopher Tortoise Council Meeting in 2015 in Louisiana. In August 2016, an intensive trapping and blood collection effort was completed and 42 blood samples were sent to the University of Florida to test for \textit{M. agassizii} and \textit{M. testudineum}. Of those samples, 13 tested positive, 7 were suspect, and 22 tested negative for \textit{M. agassizii}. A manuscript is under review by the Journal of Wildlife Disease with the details of these findings.

Waif Tortoises

FWC continues its efforts to identify solutions for waif tortoises. Waifs are gopher tortoises that have been removed from the wild (either due to injury or unauthorized removal) and whose origin cannot be determined. One solution includes identifying willing landowners to care for waifs on their property, designating the land as a “waif tortoise recipient site.” One new waif site was established on a Palm Beach County-owned preserve with capacity for 100 tortoises. An existing waif recipient site in Polk County expanded its waif capacity by 220 tortoises. Twenty-seven waif gopher tortoises were released at permitted waif recipient sites in Florida last year. The FWC is also working with wildlife rehabilitators to place waifs at designated recipient sites or release them back to their origin, if known. Under a Memorandum of Agreement with the South Carolina Department of Natural Resources (SCDNR), there is an ongoing effort to restock depleted gopher tortoise populations on public lands in South

Continued next page...
Carolina through the FWC waif program. During 2016-17, 30 adult tortoises were relocated to Aiken Gopher Tortoise Heritage Preserve under SCDNR supervision; to date, 172 tortoises have been relocated to South Carolina from Florida. The goal of this Agreement is to provide 200 gopher tortoises to the Aiken Gopher Tortoise Heritage Preserve.

Incentives

FWC continues to work closely with public and non-profit organizations, as well as private landowners, to identify and provide incentives for gopher tortoise conservation on private lands. The FWC is also working with the Department of Defense (DoD), the U.S. Fish and Wildlife Service (USFWS), and other states within the range to develop a Gopher Tortoise Crediting System for military installations. The crediting system establishes the framework for evaluating and determining credit for DoD conservation actions and will be sent out for public comment soon. The intent of the crediting system is to provide military installations with predictability for gopher tortoise management in the case that the species becomes federally listed. Using this system, the DoD can work with state wildlife agency partners to acquire gopher tortoise habitat, determine where the best opportunities exist to perform conservation activities, and utilize those activities to offset the effects to gopher tortoises caused by current and future military activities.

Habitat management

During FY 2016-17, the Habitat Management Assistance Funding (HMAF) program provided $78,830 in funding to assist local governments with gopher tortoise habitat management activities on more than 330 acres of their conservation lands. The HMAF program now also offers a reimbursement for the installation of silt fencing intended for the soft release of gopher tortoises on public lands that have agreed to receive tortoises from previously-permitted ITP development sites. Some habitat management and improvement activities conducted through the HMAF program included fire line management, prescribed burns, selective tree removal, mowing, control of exotic and invasive plants via the utilization of herbicide applications, and the installation of more than 6,500 linear feet of silt fencing for the establishment of an ITP recipient site.

Law enforcement

To enhance the protection and conservation of gopher tortoises and their habitat statewide, Gopher Tortoise program staff conducts training for FWC Law Enforcement officer recruits. Over the past year, Gopher Tortoise program staff presented at three training events for the FWC Law Enforcement. This training will help FWC officers address wildlife complaints related to gopher tortoises in an effective and consistent manner. While working with law enforcement and FWC’s legal office, a field guide for conducting investigations of gopher tortoise incidents and violations was distributed to all FWC officers in Florida. The field guide is intended to aid the officers in responding to gopher tortoise violations.

Commensals

Partners including FWC, the Central Florida Zoo’s Orianne Center for Indigo Conservation (OCIC), Auburn University, and USFWS worked together to reintroduce the federally-threatened eastern indigo snake to The Nature Conservancy’s Apalachicola Bluffs and Ravines Preserve. Twelve progeny from captive raised eastern indigo snakes (8 males, 4 females) will be monitored on a 10-year commitment.

A pilot study for the Effects of Translocation on Gopher Frog Survival and Behavior project was completed in July 2017. FWC researcher, Traci Castellon, revised an initial study performed in July 2013-May 2014. Goals were to increase the translocation sample size and implement a new tracking belt that could fit smaller frogs. The preliminary conclusion indicates translocation may be possible on a case-by-case basis with well-defined criteria; a larger-scale study is possible but will be labor intensive.
Co-chairs
Will Dillman
Betsie Rothermel

Secretary
Rachel Smith

Membership Secretary
Eric Sievers

Treasurer
Don Stillwaugh

Newsletter Editor
Cyndi Gates

Website Manager
Jennifer Howze

Standing Committee Chairs

Nominating Committee
Deborah Burr

Public Information and Education Committee
Jess McGuire and Rachael Sulkers

Research Advisory Committee
Jeff Goessling

Upland Snake Conservation Initiative
Jennifer Howze

State Representatives

Alabama
Ericha Shelton-Nix

Florida
Deborah Burr

Georgia
Matt Stoddard

Louisiana
Keri Landry

Mississippi
Tom Mann

South Carolina
Will Dillman

Return Address:
Joseph W. Jones Ecological Research Center
3988 Jones Center Drive
Newton GA 39870

Directory of 2017 Gopher Tortoise Council Officers,
Committee Chairs, and State Representatives
Please view the GTC website (below) for contact information

http://www.gophertortoisecouncil.org

The Tortoise Burrow

The Tortoise Burrow is published in April, August, and December.
Deadlines for submission of announcements and articles are the
1st of the preceding month. Send materials to the editor:
Cyndi Gates
cyndi@fgates.com

Decisions concerning publication of submitted material rest with the editor
and co-chairs.

Reprint Policy: Articles, photographs
or opinions that appear in The
Tortoise Burrow may be reprinted
with the written consent of the editor
and GTC Co-chairs.

The GTC reserves the right to approve
editorial changes prior to reprinting
and requests that reprints credit The
Tortoise Burrow, Newsletter of the
Gopher Tortoise Council.

© Gopher Tortoise Council 2017