Volume 30, Number 4

Winter 2010

The Tortoise Burrow

Newsletter of The Gopher Tortoise Council

In This Issue:

Message From the Co-Chair — Dave Steen

On October 7-10 approximately 75 gopher tortoise aficionados converged on the Alabama 4-H Center in Columbiana, Alabama for our annual conference. Many individuals helped make this meeting a reality. First, I'd like to thank Don Stillwaugh for addressing various financial matters and helping to sort out the complexities of meeting registration. Steve Godley coordinated and moderated our Friday panel discussion in which participants conferred (sometimes vigorously) on potential ramifications of a federal listing for the gopher tortoise. John Jensen organized the silent auction, which brought in over $500 to support our grants program. Jess Gonynor, Sybil Glenos, and Sean Graham were on hand to assist with a myriad of tasks, from obtaining corkscrews to easels for our poster session. Jimmy and Sierra Stiles of the Hulsey Little River Trust provided (and kept iced) beverages for the Friday social. Thanks to all of the presenters, particularly our keynote speakers, Craig Guyer and Bruce Means, and panel participants, Hal Balbach, Rachael Sulkers, Tom Mann, John Jensen, Deborah Burr, and Larry Carlile. All were entertained during our Saturday social by an enthusiastic performance by Olin Howlin (occasionally featuring Craig Guyer). Thanks to Joan Berish for always being so nice and encouraging (and congratulations on winning the first annual GTC nut roaster raffle).

Juvenile tortoise at Walsingham Park, Largo, Fl. *Photo by Jim Layfield*

Thanks to all in attendance. This year's meeting location was far from traditional venues (even extending beyond the range of the tortoise itself and therefore, the range of many of the individuals that work on the species), resulting in a long commute for many. I hope the trade-off was that we attracted people who might not otherwise have come to our annual meeting and inspired some to become involved in our organization in the coming years. Thanks finally to the Alabama 4-H Center, who professionally and courteously handled all the idiosyncrasies of the GTC (and its members!).

Our meeting signaled the end of Christian Newman's tenure as GTC co-chair so on behalf of the GTC board and members we thank him for his service. I look forward to working with incoming co-chair Ron Concoby during the final year of my reign. We also welcome some new board members, discussed elsewhere in this issue.

Election Results

The GTC membership elected Ron Concoby (former GTC Secretary) as the Co-Chair for 2011-2013. Connie Henderson (Land Planning Group, FL) is replacing Ron as secretary. Eric Fann (SC Aquarium) will serve as the SC state rep.

Special thanks to our outgoing Co-Chair, Christian Newman (photo on left), for his service to the Council.

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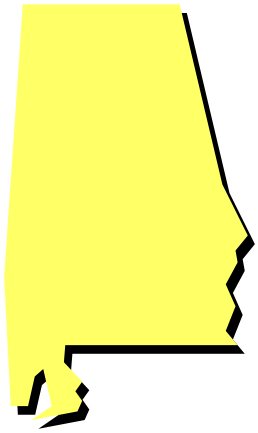

Alabama — Mark Bailey

Alabama is the only state in the range of the gopher tortoise to have both federally listed and non-listed populations, so tortoise-related activities in Mobile, Washington, and Choctaw counties (listed portion) are often different from those in the remainder of the species' range in the state.

Bruce Porter (USFWS) reports a relocation of about 70 tortoises during July-August from a newly permitted landfill in southern Washington County (listed portion of the range) to the South Alabama Utility conservation bank. All tortoises except juveniles were tested for URTD and all were negative. Bruce also began a tortoise population assessment on private lands, but this effort was curtailed by the oil spill in April.

Alabama Power Company is pursuing the possibility of a private conservation bank to mitigate their impacts from various projects.

The Longleaf Alliance continues to work with the American Forest Foundation and the World Resources Institute in developing a Sandhill/Gopher Tortoise Habitat Conservation Credit Trading System. They field tested their "Credit Calculator" on two properties, projected upfront endowment costs, and are now working with several ecosystem services market experts and financial folks to find funding support to reduce burden on both potential sellers and buyers of credits. In the absence of a listing decision, they are designing both voluntary and pre-compliance credit systems and seeking buy-in from USFWS and DOD.

Craig Guyer's lab is in year two of a three-year survey of gopher tortoise burrows on tortoise soils within the Geneva State Forest, Conecuh National Forest, and Perdido River Longleaf Hills Tract. They also hatched 51 baby indigo snakes this year which are being transferred to ZooAtlanta, where they will be raised for a year. In January they will take 30 juvenile snakes from ZooAtlanta (last year's cohort) and prepare them to be released at the Conecuh National Forest next spring. These will join the 17 snakes that were released in June 2010 as the first cohort of snakes that eventually may create a viable population of eastern indigo snakes on the Conecuh NF. The project is funded both through State Wildlife Grants and the Orianne Society, a private wildlife conservation organization.

The Alabama Chapter of Partners in Amphibian and Reptile Conservation (ALAPARC) held its second annual meeting at the Solon Dixon Forestry Education Center in November. A panel discussion on the implications of possible federal listing of the tortoise in the remainder of its range in Alabama was held, and there were posters on gopher frogs and flatwoods salamanders. Details at ALAPARC.org.

ALAPARC
Alabama Chapter of Partners in Amphibian and Reptile Conservation

For information on the Alabama Chapter of PARC visit:
www.alaparc.org

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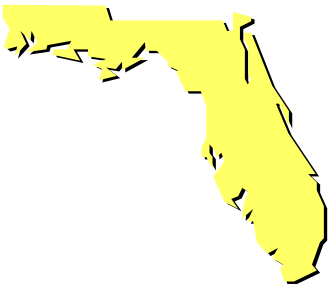
Florida

Joan Berish



Status: The gopher tortoise has been classified as Threatened in Florida since 2007, after having been a Species of Special Concern for nearly three decades. A management plan has guided tortoise conservation since 2007. The overall goal of the plan is to restore and maintain secure, viable populations of gopher tortoises throughout the species' current range in Florida. The four objectives under that goal include habitat management, habitat preservation, restocking gopher tortoises, and decreasing tortoise morality on development sites. The extensive conservation actions outlined in the plan fall under the following broad categories: permitting, local government coordination, law enforcement, habitat preservation and management, population and disease management, landowner incentives, monitoring and research, and public awareness.

Management Plan Implementation: Deborah Burr is the gopher tortoise management plan coordinator for the Florida Fish and Wildlife Conservation Commission (FWC), and is leading the charge to get this ambitious plan implemented. The FWC gopher tortoise standing team continues to meet monthly to ensure that management plan tasks are being implemented according to proposed timelines; a policy sub-team has been created to address the thornier issues. FWC staff also continues to coordinate with stakeholders through the Gopher Tortoise Technical Assistance Group (GTTAG). Former co-chair Boyd Blihovde currently represents GTC on the steering committee of this group. Noteworthy accomplishments related to tasks outlined in the management plan include the following:

Florida pine snake. *Photo by Aubrey Heupel.*

- Originally approved in April 2008, the Gopher Tortoise Permitting Guidelines were revised based on stakeholder and staff input, and were approved by FWC's Commission in June 2010.
- An on-line permitting system has reduced the use of paper and greatly increased efficiency for issuing tortoise relocation permits.
- Through the recipient site permit program, approximately 7,000 acres of private land have been protected via conservation easements and are currently being restocked with gopher tortoises.
- An interagency working group is drafting guidelines for restocking of tortoises onto public lands where populations have been depleted.
- FWC continues to work closely with public and non-profit organizations to identify and provide incentives for gopher tortoise conservation on private lands; FWC staff regularly participates in private landowner workshops to encourage management for wildlife.
- Geographic Information Systems (GIS) is being used to help identify and determine acreages of potential tortoise habitat throughout Florida.
- FWC is working with local government representatives to create ordinances and codes regarding development in gopher tortoise habitat; FWC is also providing funding for habitat management and is assisting with identification of potential recipient sites.

Gopher tortoise entering a burrow at Walsingham Park, Largo, FL. *Photo by Jim Layfield*

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Florida cont'd

- FWC is creating a training workshop and field manual for FWC Law Enforcement Officers. These tools will help FWC officers address wildlife complaints related to gopher tortoises in an effective and consistent manner statewide.
- A newly created Spanish version of the "Living with Gopher Tortoises" brochure was distributed to more than 500 non-profit, educational, and governmental organizations in Florida. FWC's "Got Gophers, Get Permits" poster is also being distributed to planning councils and local permitting offices throughout Florida.

Research: A number of gopher tortoise research projects are underway or have been recently completed in Florida, and this list is not all-inclusive:

- Matt Aresco is continuing his radio-telemetry study regarding gopher tortoise response to restocking at Nokuse Plantation in the Panhandle; Matt's preliminary findings supported the current FWC requirement of soft-release (temporary enclosures) for off-site relocations.
- Both The St. Joe Company and Disney's Animal Kingdom are embarking on gopher tortoise relocation studies that will help hone future relocation requirements.
- University of South Florida grad students Bill Hentges and Anna Hathaway (advisors: Henry Mushinsky and Earl McCoy) are undertaking a project regarding the effect of cattle on relocated gopher tortoises. Bill was a 2009 GTC research grant recipient. Bill is also looking at various tagging methods for tortoises and Anna is studying fecundity of tortoises in these pasture lands. Early findings are that curious cattle take a toll on the silt fencing used to temporarily retain relocated tortoises.
- University of Central Florida grad student Pam Pannozzo (advisor: Reed Noss) is conducting an evaluation of translocation as a gopher tortoise conservation tool by revisiting and surveying past recipient sites.
- University of Central Florida grad student Chris Catano (advisor: Jack Stout) is looking at gopher tortoise influences on vertebrate diversity in a central Florida state park.
- Florida Atlantic University researcher Jon Moore and his students are looking at burrow distribution and vegetation response following a mowing treatment.
- University of North Florida grad students Rachel Smith and Kristine Amatuli (advisor: Joe Butler) are studying the population dynamics of two northeast Florida gopher tortoise populations.
- University of Florida grad student Anthony Lau (advisor: Ken Dodd) is investigating gopher tortoise home range and movements in northeast Florida coastal dunes. Anthony was a 2009 GTC research grant recipient.
- Alex Pries (FWC) is looking at the response of gopher tortoises and vegetation to experimental coastal scrub management in northeast Florida.
- FWC land managers documented a positive tortoise response (increased burrow densities) over a 10-year period following removal of sand pine and restoration to longleaf pine on a state forest.
- Paul Moler and Joan Berish (FWC) and Colleen Sinclair-Winters (Towson University) collaborated to investigate the genetics of Panhandle gopher tortoise populations. Analyses of blood or tissue samples indicated minimal genetic diversity among six Panhandle populations and suggested that gene flow has occurred among these populations. However, when Panhandle samples were compared with those from an earlier study of Peninsula tortoises, genetic partitioning was evident between Panhandle and Peninsula populations.

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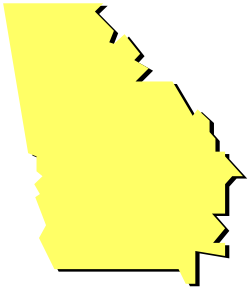
Georgia

Jessica Gonynor



Georgia DNR- John Jensen

Gopher Tortoise Surveys and Population Evaluation- We will use line transect distance sampling to derive gopher tortoise density and abundance on 18 sites throughout Georgia. We will also evaluate habitat suitability at the sites and assess their potential as augmentation sites for future relocation efforts.

Developing a long-term monitoring program for eastern indigo snake (Drymarchon couperi) occupancy in the lower Altamaha River Drainage- It is important to monitor the status of the eastern indigo snake within the Altamaha River Drainage so if population declines occur, they can be promptly identified. We therefore propose to develop a long-term program to monitor eastern indigo snake occupancy on suitable overwintering sites on both public and private lands throughout the Lower Altamaha River Drainage. The objective of the study is to estimate the proportion of suitable eastern indigo snake overwintering habitat that is occupied by snakes during the overwintering season (November-March) and to estimate the rate at which eastern indigo snake occupancy of these sites changes over time.

Ft. Gordon- Robert Drumm

Fort Gordon Army Installation, GA- Gopher tortoise surveys were conducted within a 7246 ha portion of the Gopher Tortoise Habitat Management Unit at Fort Gordon Army Installation from 28 December – 4 March 2010. Systematic surveys were conducted using a pseudo-circuit design and we used the cluster size estimation technique in Program Distance to calculate the number of occupied burrows, tortoise density, and a population estimate based on the number of tortoises observed in burrows. Tortoise density was 0.028 ± 0.007 tortoise/ha (CV= 23.91%, 95% CI = 0.0176-0.0445) and the estimated population size was 203 ± 45.8 tortoises (95% CI = 127-322).

University of Georgia/SCWDS/Jones Center- Jessica Gonynor

Jessica has conducted health assessments (including testing for URTD) on gopher tortoises from six sites in GA (140 tortoises). Jessica is a PhD candidate at the University of Georgia through Warnell School of Forestry of Natural Resources, in collaboration with the Southeastern Cooperative Wildlife Disease Study and the Jones Center.

SREL- Tracey Tuberville

Last winter (2010), SREL completed a burrow scoping survey at Kings Bay Submarine Base, GA. A final report is available and they are currently working on a manuscript. Her work also continues with Terry Norton on the St. Catherines gopher tortoise mark-recapture study. This fall they are focusing on following up on survivorship of direct-released and headstarted hatchlings of cohorts from 2005-2009.

The Orianne Society- Dirk J. Stevenson

Project Orianne captured and marked 70 gopher tortoises at their Orianne Indigo Snake Preserve this summer. A total of 64 adults (28 males, 36 females) and 6 juveniles were marked and released.

Jones Ecological Research Center- Lora Smith

Gopher tortoise surveys are being conducted on 18 sandhill sites in GA by a new JC/UGA grad student, Ashley Free. The study is part of the Multi-State Sandhill restoration project lead by Anna Farmer, Matt Elliott, and others. Also, the JC herp lab is radio-tracking gray rat snakes to examine habitat use. Dr. Terry Norton performed the implant surgeries in July and we presently have 4 snakes on air (1 mortality, likely due to predation).

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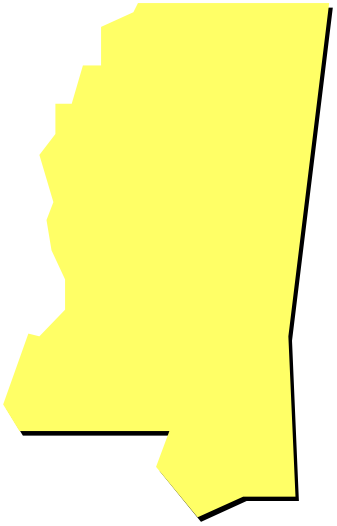
Louisiana — Beau Gregory

The Louisiana Division of Wildlife and Fisheries (LDWF) continued work on its federally funded ROW survey project. It is nearing completion with approximately 75% of ROWs with suitable soil surveyed (La. contains very little priority soil).

In 2011, the LDWF plans to utilize Section 6 funds to work on a gopher tortoise habitat improvement and burrow occupancy rate project. The primary objectives of this project will be to:

- Update existing records and potentially locate new burrows throughout range in Louisiana
- Identify important habitat areas based on existing records
- Work with landowners to improve habitat on private lands
- Inspect burrows with camera to determine rate of occupancy
- Attempt to address fire ant predation on selected sites

Louisiana had no translocations during 2010, however we relocated 4 waif tortoises (unknown origin) to the waif population located on state owned Sandy Hollow WMA.



Mississippi — Tom Mann

As documented in previous years, the preponderance of available evidence testifies to a continued decline of Mississippi's tortoise population, 23 years after its federal listing as threatened. With the exception of a handful of sites on the DeSoto National Forest (DNF) and on a few private tracts, most populations are comprised solely or primarily of polished-shelled old-timers, with little or no evidence of recent or regular recruitment. It is my opinion that we are farther from technical recovery than we were in 1987, and much land that could have been important in the recovery process has been permanently lost to other uses.

Particularly troubling to me is the continued shrinkage of the well-studied population at Camp Shelby (CS). I have long assigned much of the blame for the paucity of recruitment at CS to fire ants, and Deborah Epperson's dissertation results indicated that the impact of fire ant predation on small juvenile tortoises, in addition to other sources of mortality, is able to prevent effective recruitment and population growth. However, it is clear now that one or more other factors are suppressing nesting/hatching success, also. These could include reproductive senescence, inadequate mating frequency, inadequate number of mating partners, inbreeding depression, metabolic bone disease (characterized in part by lassitude in hatchlings and small juveniles), and/or other factors not yet articulated. Soil and weather variables play a role, too.

The CS site consists primarily of suitable soils, and supports pine savanna rather than sandhill habitat, and it is likely that historically most tortoises in MS were found in such habitat, and this in fact is likely still the case on the DNF and

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Mississippi cont'd

throughout southeastern MS, although surveys on such soils on DNF are not a requirement of the Recovery Plan. It is possible that the situation at CS may be representative of other tortoise populations on suitable rather than priority soils. Formal recovery is tied to burrow densities on priority soil units on public and private tracts. While it seems a sort of prudent triage, in the age of the fire ant, to circle recovery wagons on priority soil tracts, as evidence indicates fire ants less easily or thoroughly infest such sites, this must be regarded as a minimalist approach to recovery. It is time to re-examine and revamp the Gopher Tortoise Recovery Plan, and its modification should include consideration of the prospects for tortoise population restoration on longleaf pine savannah habitats on well-drained soils, and should evaluate among other management issues, the impact of indiscriminate application of broad-spectrum herbicides on private lands and utility corridors occupied by tortoises, particularly where there are no usable, untreated habitats nearby.

Tortoise Research

Headstarting Project--Matt Hinderliter (TNC, Camp Shelby Tortoise Biologist) Camp Shelby Field Office, Camp Shelby Joint Forces Training Center.

This is the fifth year of the head-starting project, the purpose of which is to provide a better understanding of the survivorship and behavior of the younger age classes, and to develop a tool which may be of future use in recovery of the tortoise population at CS. In May and June 2010, fifteen tortoise nests were located at burrow aprons, with a total of 80 eggs. The average clutch size this year (5.3 eggs/clutch) was higher than in previous years: 4.73 eggs/clutch in 2007 (N=15 nests); 4.52 eggs/clutch in 2008 (N=21 nests); and 4.53 eggs/clutch in 2009 (N=19 nests). The eggs were not excavated; once the first egg was observed the eggs were re-buried and covered with a nest protector for a period of 60 ± 5 days. At that time the eggs were excavated and placed in an incubator.

To date, 132 hatchling and juvenile gopher tortoises have been head-started and released (34 in 2010), and 16 are still being tracked. Reasons for not tracking include transmitters falling off or failing, mortality due to tortoises falling in stump holes, fire ant predation, mammal predation, avian predation, snake predation, and a wasting condition (verified as metabolic bone disease), the cause of which is currently being investigated. Fire ants continue to be a major cause of mortality, almost exclusively on hatchlings. This year, out of the 17 hatchlings released, 8 (47%) were depredated by fire ants; average lifespan of those 8 hatchlings was 9 nine days. Current residents of the head-start pen are: 2 four-year-olds, 10 three-year-olds, 15 two-year olds, 10 yearlings, and 19 hatchlings (56 total).

Assessment of Habitat Conditions and Corridor Development for Black Pine Snakes and Gopher Tortoises--Jeanne Jones (Project Leader and Principal Investigator); Daryl Jones; Clinton Smith; Nathan Stukey; Katherine Edwards (all of the MSU Dept. of Wildlife and Fisheries); James Lee (TNC, CS); and Lisa Yager (DeSoto Ranger District, U.S.D.A. Forest Service).

This study is designed to evaluate habitat and recommend approaches for private land enrollment in conservation programs to benefit the federally-threatened gopher tortoise, black pine snake (*Pituophis melanoleucus lodingi*), and selected grassland birds. Because habitat loss and fragmentation are primary challenges in recovery efforts for these species, identification of potential conservation corridors and restoration approaches on private lands are needed by agencies, such as NRCS and USFWS. To assist with this effort, this project will evaluate habitat conditions and occupancy of tortoises, black pine snakes, and grassland birds on priority and suitable soils in different forest types of different age classes, and will recommend methods for habitat enhancement on privately owned forest lands in south MS. Identification of private lands that could be enrolled in longleaf pine restoration or management to create conservation corridors for these species is also a project goal.

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Mississippi cont'd

Assay of Population Differences in Corticosterone Titer, and Assessment of the Impact of Maternal Transfer of Corticosterone to Hatchlings Via the Yolk-- Aaron Holbrook and Dr. Carl Qualls (USM).
To compare possible differences in blood titer of stress hormones between the tortoise population at CS and a control population on a private tract, and the possibility that maternal transfer of corticosterone to hatchlings via the yolk could have negative fitness consequences, blood samples from adult tortoises and egg samples were collected at two sites: 8 clutches (47 eggs) were collected from a private sandhill (Hillsdale Community) and 10 clutches (46 eggs) from the tortoise preserve (T44) at CS. Yolk samples were extracted from each egg within 24 h of oviposition for corticosterone analysis. All eggs were brought to the USM in Hattiesburg and incubated. Thirty-six eggs hatched (38%), 14/46 (30%) from T44 and 22/47 (47%) from Hillsdale. A blood sample was collected 24 h after hatching to obtain baseline corticosterone levels. Hatchlings were held in captivity to assess longer-term fitness (i.e., survivorship, growth, performance, behavior) and relate this to egg-yolk corticosterone levels. Hatching success was lower this year than in other years for laboratory incubated eggs. Protocols for egg collection, transportation, substrate, and other aspects of handling were the same as in prior years, so do not explain the reduced success in 2010. Hatching success was similar to prior years for clutches collected prior to June 1, but was only 14% (5 out of 35 hatched) for eggs collected after June 1. The pattern has not been noticed in previous years, but data from those years will be evaluated to determine if a similar pattern was present. Corticosterone assays and data collection from the hatchlings is ongoing.

Distribution and Habitat Utilization of the Gopher Tortoise Tick (*Amblyomma tuberculatum*) in Southern Mississippi-- Josh Ennen (USGS, Southwest Biological Science Center, c/o Northern Arizona University) and Carl Qualls (Dept. of Biological Sciences, USM)(Poster presented at 2010 GTC Annual Meeting).
The distribution of the gopher tortoise tick has been considered intrinsically linked to the distribution of their primary host, the gopher tortoise. However, *A. tuberculatum* is not present in all tortoise populations. There is a paucity of data on the ecology, habitat preferences, and distribution of *A. tuberculatum*. The goals of this study were to 1) assess the distribution of *A. tuberculatum* in south MS and 2) to determine which, if any, habitat parameters explain the distribution of *A. tuberculatum*. During 2006-2007, we examined 13 gopher tortoise populations in southern MS for *A. tuberculatum* and measured a suite of habitat parameters at each site. Only 23% of the gopher tortoise populations supported *A. tuberculatum* suggesting a more restricted distribution than its host. The results of our multivariate analyses identified several habitat variables (e.g., depth of sand and percent of sand in the topsoil and burrow apron) as being important in discriminating between sites with and without *A. tuberculatum*; *A.tuberculatum* was only found at sites with a mean sand depth of >100 cm and a mean percentage of topsoil and burrow apron sand composition > 94.0 and 92.4, respectively. Thus, environmental factors and not just its host's range appear to influence the distribution of *A. tuberculatum*.

Tortoise Genetic Population Structure—Daniel Gaillard (USM)
DNA samples were collected from AL tortoises, filling geographic gaps in prior sampling undertaken by Josh Ennen, and 16 samples were collected from a sandhill population at the Hillsdale Community in MS. Genetic analysis of these samples, and others from across the species' range, included mitochondrial DNA sequencing for new samples from AL and SC, which were missing from Josh Ennen's prior range-wide analyses. Daniel has also developed and optimized additional microsatellite loci (now 31 total) for gopher tortoises, which he is using to assay genotypes of individuals from sites throughout the southeast. Additionally, Daniel is using molecular techniques to characterize the microbial communities present in the guts (fecal samples) of wild-caught tortoises, as well as the juveniles in the common garden experiment at USM (referenced above).

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Mississippi cont'd

Evaluation of Tortoise Burrow Monitoring Video Dataset at Camp Shelby-- Tom Radzio (Drexel University) and David Delaney (U.S. ACOE).
Analysis of a large video dataset of tortoise and burrow associate activity at tortoise burrows at the Camp Shelby Joint Forces Training Center in MS is continuing. A number of manuscripts are being developed based on these data.

Surveys
Sandhill Surveys for Florida Harvester Ants, Tortoises, and Oldfield Mice-Tom Mann (Mississippi Museum of Natural Science).
In 2010, rare species surveys were undertaken on 12 sandhills in Wayne, Stone, and Pearl River Counties. Seven tortoise populations, 4 harvester ant populations, and one oldfield mouse population were discovered in Wayne County (tortoise recruitment was observed at 3 of the 4 ant sites); 3 tortoise populations were discovered in Stone County and 2 tortoise populations were discovered in Pearl River County.

Miscellaneous Conservation Initiatives
Safe Harbor Agreements and Candidate Conservation Agreements-Shauna Ginger (USFWS, Jackson, Mississippi Field Office).
Prior to her departure for a new position in Oregon, Shauna helped develop a Safe Harbor Agreement (SHA) protocol for gopher tortoises and red-cockaded woodpeckers and a Candidate Conservation Agreement (CCAA) for black pine snakes for private landowners in MS. The conservation goals of this Agreement are to protect, enhance, and expand habitat availability and allow for subsequent natural population expansion or, if feasible, reintroduction of the covered species to the area. Under this Agreement, participants may voluntarily enter into a Site Plan whereby they agree to undertake proactive management measures to enhance habitat for the gopher tortoise and BPS, and, if the participant desires and the Service determines that the species would benefit, the RCW in MS. In return, participants are relieved from any additional liability under the Act beyond that which exists at the time the Site Plan is signed under this agreement, Participants will assist with habitat conservation for a minimum of 10 years (encompassing generations of BPS, RCW and a significant portion of a gopher tortoise generation). The USFWS has received funding this year that can be used to cost share practices, which should be helpful in enticing landowners to sign up. This funding is aimed at MS but was written to include AL and LA if needed. Randy Browning (randy_browning@fws.gov) is the USFWS Partners biologist who will administer the program in MS and is grant officer over the funding.

There are several current programs that encourage conserving the tortoise on private land. The NRCS, in conjunction with the Service, launched a pilot Healthy Forests Reserve Program (HFRP) in 2006 in MS. HFRP offers cost share and/or easements to qualified landowners that conserve habitat specifically for gopher tortoise, black pine snakes, and the Federally endangered Mississippi gopher frog (*Rana sevosa*). As of 2009, over 3,000 acres have been enrolled into the program, with nearly half that amount in permanent conservation easements, and there is a backlog of participants waiting to qualify. Approximately 30 applicants with 2,000 acres remain on file in a deferred status, with an anticipated 20 more that will sign up in 2010. The program was opened to proposals from all states in 2009, thus the possibility of HFRP in other states within the range of the gopher tortoise and black pine snakes can contribute to habitat restoration for these species.

URTD Sampling-Shauna Ginger (USFWS, Jackson, MS Field Office).
USFWS assisted Kathy Shelton (Mississippi Dept. of Wildlife, Fisheries, and Parks) with securing a grant to assemble URTD sampling kits that will be used by tortoise rehabilitators, veterinarians, and state and federal biologists to test for URTD, and established an account with the University of Florida Veterinary School that will pay for URTD testing for "waif" tortoises and others not associated with relocation projects.

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Mississippi cont'd

Classification of Tortoise Soils-David Felder (USFWS, Jackson, MS Field Office).
David is working with NRCS and others to expand/improve the gopher tortoise soils classification system. The goal is to group NRCS soils by tortoise preference (priority, suitable, marginal, unsuitable). Once the soil "key" is developed, all soils in the southeast can be categorized under this system. David will be the general tortoise issue point of contact at the Jackson Field Office until Shauna's position is filled. His email is David_Felder@fws.gov. Shauna is thanked for her years of work in the trenches on behalf of tortoises.

Tortoise Habitat Management
DeSoto Ranger District (DRD)- Ed Moody (DRD biologist).
102,604 acres (27% of the DRD) received prescribed burns; 16,281 acres (16% of the prescribed burn area) of which were burned in the growing season; 4,870 acres midstory reduction with herbicide; 800 acres of cogongrass treated.

Chickasawhay Ranger District (CRD)- Andy Barwick.
Prescribed burning: 20% of the district (29,530 acres), 37% (10,873 acres) of which were burned early in the growing season. In July 2010 the decision Notice for the Mason Creek Ecosystem Restoration Project for Large Gopher Tortoise Populations on Suitable Soils was signed without objection. In August 2010 the district awarded IRTC Chick ER #4. This contract implemented 175 acres of pine and hardwood overstory thinning on priority soils and nearby suitable soils and 41 acres of cogongrass eradication to benefit gopher tortoise and RCW. Upon completion of this contract all of the district's priority soil areas should be in good shape and the CRD should be able to maintain these areas with prescribed fire.

Relocations
Six adult tortoises were moved to Westervelt's Tortoise Mitigation Bank in Greene County. Five tortoises were relocated (by Chuck Walters) from the site of a waste water treatment facility under construction in Jackson County and one in Lucedale. John McGuire, manager of the bank, plans on shifting the burning regime to growing season this year on the majority of bank.

Tom Mann and Jim Lee (TNC) moved two waif tortoises (one found in Pearl and one in Hattiesburg) to TNC's Old Fort Bayou Mitigation Bank, and Tom moved another pair of waif tortoises (one from Carriere and one from Hattiesburg) to the Hespen property in Pearl River County.

Tortoise Rehabilitation
Dr. James Askew and Dr. Karen Rushing are again thanked for long-term services in rehabilitative care of several tortoises injured on roads and of other waif tortoises in 2010.

Gopher tortoise burrow in Mozingo cemetery, Wayne County, MS. *Photo by T. Mann.*

Public Information and Education Update

Gopher Tortoise Literature

In the past couple of years, several books have come out about gopher tortoises, which I've found to be an exciting trend. Many of them go beyond just having a tortoise as a character in the story, they discuss the importance of fire, the role of the tortoise as a keystone species, relocation, etc. The Gopher Tortoise Council is not officially endorsing specific books, but authors from some of the books received editing assistance from GTC members. Here is a list of a few books that you might want to check out:

Winky the Get-Up-and-Go Gopher Tortoise by Carole Marsh:

> This is a play developed for elementary school students that has a tortoise (Winky) searching for his lost brother in some burrows and meeting many other wildlife species during the search.

How Gimble Gopher Tortoise Found a New Home by Kay Thorpe Bannon

> This is an illustrated children's story about a gopher tortoise (Gimble) who loses his home to development and must find a new home along with several other upland species.

At Home with the Gopher Tortoise by Madeleine Dunphy

> Unlike the first two, this is a natural history book that illustrates the numerous species that use tortoise burrows and the concept of the tortoise as a keystone species.

The Gopher Tortoise by Zander Srodes

> This is an activity book developed by a high school (now college) student that combines both educational facts with mazes, coloring pages and word finds. You can download this book off the GTC website.

Florida Scrub Coloring Book by Mark Deyrup and Kevina Vulinec

> This is another activity book that includes tortoises as well as many other plant and animal species found in scrub communities. This activity book can be downloaded from the Archbold Biological Station's website or purchased at their gift shop.

If you know of more books about gopher tortoises, please let me know!

2010 Donna J. Heinrich Environmental Education Grant Winners

We had numerous applicants for this year's Donna J. Heinrich Environmental Education Grants! The winners for 2010 are:

Zander Srodes: Gopher Tortoise Activity Book

> Zander created this activity book a few years ago and has given numerous talks to libraries, schools and special events to discuss gopher tortoise (and other turtle species) conservation. The grant funding will allow him to reprint 5,000 copes which he gives away to students and educators during his programs and by request. He has also provided the PDF for our website if you want to download a copy!

Alabama Coastal Foundation: Gulf Coast Bay Buddy Program

> This program is a presentation for students between grades K-3 in southern Alabama that discusses conservation of gopher tortoises and upland habitats as well as other species of wildlife. In addition to the program, an activity booklet and pre and post activities for the students are provided.

Keep an eye out for articles from our grant recipients in future issues of The Tortoise Burrow!

ANNOUNCEMENTS

Kingsnake Health Assessment Grant

At the GTC fall meeting, Sean Graham, Lora Smith and Terry Norton were awarded a $ 2200 grant from the GTC for their proposed research coordination network for health assessments of Eastern Kingsnakes. The Eastern Kingsnake--a significant component of the longleaf pine upland snake assemblage--has become a source of increasing conservation concern due to reports of population declines in Florida and South Carolina. However, robust populations still exist in parts of their range, setting up an opportunity to examine snakes in an attempt to determine the cause of the decline. Since the declines appear to defy immediate explanation, it is suspected that an emerging infectious disease may be the culprit. Therefore, Sean and his coauthors have set out to coordinate members of the GTC's Upland Snake Conservation Initiative (USCI) to collect recently dead on road kingsnakes throughout the southeast and ship them for evaluation by Dr. Terry Norton. Funds supplied by the GTC board will cover the cost of shipping these snakes by FedEx, since they must be shipped fresh and cannot be frozen. Individuals interested in assisting this project should contact Sean Graham (grahasp@auburn.edu) and indicate something about the kingsnake initiative in the subject field of the email. USCI members should expect more information on this effort, including protocols for shipping and access to a FedEx account number, on the USCI facebook page soon. Part of the funds will be used by Terry for analyses of both dead and live kingsnakes he will examine from an apparently healthy population at Ichauway. The proposed research will begin in earnest in spring 2011. Sean, Lora, and Terry hope to provide the first health assessment study of wild kingsnakes as an important baseline for future efforts to determine the cause of these enigmatic declines.

Volunteer opportunities in Florida State Parks- Aaron Wiles, AmeriCorps Volunteer Outreach Member for the Florida Park Service

The Florida Park Service is a multi-award winning system with 160 parks serving over 18 million visitors every year. With only a little over 1,000 employees, much of the Park Service's success is owed to the amazing community support of over 7,000 annual volunteers. Despite our great resources of volunteers, we can still use more, and we have countless ways in which people can help.

Volunteers can assist with the daily routines of the parks by greeting visitors, gardening, landscaping, removing trash, doing clerical work, completing animal and plant surveys, as well as many other activities. Volunteers can lead tours through the various museums and historic properties the park service maintains, can help with specialized tasks such as grant writing, coordinating special events, or giving educational talks and presentations. Groups can also volunteer to work on projects such as cleaning up beaches, removing exotic plants, or building playgrounds. Serving as a Campground Host or Resident Volunteer is yet another way one can give back to the community while enjoying all the parks have to offer.

We accept volunteers young and old and can even tailor the volunteer's service to their needs and interests; if you'd prefer being inside in the air conditioning, or if you'd like to work in a specific area such as resource management or visitor services, we can accommodate you.

So, if you or your organization would like to volunteer at one of Florida's beautiful state parks, or if you'd like more information about these opportunities, please feel free to contact me by e-mail (aaron.wiles@dep.state.fl.us).

ANNOUNCEMENTS

GEORGIA AMPHIBIAN MONITORING PROJECT

VOLUNTEERS NEEDED

Why:

Scientists around the world have become increasingly concerned about amphibian population declines. When long-term standardized monitoring data are collected from across the country, the local, regional and national patterns of amphibian stability or decline can be analyzed. If population declines are observed, we can focus our attention on the causes and work to reverse them.

Who:

The U. S. Geological Survey has developed an international study to investigate the distribution and relative abundance of amphibians in North America called the North American Amphibian Monitoring Program (NAAMP). Georgia DNR's Wildlife Resources Division is coordinating Frog Call Surveys as a part of this effort in Georgia.

How:

As a volunteer, you will be asked to drive a predetermined route (or routes), stopping for five minutes to listen and report frog species and their relative abundance at 10 established wetland stops. Three specific "windows" of listening periods are designated to account for the seasonal activity differences between various species, so each route must be run three times per year. Your information will be incorporated into the national database. For those of you that have participated in the Breeding Bird Survey, this is basically the frog version of that successful program.

We are seeking volunteers with demonstrable abilities to identify Georgia frogs by their calls (you must pass a quiz, 65 out of a possible 100, to participate). Additionally, because consistency is so important to this effort, we are seeking volunteers that can commit to do this at least three straight years, but ideally five or more.

If you are interested in participating, please e-mail John Jensen at:

john.jensen@gadnr.org

Additional Information:

To learn more about the national program please visit the following website: http://www.pwrc.usgs.gov/naamp/

ANNOUNCEMENTS

The Southeastern Partners in Amphibian and Reptile Conservation Meeting

"Reptile and Amphibian Conservation Southern Style"

Will be held on February 17 – 20, 2011

Lake Tiak O'Khata in Louisville, MS

For more information visit: http://www.uga.edu/separc/

NEW LITERATURE

Fujii, A., and M. R. J. Forstner. 2010. Genetic Variation and Population Structure of the Texas Tortoise, *Gopherus berlandieri* (Testudinidae), with Implications for Conservation, Chelonian Conservation and Biology 9 (1): 61-69.

Johnson, A. J., L. Wendland, T. M. Norton, B. Blezer, and E. R. Jacobsen. 2010. Development and use of an indirect enzyme-linked immunosorbent assay for detection of iridovirus exposure in gopher tortoises (*Gopherus polyphemus*) and eastern box turtles (*Terrapene carolina carolina*). Veterinary Microbiology 142 (3-4): 160-167

Stober, J.M., and L. L. Smith. 2010. Total counts versus line transects for estimating abundance of small gopher tortoise populations. Journal of Wildlife Management. 74(7): 1595-1600.

Styrsky, J.N., C. Guyer, H. Balbach, and A. Turkmen. 2010. The relationship between burrow abundance and area as a predictor of gopher tortoise population size. Herpetologica 66(4): 403-410.

Tuberville, T.D., T.M., Norton, B.J. Waffa, C. Hagen, T.C. Glenn. 2010. Mating system in a gopher tortoise population established through multiple translocations: Apparent advantage of prior residence. Biological Conservation (available on line 9 September 2010).

Willcox, E.V., and W. M. Giuliano. 2010. Seasonal effects of prescribed burning and roller chopping on saw palmetto in flatwoods. Forest Ecology and Management 259(8): 1580-1585.

****Members are encouraged to notify the newsletter editor (lora.smith@jonesctr.org) of new research publications relevant to North American tortoises****

Newsletter of The Gopher Tortoise Council

Directory of 2010 Gopher Tortoise Council Officers, Committee Chairs, and State Representatives
Please view the GTC website (below) for contact information

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3988 Jones Center Drive
Newton GA 39870

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The Tortoise Burrow

http://www.gophertortoisecouncil.org

The Tortoise Burrow is published in December, April and August. Deadlines for submission of announcements and articles are the 15th of the preceding month. Send materials to the editor:

Lora Smith

lora.smith@jonesctr.org

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