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- Danna Baxley discusses the findings from her black pine snake research
- Florida's interim tortoise policy is described
- Boyd Blihovde gives a stakeholder's perspective on the new tortoise policy

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Notes From a Co-Chair**J. M. Lockhart**

Greetings all! I eagerly anticipate this year's Council meeting in Milton, Florida on October 11-14, 2007. I'm sure Margaret will have a tremendous event planned for us. Please get your registrations in as soon as possible as, speaking from experience, this will ease her mind a lot about attendance and the program of events. In the twilight of my tenure as co-chair, I can say with confidence that I wish I had done much more in my role. My apologies, as I had no real idea what would be involved with having triplet babies. I have asked the nominations committee to assign me to whatever tasks they have difficulty in finding volunteer's for as I wish to remain actively involved in Gopher Tortoise Council affairs.



So much has happened in tortoise biology in the last few years. Two particular noteworthy events, 1) the proposal to list the eastern population is now before the Fish and Wildlife Service, and 2) the management plan created by the Florida Fish and Wildlife Conservation Commission is in the final stages of approval. Hopefully, through its several iterations, all stakeholder interests have been met and/or considered. I feel confident that this plan may serve as a model for tortoise management in others states in the future. I hope through the management plan and stakeholder process, we all may have learned that mediation is an important step in bringing together individuals with disparate points of view, all working towards a common goal...the well-being of the gopher tortoise.

Fall Meeting Reminder**M. Gunzburger**

I am pleased to announce the 29th Annual meeting of the Gopher Tortoise Council is scheduled for October 11-14, 2007 at Adventures Unlimited, a private retreat facility north of Milton, Florida, in the western Florida Panhandle. All meeting sessions, meals, and socials will be at this site, and lodging is available on-site in cabins and campsites.

The meeting will begin Thursday night with the business meeting dinner. Friday's special session "Real World Solutions for Conservation" will highlight the application of scientific research, unique approaches, and new partnerships to solving conservation challenges. On Saturday, the meeting program continues with contributed presentations on any aspect of the ecology and conservation of gopher tortoises and other components of the longleaf pine ecosystem. On Sunday several field trip opportunities will allow us to explore northwest Florida's beautiful natural areas. For details regarding presentations, registration or lodging, please visit our website www.gophertortoisecouncil.org.

CONTRIBUTED ARTICLES

Ecology and Conservation of the Black Pine Snake in Mississippi**D. Baxley and C. Qualls**

A black pine snake basks in Mississippi

“Capturing black pine snakes proved to be a difficult venture... we captured six..over the course of 4,088 trap days (1 per 688 trap days).”

Like the gopher tortoise and the eastern indigo snake, the black pine snake, *Pituophis melanoleucus lodingi*, is an imperiled specialist of the longleaf pine ecosystem. This large, slow-moving, diurnal snake moves long distances in pursuit of mammals and mates and has one of the most restricted ranges within its genus. Though the historic range of the black pine snake once spanned from extreme eastern Louisiana to extreme western Florida, the current range is much reduced. At present, black pine snakes are thought to be extirpated from Louisiana, and have not been reported west of the Pearl River for nearly forty years. These precipitous population declines are primarily a result of historic and continued conversion of longleaf pine savannas to other land-cover types (silvicultural lands, developed lands, fire-suppressed forests).

Other factors such as stump removal (a main refuge of these snakes), road mortality, and negative attitudes towards snakes (direct killing) have also played a role in the decline of this taxon. As a result of these factors, most remaining black pine snake populations are concentrated within DeSoto National Forest in Mississippi. Prior to 2004, all field research addressing questions of black pine snake ecology and natural history was conducted on a managed gopher tortoise reserve within DeSoto National Forest (Camp Shelby, an army national guard training facility). This site contains one of the few remaining black pine snake populations that appears to be thriving, and also represents the most continuous, un-fragmented area of suitable habitat within the range of the black pine snake in Mississippi.

To address questions of black pine snake ecology on a different scale, we conducted surveys for black pine snakes throughout Mississippi, fitted eight adult snakes (representing five different counties) with temperature-sensitive radio-transmitters, and tracked these snakes from April 2005 through December 2006. Our main objectives were to identify areas where black pine snake populations still persist; characterize the habitat where they occur, and contrast this to other areas; to determine whether home range sizes differ between degraded and quality habitat; and evaluate whether movements of these snakes are driven by prey dynamics and whether roads serve as barriers to movement.

Capturing black pine snakes proved to be a difficult venture. Between 2004 and 2006, we acquired twenty-three new black pine snake records. Using drift fences and funnel traps, we captured six black pine snakes over the course of 4,088 trap days (1 per 688 trap days). Five black pine snakes were hand-captured, and road cruising resulted in twelve new records (five live and seven DOR black pine snakes). For all methods and all years, May and June were the most productive months for detecting black pine snakes, presumably as a result of breeding activity.

After implanting radio-transmitters into suitably large adults, we tracked snakes twice per week in the spring and summer, and once per week during the fall and winter, for a total of 463 location events. Roads did not pose a barrier to movement; 18.6% of the time, black pine snakes crossed roads between location events, and two of eight black pine snakes fitted with radio-transmitters were found dead on paved roads. Nearly exclusively, black pine snakes used rotted pine stump holes for refuge, and were

D. Baxley was a 2005 winner of the J. Larry Landers Student Research Award, awarded annually by the GTC

found above ground only 29.6% of the time. Given the secretive nature of this snake, it is likely that individuals are above ground more frequently than telemetry studies suggest. In our study, snakes were seen fleeing into refugia 5.8% of the time, and snakes exhibited a sudden and marked decrease in body temperature (which we interpret as a result of moving below ground as we approached) during 13.8% of all location attempts. Five snakes tracked for more than 135 days exhibited large home ranges; estimates ranged from 92 to 396 hectares (.36 to 1.5 square miles), much larger than the 47.5 hectare average home range previously reported for black pine snakes on Camp Shelby¹.

With pine snakes exhibiting larger home ranges in our study than at Camp Shelby, we were curious if marginal prey dynamics in degraded habitat outside Camp Shelby necessitate longer distance movements of snakes thereby resulting in larger home ranges. To examine whether prey availability drives movement patterns of black pine snakes, we randomly placed grids of mammal traps in the core and the outer home range of four of our telemetered snakes, and compared density, biomass, and abundance of small mammals in the inner versus the outer home ranges of these snakes. We hypothesized that core home ranges of black pine snakes would have greater mammal densities and higher total biomass. Our mammal trapping resulted in 179 captures of 59 individuals representing six species. Our results indicated a greater abundance of hispid cotton rats in the core home ranges as well as higher total captures of hispid cotton rats and cotton mice in the core home ranges.



The home ranges of black pine snakes may be influenced by small mammal populations

Total small mammal biomass was higher in the core home range, though this difference was not statistically significant ($p = 0.059$). Since prey availability differs in core home ranges when compared to areas seldom used by black pine snakes, it follows that prey dynamics likely drive movement patterns of black pine snakes to some degree. Hispid cotton rats utilize *Andropogon* (bluestem) as a primary food source² and are associated with grassy, open habitats³; consequently, improving habitat quality through growing season burns and decreased stand densities may increase the densities of hispid cotton rats and other small mammals. Increasing mammal abundances via habitat improvement may reduce some non-breeding associated long distance movements of this snake, ultimately decreasing susceptibility to road mortality.

Since most remaining black pine snake populations persist on public land, the question remains: are we willing to invest time and money into a pro-active approach necessary to conserve and restore these populations? There is currently no protocol for monitoring herpetofauna within DeSoto National Forest; consequently, we've been surprised by the quiet and seemingly total disappearance of several longleaf pine specialists, such as *Pseudacris ornata* and *Heterodon simus*. For a secretive and rare snake that occurs at very low densities in most areas, a long-term collaborative effort between land managers and biologists is needed to identify where black pine snake populations persist and to attempt to estimate population sizes throughout the range, such that monitoring can ensue. Further efforts that we recommend as necessary to black pine snake restoration include: improving existing habitat on DeSoto

National Forest through the use of growing season burns and lowered planting densities, actively seeking and developing feasible private land conservation easements to create buffer areas adjacent to existing black pine snake populations, and preventing further fragmentation of the last continuous tracts of DeSoto National Forest (e.g., future DOT plans include dividing the Leaf River Wildlife Management Area from Camp Shelby with a four-lane highway).

We would like to acknowledge the Mississippi Department of Wildlife Fisheries and Parks, U.S. Fish and Wildlife Service, and the U.S. Forest Service for funding this project. In addition, this project would not have been possible without financial assistance from the Gopher Tortoise Council and Greater Cincinnati Herpetological Society during an era of post-Katrina budget cuts.

¹Duran, D.M. 1998. Radio-telemetric study of the black pine snake (*Pituophis melanoleucus lodingi*) on the Camp Shelby Training Site. MS Museum of Natural Science Technical Report # 59. 44 pp.

²Miller, J.H. and K.V. Miller. 1999. Forest Plants of the Southeast and Their Wildlife Uses. Southern Weed Science Society. Auburn, AL.

³Duran, C. M. 1994. Ecology of the hispid cotton rat (*Sigmodon hispidus*) with comments on the effects of artificial population manipulation on an eastern Texas small mammal community. Masters Thesis. Stephen F. Austin State Univ. Nacogdoches, TX 102 pp.

³Goertz, J. W. 1964. The influence of habitat quality upon density of cotton rat populations. *Ecological Monographs*, 34(4): 359-381.

³Kincaid, B. W. and G. N. Cameron. 1982. Effects of species removal on resource utilization in a Texas rodent community. *Journal of Mammalogy* 63(2): 229-235.



Danna Baxley is a graduate student at the University of Southern Mississippi in pursuit of her doctoral degree. In addition to her work concerning natural history and spatial ecology of black pine snakes, she is currently re-assessing the systematics of the eastern pinesnakes, monitoring the last remaining populations of Mississippi Gopher Frogs (*Rana sevosa*), and educating private landowners about the healthy forest reserve program (HFRP) in hopes of establishing positive attitudes towards conservation easements as well as examples of easement success within the range of black pine snakes. Although her interests in ecology and natural history are broad, Danna is particularly interested in herpetofaunal studies on a community level, upland snake ecology and conservation, and the little-known impacts of fragmentation, roads, and land-use practices upon reptiles and amphibians. She can be contacted at dannaster@yahoo.com



Carl Qualls is an Assistant Professor in Biological Sciences at the University of Southern Mississippi, currently involved in ecological monitoring and conservation-based research on several species (*Graptemys flavimaculata*, *G. oculifera*, *Gopherus polyphemus*, *Pituophis melanoleucus lodingi*, and *Rana sevosa*). His research background is diverse; he has studied life history evolution and the evolution of viviparity in Australian and North American lizards, phenotypic plasticity and the influence of incubation temperature on reptile eggs and neonates, and the ecology and management of the invasive Brown Treesnake on the tropical Pacific island of Guam. Carl's primary interests include reproductive biology and life history evolution, thermoregulation and thermal biology, phenotypic plasticity and embryonic development, ecological impacts of invasive species, and the application of research on these topics to the conservation of native amphibians and reptiles.

Abbe Gleicher was a 2006 recipient of the GTC Environmental Mini-Grant, she provided this update on her project at Carver Middle School in Florida

The Carver Preserve Project is well underway! The grant from the Gopher Tortoise Council was used to hire a biologist from C & N Environmental Consultants, Inc. A management plan was prepared and the first section of the preserve, where two burrows are located, was rid of the invasive exotic grass. The removal created an open canopy and easier access into the preserve. It also allows for the tortoises to possibly dig more burrows.

The biggest challenge we face is the removal of all or most of the numerous exotic invasive plant life in the area. The work needs to be done continuously, and most of the removal needs to be done either mechanically, chemically, or a combination of both, while being cognizant and protective of the gopher tortoise and its burrows.

In the classroom, I've continued to teach the students about the plight of the gopher tortoise and the issues surrounding this species with regard to development. During research, they access the Gopher Tortoise Council website and current news and editorial articles that enable them to understand why this critter and its habitat is so valuable and in need of protection.

This summer I've contacted two other organizations in hopes of obtaining grant awards. I'm also working with teachers in the higher grades who have my ex-students to continue the students' interest and education about the gopher tortoise, its listing, and development issues.



GENERAL ANNOUNCEMENTS AND PRESS RELEASES

SEPARC Habitat Management Workshop

We are proud to invite you to the inaugural SE PARC Habitat Management Guidelines Workshop. Through daily lectures, presentations and outdoor hands-on sessions in the field, we provide helpful information on how conservation-friendly management can benefit amphibians, reptiles and related biodiversity in a variety of southeastern habitat types. The workshop will be held at the Arnold Air Force Base located along Interstate 24 near Manchester and Tullahoma, halfway between Nashville and Chattanooga, TN. The award-winning conservation department at Arnold Air Force Base has graciously offered to provide state-of-the-art classroom facilities for this workshop. With over 39,000 acres of land, the Base is also an excellent field laboratory for first-hand experience with numerous habitat types and management regimes. Likewise, Tennessee Wildlife Resource Agency has generously granted access to spectacular examples additional habitat types on nearby state-owned Wildlife Management Areas. Finally, The Nature Conservancy of Tennessee will permit the class to visit one of the South's most breathtaking, biologically important and well-managed cave and karst complexes.

New Dates: Tuesday morning, October 17 through Thursday evening, October 18 (8am - 6pm) with possible evening field trips. Monday and Friday should be used as travel days.

Visit www.separc.org for more information, downloadable brochures, and registration details.

GENERAL ANNOUNCEMENTS AND PRESS RELEASES

Interim Tortoise Policy Requires Relocation and an End to Entombment

FWC Press Release

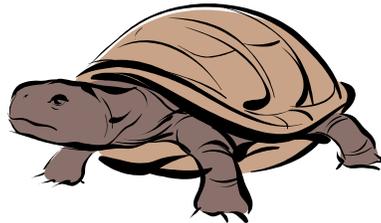
Florida Fish and Wildlife Conservation Commission (FWC) commissioners today (6/13/07) approved a policy that puts an end to gopher tortoise entombment and requires developers to relocate them.

Entombment occurs when construction activity fills in or covers a gopher tortoise burrow, preventing escape of tortoises and other animals that may be inside. FWC staff developed the new policy with the help of stakeholders and the public.

“We’ve listened to our stakeholders on this issue and have developed a policy we believe meets the needs of both Floridians and wildlife,” said Greg Holder, leader of FWC’s gopher tortoise management plan team. The interim policy will affect developers who apply for incidental take permits after July 30. The policy will also apply to anyone who has an incomplete incidental take permit application before that date.

The policy is an interim measure that will remain in effect until the FWC can begin a new permitting process detailed in the gopher tortoise management plan. The plan protects individual gopher tortoises by requiring developers to relocate them in a way that ensures their long-term survival. The plan protects gopher tortoise habitat through conservation easements, and proposes habitat management to make the number of tortoises that can live and reproduce in relocated areas as high as possible.

Commissioners reviewed the plan today at their meeting in Melbourne. The FWC will conduct a final public hearing at a future meeting. “In the meantime, the interim policy is needed to reduce gopher tortoise deaths on development sites while we progressively implement the permitting process proposed in the gopher tortoise management plan,” Holder said.



Interim Policy FAQ's

FWC Press Release

- Q. What is the gopher tortoise interim take permit policy?
- A. Under this policy all take permits issued for applications received by the FWC after July 30, 2007 and those previously received applications remaining incomplete after that date will include a provision that requires developers to relocate tortoises out of harm's way.
- Q. Will it end entombment?
- A. Yes, except in instances where incidental take permits were issued for complete applications received by the FWC by July 30, 2007. The conditions of those permits include incidental take and they are grandfathered in.
- Q. Which incidental take permits will be subject to the provision requiring tortoises be moved?
- A. Any take permit application received by the FWC after July 30, 2007 or any incidental take permit application received on or before July 30, 2007, which is deemed incomplete (see policy for application requirements).

Q. Why can't the FWC stop all incidental take of tortoises right now?

A. The FWC is committed to provide ample notice to those who will be impacted by such a change in the agency's gopher tortoise permitting process (land developers). The new policy requiring relocation is effective July 31, 2007

Q. Will the FWC do anything to encourage developers who currently have or will receive incidental take permits to relocate tortoises instead of entombing them?

A. In order to discourage entombment between now and when the interim policy takes effect, the FWC will encourage land developers who have obtained incidental take permits to voluntarily move tortoises out of harm's way to specified Relocation Parcels. The FWC will require the relocation parcels include suitable habitat but will expedite the application review process.

Q. I've heard incidental take permits never expire. Will the permits issued under the interim policy have an expiration date?

A. No. There is no time limit on relocating tortoises from development sites.

Q. What if a developer who applies for a take permit under the interim policy hasn't located a Relocation Parcel?

A. There are two options a developer/applicant has. One option is to work cooperatively with the FWC to locate an appropriate Relocation Parcel within 30 days. If a Relocation Parcel cannot be found, the FWC will make its lands available for relocation, but only if it has lands with appropriate habitat to support additional tortoises. When a site is located, the FWC will issue the take permit. The other option is for the developer/applicant to convert the take permit to a standard relocation permit. If the applicant already paid a mitigation contribution under the terms of the take permit, the FWC will refund it.

Q. Will developers still pay a mitigation contribution with the interim take permit?

A. Yes. During the interim period, the mitigation contributions and habitat protection requirements will remain consistent with the FWC's current incidental take permit process.

Q. Will a list of acceptable relocation sites be available?

A. Yes. The FWC will maintain a current list and description of available gopher tortoise recipient sites, including FWC lands, on its web site.

Q. Do Relocation Parcels receiving tortoises from incidental take permit sites have to meet the same size and habitat quality criteria as recipient sites receiving tortoises under standard tortoise relocation permits?

A. No. Proposed Relocation Parcels that have suitable vegetation, habitat quality and soils to support tortoises, but would not otherwise qualify as a recipient site for tortoises under standard tortoise relocation permits because of their size or habitat management, might be approved to receive tortoises from incidental take permit sites. These proposed parcels will be evaluated by the FWC and approved as Relocation Parcels if we determine that they provide suitable tortoise habitat.... [Continued on page 9](#)

Conservation Views

B. Blihovde

The views expressed in this column are solely those of the author and do not necessarily represent the position of the Gopher Tortoise Council. To respond to this column or submit your own view on a current conservation issue, please contact the editor.

I have been representing the Gopher Tortoise Council on the Florida Fish and Wildlife Commission's (FWCC) gopher tortoise stakeholder group since December 9th, 2005. The stakeholders were given a great opportunity to speak out to a government agency and we made some great strides.

The FWCC accepted the stakeholder suggested definition of a tortoise burrow and then added protection for it that made it easier to enforce burrow violations. The stakeholder group also expressed concern that many tortoises were being killed simply because they tested positive for an immune reaction to the mycoplasma bacteria that causes Upper Respiratory Tract Disease (URTD). The FWCC listened to these concerns and made a dramatic shift in their relocation policy by no longer requiring developers to test tortoises for URTD. This change will require that all tortoises be moved to a relocation recipient site whether they have URTD or not. Some stakeholders are still concerned about this policy, however most feel this is a positive long-term improvement for gopher tortoise conservation.

"There's no doubt that the entombment of tortoises was a nasty practice..."

The latest improvements in gopher tortoise conservation in Florida came on June 13th, 2007 when the FWCC approved the suggested interim entombment policy. In a press release the FWCC said, "Florida Fish and Wildlife Conservation Commission (FWC) commissioners today approved a policy that puts an end to gopher tortoise entombment and requires developers to relocate them. Entombment occurs when construction activity fills in or covers a gopher tortoise burrow, preventing escape of tortoises and other animals that may be inside. FWC staff developed the new policy with the help of stakeholders and the public." The Interim policy takes effect July 30th, 2007 and will remain in place until the new gopher tortoise management plan is finalized. The interim entombment policy is a great improvement for individual tortoises, but it will do very little for tortoise populations. It will help protect individuals from being inhumanely buried during development, but it will not protect the habitat or the commensals that live in the tortoise burrows. My problem with the philosophy behind the State's relocation policy is that it places very little emphasis on retaining the gopher tortoise habitat that the tortoises are being moved from.

There's no doubt that the entombment of tortoises was a nasty practice that placed no value on a rapidly declining species. However, the tortoise burrow may harbor similarly declining species and a developer is not required to relocate most of them (i.e. gopher frog, Florida mouse, and pine snake).

I am hopeful that at least some of these problems will be dealt with in the new gopher tortoise management plan that is expected to be approved in mid-September by the FWCC (they have already approved the draft plan). The draft plan has a great deal of language about protecting habitat and managing that habitat for tortoises, but (there's always a but!), the FWCC has so far not been willing to commit to spearheading the habitat protection and land management issues. In the draft management plan the FWCC places a great deal of responsibility on other agencies and conservation groups, as well as NGOs. To the FWCC's credit, they do not have enough staff to handle the burden of coordinating the habitat issue. The staff needs more funding and additional employees to help with the new tasks that will be outlined in the management plan.

The Gopher Tortoise Council should be satisfied that the management plan will improve protection for the gopher tortoise, but should be concerned that the plan does not ensure that enough habitat will be procured for protection or that current protected property will be adequately managed. GTC members can help by writing to the FWCC, or Florida elected officials urging them to provide much more funding for staff, land acquisition, and management. Currently, the FWCC gopher tortoise issue team is doing a fantastic job in partnering with the stakeholder group to correct any remaining flaws in the management plan. The final plan will likely be ready before the annual Gopher Tortoise Council meeting in October.



Boyd Blihovde has a Bachelors and Masters degree in Biology from the University of Central Florida, focusing on herpetology. At UCF Boyd worked for seven years in marine turtle research. Boyd studied the movements and behavior of the Florida gopher frog in Central Florida for his Masters research. Boyd worked for Seminole County, Florida for several years, and then was a Park Biologist at the Wekiva River Basin State Parks for 3 years. He then worked as a seasonal employee with the USFWS during college (at Carolina Sandhills NWR and White River NWRs), then received his current position as a Fire Management Specialist covering South Florida and the site manager for the Lake Wales Ridge National Wildlife Refuge.. He has been in that position for over 3 years.

Boyd can be reached at boydblihovde@msn.com



Interim Policy FAQ (continued from page 7)

- Q. Is there a minimum acreage for Relocation Parcels that receive tortoises from incidental take permit sites?
- A. A Relocation Parcel may not accept more than three additional tortoises for each acre of tortoise habitat unless otherwise approved by the Executive Director. Therefore, at least 1/3 acre of tortoise habitat should be provided for each tortoise relocated from an incidental permit site.
- Q. Will Relocation Parcels used during this interim policy time period be automatically “certified” as a recipient site under the proposed new permit process proposed in the draft Gopher Tortoise Management Plan?
- A. No. There is currently no certification process for relocation recipient sites. After the new permit process identified in the Management Plan is approved and certification criteria are adopted for recipient sites, landowners could apply for their lands to be certified. Properties that have not been previously permitted at their maximum tortoise carrying capacity and meet the adopted criteria would be eligible for future certification.

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