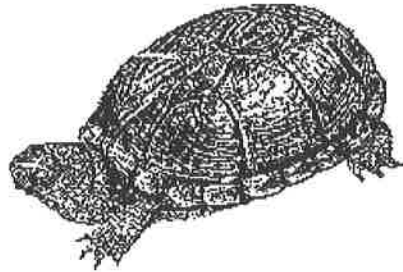


Eighth Annual
Tennessee Herpetology Conference

Joe Morgan University Center, Room 307

Austin Peay State University, Clarksville, Tennessee

31 October-2 November, 2002



Sponsored by

The Tennessee Herpetological Society

and

**The Center for Field Biology,
Austin Peay State University**

Eighth Annual Tennessee Herpetology Conference

**Joe Morgan University Center, Room, 307
Austin Peay State University, Clarksville, Tennessee
31 October-2 November, 2002**

Schedule of Events

Thursday Afternoon (31 October)

Pete Wyatt, Moderator

- 12:00-1:00 **Registration** (\$10.00; students waived)
- 1:00- 1:15 **Welcome** (APSU President Sherry Hoppe) **and Announcements**
- 1:15-2:15 **Keynote Address: Protecting our Hidden Biodiversity from People Who Can't See the Wetland for the Water.** J. Whitfield Gibbons, University of Georgia/ Savannah River Ecology Laboratory, Aiken, SC.
- 2:15-2:30 **Break**
- 2:30-2:50 **Funding and TWRA Plans.** Richard Kirk, Nongame/Endangered Species Program, Tennessee Wildlife Resources Agency
- 2:50-3:10 **Checklist of Tennessee's Amphibians and Reptiles.** Floyd Scott, Austin Peay State University
- 3:10-3:30 **Great Moments in Herping.** John Byrd, Clinton High School-CRESO
- 3:30-3:40 **Break**
- 3:40-4:00 **The Pet Herptile Industry in Tennessee.** Lisa Powers, Froghaven Farm
- 4:00-5:00 **General Membership Meeting/Elections**
- Supper** **(on your own)**
- 7:30-9:30 **AUCTION**

Friday (1 November)

Contributed Papers: Floyd Scott, Moderator

- 9:00-9:20 **Hatchie National Wildlife Refuge Malformed Anuran Survey.** April M. Hughes and Brian P. Butterfield. Freed-Hardeman University.
- 9:20-9:40 **A Tennessee Conundrum: The Gopher Frog Chronicles.** Brian T. Miller and John W. Lamb. Middle Tennessee State University and ACS Conservation, Arnold Air Force Base.
- 9:40-10:00 **A New Hellbender Record for Grainger County and Other Data on the Species in TWRA's Region IV.** Pete Wyatt, Tennessee Wildlife Resources Agency.
- 10:00-10:20 Break
- 10:20-10:40 **A Leaf-litter Bag Study of a Small Stream in Anderson County, Tennessee.** Nikki Vann, Heather Hedden, Ashley Jones, and Nathan Shaw; Clinton High School-CRESO.
- 10:40-11:00 **Activity of the Common Snapping Turtle, *Chelydra serpentina*, in a Seasonally Drying Wetland.** Tamara J. Berthel, Middle Tennessee State University.
- 11:00-11:20 **Ecology of the Northern Pine Snake (*Pituophis melanoleucus melanoleucus*) on Arnold Air Force Base, Tennessee.** Mark A. Bailey and Karan A. Bailey, Conservation Services Southeast, Gary Gerald, Middle Tennessee State University, and Jeff Holmes, The Nature Conservancy.
- 11:20-11:40 **Geographic Variation in Garter Snake (*Thamnophis sirtalis*) Antipredator Behavior.** John S. Placyk, Jr. and Gordon M. Burghardt, Department of Ecology & Evolutionary Biology, University of Tennessee, Knoxville.
- 11:40-1:00 **Lunch**
- 1:00-3:00 **Panel Discussion: "Research Needs for Tennessee's Reptiles and Amphibians."** Moderated by Andrew Barrass, Tennessee Department of Environment and Conservation, Department of Natural Heritage

Panel Members:

John Byrd, Clinton High School
Brian Butterfield, Freed-Hardman University
Ray Jordan, Tennessee Technological University
Richard Kirk, Tennessee Wildlife Resources Agency
Brian Miller, Middle Tennessee State University
Floyd Scott, Austin Peay State University
Pete Wyatt, Tennessee Wildlife Resources Agency

Saturday (2 November)

- 10:00-1:00 Herp Field Trip to Barnette Woods Natural Area, Montgomery County. Floyd Scott and Nathan Parker leaders.

Abstracts of Contributed Papers

Hatchie National Wildlife Refuge Malformed Anuran Survey. April M. Hughes and Brian P. Butterfield. Department of Biology, Freed-Hardeman University, Henderson, TN 38340.

In July 2000, the U.S. Fish and Wildlife Service began a study of all National Wildlife Refuges for the prevalence of malformed anurans. As a part of this study, a series of surveys were conducted on the Hatchie NWR, Brownsville, Tennessee, from May through August 2002. Eleven sites were selected and were sampled when metamorphs were found. Basic habitat type and GPS coordinates were recorded for each site. Sampling techniques, determined primarily by the size and stage of the targeted metamorphs, included dip netting and hand catching. Snout-vent length, tail length, Gosner stage, and the presence of abnormalities were ascertained for each metamorph collected. Malformed metamorphs were fixed in 90% ethanol and preserved in 70% ethanol. A total of seven complete samples of 50 or more individuals from six different sites were processed. These included five samples of *Bufo fowleri* and one sample of *Acris crepitans*. The frequencies of malformed individuals within samples ranged from 0% to 5.0%. Only one sample had a frequency of malformed individuals greater than 3.0%. The total frequency of malformations across all samples was 1.3%, indicating that the frequency of malformed individuals within the Hatchie NWR is within the natural rate expected by chance.

A Tennessee Conundrum: The Gopher Frog Chronicles. Brian T. Miller and John W. Lamb. Middle Tennessee State University, Murfreesboro, TN 37132 and ACS Conservation, Arnold Air Force Base, TN 37389.

The occurrence of a small isolated population of gopher frogs at Arnold Air Force Base (AAFB) in Coffee County Tennessee was inferred from the collection of a single specimen on 12 July 1993. Despite intensive searches, a second specimen was not forthcoming until almost four years later (1 March 1997). The collection of this latter specimen, found less than 1 km from the first specimen, rekindled interest in the distribution of the gopher frog in Tennessee and prompted an even more intensive and deliberate three year survey (1998 – 2000) for breeding sites. The distribution of the gopher frog was investigated by night time and automated aural surveys of calling males, daytime searches for egg masses, tadpole surveys, and establishment or maintenance of pit fall or funnel traps associated with drift fences. No evidence of gopher frog breeding activity was found by any of these survey methods, suggesting that if gopher frogs are extant at AAFB, then they are exceedingly rare, exceptionally secretive or breed in an as yet undiscovered or under-surveyed wetland. These musings can not be discounted as mere hopes; calls resembling those of gopher frogs, though not recorded, were heard by several individuals during the survey period. Calls of the elusive gopher frog continue to be reported, the last made during May of 2002 when three biologists reported four calls during a twenty minute period.

A New Hellbender Record for Grainger County and Other Data on the Species in TWRA's Region IV. Pete Wyatt, Tennessee Wildlife Resources Agency, Region IV.

The Hellbender (*Cryptobranchus alleganiensis*) is an important nongame species; however, it is believed that populations have declined or been eliminated in many areas throughout the eastern United States. Dams and other impoundments which limit stream flow, sedimentation, water pollution, and over collecting may be contributing factors to these declines. The lack of new distributional records published in *Herpetological Review* during the period 1995-2000 suggests that relatively few occurrences remain undiscovered. Most maps in state amphibian and reptile books do not distinguish between extant and historical occurrences. Redmond and Scott (1996) mapped more than 50 locations in Tennessee. The data presented in this report will describe a new county record and other information on extant populations in Tennessee.

A Leaf-litter Bag Study of a Small Stream in Anderson County, Tennessee. Nikki Vann, Heather Hedden, Ashley Jones, and Nathan Shaw; Clinton High School –CRESO, Clinton, Tennessee.

We used leaf-litter bags to capture a total of 910 salamanders from pool and riffle habitats in a first order, spring fed stream located at the University of Tennessee Arboretum in Anderson County, TN. Of the total captures, 177 were adults, 714 were larva, and 19 were undetermined. The most common species was *Desmognathus fuscus*, followed by *Eurycea bislineata* and *Pseudotriton ruber*. Adult *D. fuscus* favored pools, but the larvae showed no significant difference between the two habitats. Analysis of *E. bislineata* captures showed the reverse of *D. fuscus*, while *P. ruber* larvae were mostly found in pools. *Eurycea bislineata* and *P. ruber* were mainly found in the upper reach of the stream close to the spring head. *Desmognathus fuscus* was most common in the lower reach which was spared from tornado damage in 1993 and thus represents a more complex vegetation structure than the upper sections of the stream which have a fairly thick monotypic vegetation layer characterized by a high percentage of exotics, especially privet.

Activity of the Common Snapping Turtle, *Chelydra serpentina*, in a Seasonally Drying Wetland. Tamara J. Berthel, Middle Tennessee State University, Murfreesboro, TN 37132.

Turtles are long-lived vertebrates that have a high tolerance of harsh environmental conditions, which enables them to survive in many types of habitats. Although common snapping turtles are a well studied species, relatively little is known about how they cope with drying habitats. Seasonal activity patterns of sixteen common snapping turtles (*Chelydra serpentina*) were investigated from June to September 2001 and April to October 2002 at Sinking Pond, Coffee County, Tennessee using radio-telemetry techniques. Hydrographs of Sinking Pond are characterized by abrupt seasonal rises and falls with water depths ranging from 0.0 m in the summer and autumn to 3.5 m in the winter and spring. Seasonal filling of Sinking Pond is variable from year to year, but usually begins in December or January.

Although Sinking Pond covers 108 ha, the snapping turtles remained concentrated in and around the great blue heron rookery while there were chicks in the nests. Turtles began to dig down into the leaf litter of the pond basin as water levels began to decrease in mid-July. Rather than migrating to other bodies of water, the turtles remained buried in the basin, in a state of estivation, after the pond was completely desiccated.

Turtles remained buried in their initial estivation sites for at least two weeks. Radio tagged turtles began to move from their original estivation chambers to new ones with subsequent rains during August. New estivation sites remained within the pond basin, but were dug at higher elevations and away from the deep central region of the pond.

When water levels begin to rise in December or January, the ambient temperature is too cold for the turtles to become active. Therefore, the turtles are actively foraging from March until July, allowing five months or less for feeding and fat storage. Individuals in this population must consume enough energy in a relatively short period of time to produce eggs and store lipids. The novel life style of snapping turtles inhabiting Sinking Pond must be presumed to have an impact on growth and reproduction not experienced by snapping turtles that live in permanent bodies of water or that migrate in response to drying habitats.

Ecology of the Northern Pine Snake (*Pituophis melanoleucus melanoleucus*) on Arnold Air Force Base, Tennessee. Mark A. Bailey and Karan A. Bailey, Conservation Services Southeast, Gary Gerald, Middle Tennessee State University, and Jeff Holmes, The Nature Conservancy.

Habitat use and home range was studied in five male and three female northern pine snakes (*Pituophis melanoleucus melanoleucus*) that were radio-tracked from April to December 2001 at Arnold Air Force Base (AFB) in Coffee and Franklin counties in Tennessee. The eight snakes were located a total of 988 times at 354 positions. Snakes were most active from May through July. Surface activity was documented during virtually all times of day between dawn and dusk, but snakes spent the majority of their time underground or in abandoned building foundations. The tracked snakes selected open cleared or fire-maintained areas dominated by herbaceous and shrubby vegetation. Habitats with closed canopies such as pine and deciduous forests and little herbaceous groundcover were avoided. Snakes significantly preferred areas with greater than 50% herbaceous substrates and avoided substrates composed of leaf/straw litter. Snakes preferred areas with less than 25% canopy cover and avoided areas with greater than 75% canopy cover. Mean minimum convex polygon home range for six snakes tracked at least seven months was 113.4 hectares. Home ranges overlapped considerably with core areas of activity being shared by multiple snakes.

Northern pine snakes prefer areas with a low frequency of human disturbance, but may benefit from some disturbances that produce increased shelter and early successional plant communities. Nearly 25% of the locations recorded were in building foundations and many other locations were recorded in recent clear-cuts or maintained open areas. Northern pine snake preferences for old structures and early successional vegetation have several management implications.

Conservation strategies should emphasize periodic burning to maintain openness, which will enhance pine snake habitat by increasing rodent and ground-nesting bird densities. The snakes would also benefit from harvesting mature pine stands if stumps are left to serve as future

den sites. In addition to maintaining open areas, retention of the remnant building foundations may be important to the survival of this local population. Finally, the removal of non-native pine plantations and restoration of the native fire-maintained oak barrens on Arnold AFB would probably benefit northern pine snakes and other native species.

Geographic Variation in Garter Snake (*Thamnophis sirtalis*) Antipredator Behavior. John S. Placyk, Jr. and Gordon M. Burghardt, Department of Ecology & Evolutionary Biology, University of Tennessee, Knoxville.

The garter snake (*Thamnophis sirtalis*) is the most widespread snake in North America, occurring in nearly every natural habitat found throughout its range. The success of *T. sirtalis* may be attributed, in part, to its ability to behaviorally 'adapt' to different habitats. Our study focuses on the influence of predator pressures on antipredator behavior of several different populations of *T. sirtalis*. Our goals were to determine the effects of predator pressures on antipredator behavior, as few studies have fully explored geographic variation in defensive behavior. Test subjects were from four populations on three different islands in the Beaver Archipelago of Lake Michigan and one population from the Lower Peninsula of Michigan. Predator surveys conducted during the study period and historical records indicate that predator composition varies significantly between populations. We therefore hypothesized that variation in antipredator behavior between populations would be visible. Antipredator behavior of adult and neonate snakes were tested using a standardized antipredator behavioral test and by testing snakes for their response to ophiophagous snake chemical cues. Results of this preliminary study indicate that predator pressures have a significant influence on the antipredator behaviors displayed by individuals from each population and that these behaviors may have a strong genetic component.