

Alabama
Partners in Amphibian and Reptile Conservation
2012 Meeting Program

Dauphin Island Sea Lab, Dauphin Island, AL



About Our Meeting

Welcome to the fourth annual meeting of the Alabama Chapter of Partners in Amphibian and Reptile Conservation (ALAPARC) at the Dauphin Island Sea Lab, Dauphin Island, Alabama. Maps of the Sea Lab are provided at the back of this program. All talks will occur in Galathea Hall and all meals will be served in the Cafe. The poster session and socials will also occur in Galathea Hall.

Dauphin Island Sea Lab

Accommodations

Upon arrival, you can go to your dorm room which was previously assigned to you. All room assignments will be in the Challenger dormitory. The rooms will all be unlocked prior to arrival. Please leave the doors unlocked when you leave the DISL. If needed the key code to enter the building is: 0213 1964. Use the campus map (provided at the back of this program) to locate the different buildings.

There is NO bedding or toiletries provided by the DISL. You must provide your own bed linens or sleeping bag, pillow, towels, and toiletries.

Meals

All meals will be served in the Cafe. Try to make it to the Cafe in a timely manner at the assigned times.

Internet Access

There is no wireless internet access at the DISL. We also do not have access to the campus computer lab.

Sustainability

Please consider bringing your own coffee mugs and beer steins to our meeting so that use of disposable cups will be minimized. Containers for recycling aluminum cans are located throughout the campus. We will also be recycling or reusing any glass bottles.

SCHEDULE

Friday September 28th, 2011

Time	Event/Title	Presenter
1:30	Herp Outing to Cedar Point Marsh	Taylor Roberge
4:30	Return from Herp Outing	
5:30	<i>Dinner</i>	
6:15	Introduction	
6:20	History of the Kemp's Ridley Sea Turtle in the Gulf of Mexico: The Biology and Politics of Saving an Endangered Species	Thane Wibbels
6:45	Turtles, turtles everywhere: The IMMS' response to the high number of incidental captures of sea turtles at Mississippi fishing piers	Andy Coleman
7:00	Evaluation of the movements of adult female Diamondback Terrapins in the salt marshes of Heron Bay, Alabama	Taylor Roberge
7:15	Management solutions to maintain sustainable alligator hunting in Lake Eufaula, AL.	Chris Murray
7:30	Education/outreach and its impacts on herpetofaunal conservation in Alabama	Jimmy Stiles
8:00	Poster Session/Social	

Saturday September 29th, 2011

Time	Event/Title	Presenter
7:30	<i>Breakfast</i>	
9:00	Herp Outing on Dauphin Island	Jimmy Stiles
11:30	<i>Lunch</i> will be a sack lunch out in the field	
2:30	Return from Herp Outing	
4:00	Get ready for name changes: emerging taxonomic issues in Alabama's herpetofauna	Craig Guyer
4:15	Good news at last: conservation status of the seepage salamander (<i>Desmognathus aeneus</i>)	Sean Graham
4:30	Road - kill survey of Alabama red - bellied turtles on the Mobile Bay Causeway - XI	David Nelson

4:45	Canine detection as a potential tool for python management in Florida	Melissa Miller
5:00	The Alabama River Frog Initiative: Recent success (heck yeah!) and a call to arms	Brian Folt
5:30	<i>Dinner</i>	
6:30	Opening Fire-Suppressed Forest Canopies: Effect on the Canebrake Rattlesnake, <i>Crotalus horridus</i>	Scott Goetz
6:45	Survival under pressure: adaptive responses of the Eastern Fence Lizard (<i>Sceloporus undulatus</i>) to invasive fire ants (<i>Solenopsis invicta</i>)	Chris Thawley
7:00	Monitoring the Reintroduction of Eastern Indigo Snakes into Alabama: Survival and Home Range	Jimmy Stiles
7:15	The distribution and status of the Alligator Snapping Turtle (<i>Macrochelys temminckii</i>) in Alabama	Brian Folt
7:30	Thinking Outside the Box: Recycling Materials for Herpetofaunal Research	Andrew Cantrell
7:45	The impacts of invaders: Basal and acute stress profiles of native lizards (<i>Sceloporus undulatus</i>) threatened by invasive ants	Sean Graham
8:00	Social	

Sunday September 30th, 2011

Time	Event/Title
7:30	<i>Breakfast</i>

SCHEDULE DETAIL

FRIDAY

1:30 Herp Outing to Cedar Point Marsh

5:30 Dinner

6:15 Introduction

6:20

Thane Wibbels (twibbels@uab.edu), University of Alabama at Birmingham. *History of the Kemp's Ridley Sea Turtle in the Gulf of Mexico: The Biology and Politics of Saving an Endangered Species.*

The Kemp's ridley sea turtle is native to the Gulf of Mexico and Atlantic Coast of the U.S. Historically it was one of the most mysterious animals in North America since it was relatively abundant in the Gulf of Mexico but its nesting beach was unknown to the

scientific community until the early 1960's. This species came close to extinction by the mid 1980's and has been the subject of intense politics and an extensive conservation program for several decades. Its history is an example of the problems and solutions associated with preventing the extinction of an endangered species. Due to the development and implementation of an effective management strategy, the Kemp's ridley is now on the road to recovery.

6:45

Andy Coleman (acoleman@imms.org), Institute for Marine Mammal Studies, Gulfport, MS. *Turtles, turtles everywhere: The IMMS' response to the high number of incidental captures of sea turtles at Mississippi fishing piers.*

Abnormally high numbers of sea turtles, particularly immature Kemp's ridley (*Lepidochelys kempii*) sea turtles, were incidentally captured by recreational fishermen at fishing piers in the three coastal counties of Mississippi. Almost 200 captures were reported in 2012, whereas approximately 30-40 captures were reported in both 2010 and 2011. The turtles were transported to the Institute for Marine Mammal Studies where they received care and rehabilitation. Straight-line carapace lengths ranged from approximately 21 cm to 48 cm. Turtles were grouped by capture date and pier to examine temporal and location trends. Additionally, hook sizes and types were measured and analyzed for any potential influences on incidental captures. Feces were passively collected from rehabbed turtles for the first ten days to examine local dietary preferences. Several of the turtles were fitted with satellite transmitters, and the observed movements will be discussed. The north central Gulf of Mexico has been previously identified as an important developmental habitat for the Kemp's ridley sea turtle; however, this region has been historically understudied. The need for better understanding this critically endangered species' abundance is further underscored because it has been recently experiencing a population recovery due to conservation efforts on nesting beaches, foraging grounds, and migratory corridors. The substantial increase in incidental captures in 2012 could be due to a number of factors including increased awareness and population recovery. However, the possibility of degraded natural habitat driving the turtles into close proximity to the fishing piers cannot be discounted and needs to be further explored.

7:00

Taylor Roberge (troberge@uab.edu), **Thane Wibbels**, **Ken Marion**, University of Alabama at Birmingham, and **David Nelson**, University of South Alabama. *Evaluation of the movements of adult female Diamondback Terrapins in the salt marshes of Heron Bay, Alabama.*

The diamondback terrapin, *Malaclemys terrapin*, was once an abundant species in the salt marshes of Alabama. Further, it was an important economic resource, and Alabama was home to one of the largest terrapin farms in the United States. A variety of threats have impacted this species and resulted in drastic declines over the past century. The diamondback terrapin is currently considered a "priority one species of highest conservation concern" in Alabama. Surveys during recent years indicate that the

diamondback terrapin is currently represented by small aggregations in specific salt marshes along the Alabama coast. The current study evaluates the movements of adult female terrapins in the largest known aggregation in Alabama (i.e. Cedar Point Marsh). A total of 28 adult females were fitted with radio transmitters during the 2010, 2011, and 2012 nesting seasons and their movements subsequently monitored. The transmitters had a maximum range of approximately 1.0 km and a battery life of approximately one year. The results indicate that many of the females have relatively small home ranges (approximately 1.0 km or less), and remain resident in the Cedar Point Marsh directly adjacent to the nesting beach. Additionally, the results also indicate that some may migrate several kilometers across Heron Bay to nearby marshes. Collectively, the results verify the importance of the marshes encircling Heron Bay as critical habitat for adult female terrapins which nest on the Cedar Point Marsh nesting beach. This has significant implications for the ecology, conservation, and recovery of the diamondback terrapins in Alabama.

7:15

Christopher M. Murray (murracm04@gmail.com), Auburn University, *Management solutions to maintain sustainable alligator hunting in Lake Eufaula, AL.*

Healthy American alligators (*Alligator mississippiensis*) populations provide opportunity for wild harvest in many states in the southeastern US. Meat, hide, head and claws are valuable materials and offer means for self-sustainability or sale. Alabama has offered wild alligator harvest in two regions since 2005 using a traditional lottery system. Lottery opportunities and hunt time has increased 3-fold since hunt conception. Lake Eufaula, a dammed portion of the Chattahoochee River, encompasses a national wildlife refuge and a healthy alligator population. The vast majority of hunting pressure is confined to Lake Eufaula to the north and south of the refuge boundaries. Preliminary data suggest that the refuge is a source habitat for the entire lake and that nesting pressure, long recruitment time, and pressure from the Georgia alligator hunt make the Eufaula alligator hunting program unsustainable. The Alabama Conservation Commission, Eufaula National Wildlife Refuge and Auburn University aim to collect more data and make an informed management decision to formulate a sustainable alligator hunting program in the Southeast Region of Alabama.

7:30

Jimmy Stiles (stileja@auburn.edu), Auburn University Department of Biological Sciences, *Education/outreach and its impacts on herpetofaunal conservation in Alabama.*

Alabama has many imperiled herpetofaunal species most of these benefit greatly from efforts to educate the general public about their plight. Educational efforts can be as simple as putting up road signs warning the public to watch out for herp species. These efforts can also be as difficult as trying to convince people that we do not need rattlesnake round ups. This talk will discuss the educational efforts currently underway in our state, and how these efforts are playing an important role in the conservation of species at risk.

8:00 Poster Session/Social

Poster Abstracts

Kristin A. Bakkegard, Samford University (kbakkega@samford.edu), **James C. Godwin**, Alabama Natural Heritage Program, **Shannon K. Hoss**, San Diego State University, and **Michael P. Wines**, Alabama Natural Heritage Program. *Movement within a population of Red Hills Salamanders, Phaeognathus hubrichti.*

The Red Hills Salamander, *Phaeognathus hubrichti*, is an IUCN Red List Endangered plethodontid endemic to the Red Hills region of southern Alabama. This fossorial species lives in burrows predominantly on steep, north facing slopes. We report on an ongoing study of a PIT- tagged population of Red Hills Salamanders in Monroe County, Alabama, USA. Salamanders were implanted with 134.2 kHz ISO tags (Biomark TX 1440) and detected with a Biomark 2001F-ISO reader with a racquet antenna. Burrows were individually numbered and geo-referenced using a Trimble 5600 Total Station to map burrow entrances. Salamanders (N = 115) were tagged Dec 2007 – Feb 2008 then released into their capture burrow. They were monitored five times during March – May 2008, monthly (except August) in 2009, and six times during 2010-2012. We detected 69.6 % of the salamanders at least once post release; mean number of detections was 2.7 (range = 1–11); 62.6% were detected at least twice. Of those, 53.4% changed burrows zero or one time; 24.6% moved at least 3 times. The longest occupancy time for the same burrow was 51 months (N=2; 9 and 7 detections). Distance moved was calculated starting 1 month post release. Mean distance moved for all detections was 2.9 m (SD = 16.4; N = 247 detections; 77 salamanders); for mean distance moved including only when a salamander changed burrows was 6.8 m (SD = 24.6; N = 106 detections; 48 salamanders). Based on maximum distance moved, 62.5% moved less than 2 m and 87.5% of salamanders moved less than 10 m. Maximum distance moved was approximately 173.4 m (by a female) to new burrows in an area adjacent to the main slope. The longest distance moved by a male was 77.7 m. Red Hills Salamanders apparently do not move often or far. We recommend that all populations of this patchily distributed species be protected against habitat destruction because of the limited dispersal capability of this salamander.

Kayla Bieser (kbieser@uab.edu), and **Thane Wibbels**, Department of Biology University of Alabama Birmingham. *Epigenetic Influences of Methylation Inhibitors on Dmrt1 Expression in the Red-eared Slider Turtle (Trachemys scripta).*

Biologists have long tried to elucidate the molecular mechanisms of temperature-dependent sex determination (TSD) in reptiles. This question grows increasingly urgent with global climate change and continued declines in many populations worldwide. Although many genes in the sex determining pathway are known, epigenetic processes and how they influence gene expression during sexual differentiation remain largely unexplored, particularly in reptiles. The current study examines the role of DNA methylation on gene expression in a turtle (*Trachemys scripta*) with TSD. Specifically, it utilizes one DNA methylation inhibitor, zebularine, which is known to alter gene

expression through epigenetic processes in cell cultures and during early embryonic development in mammals and chickens. We hypothesized that application of this inhibitor directly to the eggshell of *T. scripta* or by injection during the thermosensitive period would be sufficient to induce gene expression changes, specifically down-regulation of *Dmrt1*, and induce sex reversal by altering DNA methylation. To test this hypothesis, *T. scripta* embryos were incubated at a male and female-producing temperature. During the thermosensitive period ethanol or zebularine was applied to the eggshell or injected into the egg, and adrenal-kidney-gonad complexes were dissected from embryos of each treatment group after 6, 12, and 24 hours. After microdissection, individual pairs of gonads were used in RT-qPCR to quantify *Dmrt1* expression. Upon histological examination at hatching, no sex reversal was evident with all gonads being testicular. The results demonstrate a trend showing a reduction in *Dmrt1* expression at a female temperature upon treatment with zebularine after 6 hours. This provides some evidence that the drug had an influence on demethylation and that pipetting of the drug was an effective treatment method. This evidence suggests that epigenetics represents a potential avenue by which temperature may be regulating sex determination in reptiles with TSD.

Scott M. Goetz (smg0029@auburn.edu), **Christina M. Romagosa** and **Craig Guyer**, Auburn University. *Response to chemical cues and prey value of an invasive anuran (Cuban treefrog; *Osteopilus septentrionalis*) by a native anuran-eating snake (eastern garter snake; *Thamnophis sirtalis*).*

Consumption of invasive prey may result in sub-lethal effects to native predators due to a lack of predator/prey co-evolution. The Cuban treefrog, *Osteopilus septentrionalis*, is an abundant invasive species throughout much of Florida. The noxious secretions of this treefrog have been suggested to function as defense against mammalian and ophidian predation. We examined the chemosensory response of wild-caught adult and neonatal eastern garter snakes, *Thamnophis sirtalis*, to the chemical cues of the Cuban treefrog to determine if prey novelty or noxious secretions reduced response strength. Palatability, acceptance, handling time and prey value of Cuban treefrogs was also assessed in a feeding trial with the native green treefrog, *Hyla cinerea*, serving as a control. Adult garter snakes exhibited a significantly greater predatory response ($P < 0.001$) to Cuban treefrogs than to controls. Neonates did not differentiate between treefrog species but did exhibit a significantly greater response ($P < 0.001$) over non-anuran controls. There was a significant increase of 111 seconds ($P = 0.038$) when consuming Cuban treefrogs relative to time taken to consume green treefrogs. Snakes consuming a diet of Cuban treefrogs gained significantly less mass ($P = 0.008$) compared to those consuming green treefrogs. Therefore, invasive Cuban treefrogs may represent a lower quality prey item for native Ophidian predators. Further, preference for Cuban treefrogs over a native treefrog may represent an ecological trap for garter snakes.

Jenny Layton (jlayton@samford.edu), **Miranda Goins**, **Rivvi Kukkamalla**, **Jessica Delo**, Samford University, and **Thane Wibbels**, University of Alabama Birmingham. *Genetics of Loggerhead Sea Turtle Hatchlings from the Alabama Coast.*

The loggerhead sea turtle (*Caretta caretta*) is a protected species that inhabits temperate and tropical waters world-wide. One of the greatest concentrations of loggerhead nesting is along the southeastern coast of the United States including the Gulf of Mexico. The Deepwater Horizon Oil Spill resulted in a wide variety of unprecedented responses implemented to lessen the impact on ecosystems in the northern Gulf of Mexico. One such measure was the relocation all loggerhead sea turtle eggs from the beaches in Alabama. All eggs were relocated to Cape Canaveral National Seashore where the eggs hatched and the hatchlings entered the Atlantic Ocean. The relocation of eggs could have implications for the ecology of the loggerhead sea turtle population in the southeastern United States. This strategy has the potential to alter the genetic composition of loggerhead management units. Additionally, the genetic haplotype of hatchlings from Alabama has not been well-documented. Therefore, it is of importance to identify the genetic haplotype of hatchlings from the beaches of Alabama. Tissue samples from hatchling loggerheads were collected as part of a collaborative study with the Bon Secour National Wildlife Refuge. DNA sequence analysis was conducted on a 380bp fragment of the mitochondrial D-loop control region. The results of this study indicate that haplotypes A and B occur in hatchlings from Alabama nesting beaches. These haplotypes have been shown to occur on the Atlantic and northern Gulf coasts of Florida.

Melissa A. Miller (melissamiller@auburn.edu), Auburn University, **John D. Willson**, Virginia Polytechnic University, **Christina M. Romagosa**, Forestry and Wildlife Sciences, **Craig Guyer**, Auburn University and **Ray W. Snow**, National Park Service. *Habitat associations of snakes in Everglades National Park, FL: an occupancy modeling approach*

The everglades is a unique ecosystem that contains a diverse array of ophidian species. Understanding the habitat associations of snakes within Everglades National Park (ENP) poses a challenge because snakes are cryptic and often have low probability of detection (*i.e.* the probability of detecting a species given that species is present). Because detection is often less than one, it is difficult to reliably estimate species presence/absence and habitat associations without accounting for variation in detection rates among species. Several studies have examined snake assemblages in ENP in regard to select habitat types, however species-specific detection probabilities were not incorporated into analyses. We analyzed the habitat associations of ten snake species occurring in ENP using site occupancy (presence/absence) models and species-specific detection probabilities. Specifically, we repeatedly surveyed 14 transects (5 km) in ENP during 2010 and 2011 and assessed species presence/absence in relation to habitat characteristics (major vegetation types, water depth, elevation, and soil composition) using program PRESENCE. Detection rates varied among species and ranged from 0.02 to 0.12. Occupancy also varied among species and ranged from 0.28 to 1.0. Occupancy was constant in top models for all species and was not affected by habitat characteristics; however, we observed large variation in detection rates in regard to habitat type. Detection of scarlet snakes (*Cemophora coccinea*) and mangrove watersnakes (*Nerodia clarkii*) increased with increasing surface water depth, likely reflecting larger abundances in habitats with greater mean surface water depth. Detection of Burmese pythons (*Python molurus*) and ribbon snakes (*Thamnophis sauritus*) greatly increased as forest habitat

increased. Several species (garter snake, *T. sirtalis*; racer, *Coluber constrictor*; and Green watersnake, *N. floridana*) exhibited high rates of occupancy yet low detection rates which stress the need for incorporating detection probabilities into studies that aim to reliably estimate occupancy of cryptic, hard to detect species.

Christopher M. Murray (murracm04@gmail.com), Auburn University, *Diagnostic cranial variation between independent lineages of alligator snapping turtle (Macrochelys temminckii)*.

The alligator snapping turtle (*Macrochelys temminckii*) has been under studied from an evolutionary perspective until recently. Severe harvesting pressure has resulted in low densities across the species' distribution. Since recovery has been made possible, the species has been extensively examined from an ecological perspective; however, recent investigations have elucidated the potential for independent evolutionary lineages within the taxon. Current evolutionary investigations using molecular and morphological datasets are underway. This study attempts to diagnose cranial synapomorphic characters unique to independent lineages within the taxon and assist morphological description and identification as these unique lineages are diagnosed. Here, a geometric morphometric approach is used to expound upon traditional mensural and morphometric characters. Preliminary analyses reveal variation in maxilla and palatine width, basisphenoid shape, and head length. Character variation among specimen groups is consistent with previously hypothesized biogeographic barriers. Results need to be compared to traditional molecular and morphological data analyzed in a phylogenetic context.

Sierra Stiles (stiles@auburn.edu), **Jimmy Stiles**, **Craig Guyer**, Auburn University Department of Biological Sciences and **James Godwin**, Auburn University, Environmental Institute *Shelter Use by Translocated Eastern Indigo Snakes (Drymarchon couperi) in Conecuh National Forest, Alabama*.

Reintroduction has become an increasingly popular conservation method for reestablishing extirpated populations of declining species in recent years. Numerous translocation failures have implicated translocation into unsuitable habitat as a probable cause. Additionally, abnormal behaviors, including abnormal use of habitats have been observed in translocated snakes raised in captivity before release. Natal environment and prior experience may also affect how well translocated snakes adapt to a novel environment. We radio-tracked 38 Eastern Indigo Snakes translocated to Conecuh National Forest, Alabama to evaluate post-release habitat use. Conecuh National Forest lies in the northern extent of the geographic range of *Drymarchon couperi*. Previous studies of this species in the northern part of their range have indicated that shelter availability may be a potent environmental constraint. In particular, Eastern Indigo Snakes in this part of their range are documented to rely chiefly on gopher tortoise (*Gopherus polyphemus*) burrows for shelter. Translocated Eastern Indigo Snakes in our study used shelters in a manner similar to snakes studied previously near the source site. Our observations indicate that maintenance of high quality gopher tortoise habitat, including prescribed burning will be critical for reestablishing Eastern Indigo Snake populations in this part of their range.

SATURDAY

7:30 Breakfast

9:00 Herp Outing along the coast and Bird Sanctuary

11:30 Lunch

2:30 Return from Herp Outing

4:00

Craig Guyer (guyercr@auburn.edu), Auburn University. *Get ready for name changes: emerging taxonomic issues in Alabama's herpetofauna.*

Alabama has an unusually rich herpetofauna, creating a challengingly long list of named taxa. The chore associated with memorizing this roster will expand significantly in coming years from three sources. First, sequence data, coupled with a growing acceptance of the lineage species concept, has demonstrated that we have undercounted the total number of lineages within the state. Second, phylogenetic analyses of cosmopolitan lineages that traditionally have been placed in a single genus are consistently documenting North American lineages that deserve recognition as separate genera. Finally, we must elevate to species status several lineages that have long been recognized as subspecies because they fit the expectations of either of the two common species concepts. So, when the revised version of Mount's book on the herps of Alabama comes out, be ready for lots of new names.

4:15

Sean P. Graham, *Department of Biology, 208 Mueller Laboratory, The Pennsylvania State University, University Park, Pennsylvania 16802, USA* (szg170@psu.edu), **David Beamer** *Department of Mathematics and Sciences, Nash Community College, Rocky Mount, North Carolina 27804, USA*, and **Trip Lamb** *Department of Biology, East Carolina University, Greenville, North Carolina 27834, USA*. *Good news at last: conservation status of the seepage salamander (*Desmognathus aeneus*).*

The Seepage Salamander (*Desmognathus aeneus*) is a tiny, terrestrial plethodontid salamander with a patchy distribution across the Blue Ridge, Fall Line Hills, and Piedmont physiographic provinces of the southeastern U.S. The species is of special concern or protected in most states within its limited geographic range, and anecdotal reports of population declines or extirpation have prompted a recent petition for federal listing under the Endangered Species Act. To assess the current status of the Seepage Salamander, we conducted 137 surveys at 101 sites, including 46 historical collection localities. Our survey results provide rare good news in this era of declining amphibian populations: we confirmed the presence of Seepage Salamanders at 78% of the historical locations surveyed and discovered new populations at 35 additional localities. Several of these new sites were within 5km of historical collection sites. Encounter rates (salamanders/person h searching) were comparable to encounter rates reported by

previous researchers in 1971. Although this species appears to be common and secure over the majority of its range (i.e., the Blue Ridge physiographic province of Georgia and North Carolina), encounter rates were lower and occupied sites fewer across the Piedmont and Fall Line Hills of Alabama and western Georgia, suggesting conservation may be warranted within these regions.

4:30

David H. Nelson (dnelson@usouthal.edu), University of South Alabama and **Cynthia Scardamalia-Nelson**, Providence Hospital. *Road - kill survey of Alabama red - bellied turtles on the Mobile Bay Causeway - XI.*

A systematic, road-kill survey was conducted on the Mobile Bay Causeway (US 90 / 98) from October 2010 through September 2011 to assess the numbers of Alabama red-bellied turtles (*Pseudemys alabamensis*) that were killed by automobile traffic. During the 11-year study, a total of 646 mortalities of the endangered, Alabama red-bellied turtle was recorded: 486 hatchlings, 141 adult females (most gravid), 16 juveniles, and 3 males. A majority of the hatchlings (96%) had over - wintered in their nests to emerge during the following springs (March-April). Mortalities of adult females were greatest during nesting seasons: May, June, and July. Each year, from 3 to 28 nesting females (mean = 12.8) were killed by vehicular traffic on the road. Because of the limited availability of favorable nesting sites in the lower delta, gravid females are attracted to elevated roadsides where they deposit eggs (and may incur mortality). In 2008, sections of chain-link fencing (totaling 4.1 km [2.6 miles]) were financed and installed by the Alabama Department of Transportation to reduce roadway mortality of *P. alabamensis* along the eastern causeway. Since the construction of the fencing, turtle mortalities have declined significantly: from a total of 113 in 2007, to 28 in 2008, 20 in 2009, 21 in 2010, and 18 in 2011. Compared to 2007, these data represent yearly mortality reductions of 75%, 82%, 81%, and 84%, respectively. Last year's decline in mortality may have been affected also by unusually saline conditions in the lower delta caused by severe drought. The monitoring of the fences and turtle mortalities is continuing. Research funding was provided by the Alabama Department of Conservation and Natural Resources: Division of Wildlife and Freshwater Fisheries and the U. S. Fish and Wildlife Service.

4:45

Christina M. Romagosa, Auburn University, **Melissa A. Miller** (melissamiller@auburn.edu), Auburn University, **Bart Rogers**, Auburn University, **Skip Snow**, National Park Service, **Todd Steury**, Auburn University, **Craig Angle**, Auburn University, **Terrence Fisher**, Auburn University, **Robert Gillette**, Auburn University. *Canine detection as a potential tool for python management in Florida.*

The establishment of nonindigenous Burmese python (*Python molurus bivittatus*) in Florida is an ecological threat that has cost approximately \$2 million since 2005 for research and management. While it is unlikely that this species can be eradicated from all southern Florida habitats, land managers are looking for additional methods to help curtail the spread of this and other large constrictor species. Among vertebrates, snakes are the most difficult to detect, and additional methods to find and capture these

nonindigenous snakes are worth investigating. Early Detection and Rapid Response (EDRR) efforts combine various tools to address newly introduced or established species. Detection dogs, which use additional cues beyond the visual cues used by humans, are among the potential tools being assessed for EDRR efforts. Everglades National Park and Auburn University EcoDogs are cooperating in a pilot program to evaluate the use of dogs for python detection and also to support the multiagency search efforts for pythons in southern Florida. During field surveys for wild pythons, the detection dogs are encountering one python for every 7 hours of dog search time. The results of this pilot program have direct management application for identifying effective tools for the capture and removal of nonindigenous species in Florida. We discuss the challenges associated with detection dogs as an EDRR tool and how lessons learned from our efforts can be used to guide current and future efforts.

5:00

Brian P. Folt (brian.folt@gmail.com), Auburn University, **Sean P. Graham**, Pennsylvania State University, and **Craig Guyer**, Auburn University. *The Alabama River Frog Initiative: Recent success (heck yeah!) and a call to arms.*

The River Frog (*Lithobates heckscheri*) is a large frog species from the Gulf Coastal Plain of the southern United States. Like some of its close relatives, adult River Frogs can reach massive sizes in excess of 14 cm snout-vent length. However, the River Frog is unique in possessing a life-history strategy during its larval stage where tadpoles school together to form large congregations that can contain thousands of individuals. In Alabama, *L. heckscheri* is historically known from three localities, one each in Mobile, Baldwin, and Escambia Counties. On September 19, 2011, the Auburn University Herpetology class detected a metamorph River Frog in Bullock County, AL, the first documentation of this species in the state since 1975. This record is ca. 171 km from the nearest historically-known locale, extending the species' presumed range considerably north through the Coastal Plain. In this talk, I will review the natural history and range-wide distribution of the River Frog, but with specific emphasis on Alabama. In particular, I will discuss historic collection localities and more recent, unverified sight records from the state. The objectives are to raise awareness about *Lithobates heckscheri* and to rally further search efforts for this enigmatic frog in Alabama.

5:30 Dinner

6:30

Scott M. Goetz (smg0029@auburn.edu) Auburn University, **Alan H. Savitzky**, Utah State University, **Christopher E. Petersen**, Naval Facilities Engineering Command, and **John D. Kleopfer**, Virginia Department of Game and Inland Fisheries. *Opening Fire-Suppressed Forest Canopies: Effect on the Canebrake Rattlesnake, Crotalus horridus.*

Few studies have examined the relationship between forest canopy structure and the ecology of the canebrake rattlesnake, *Crotalus horridus*. Radiotelemetry was used to compare the movements, activity range sizes and behaviors of canebrake rattlesnakes

before and after a large-scale natural disturbance (Hurricane Isabel) which opened a previously closed canopy. Isabel created gaps in the canopy through tree blowdown, resulting in a 16.6% opening in the forest canopy at my study site, in southeastern Virginia. I compared six years of female tracking data from before Isabel to two years of data on females after Isabel. There was no difference in the mean total distance moved, mean distance per day, mean range length, or the greatest mean maximum distance traveled from hibernaculum. However, the mean distance per movement was significantly longer after Isabel. All activity ranges (minimum convex polygon and the 25%, 50%, 75% and 95% kernel isopleths) were significantly smaller after Isabel. Further, following Isabel a greater proportion of behavioral events, including ecdysis and courtship, occurred within the forest as opposed to anthropogenic areas.

6:45

Christopher J. Thawley (cjt171@psu.edu), **Travis R. Robbins**, and **Tracy Langkilde**, Pennsylvania State University. *Survival under pressure: adaptive responses of the Eastern Fence Lizard (Sceloporus undulatus) to invasive fire ants (Solenopsis invicta).*

Anthropogenic environmental change, including introductions of non-native species, imposes novel selective pressures on native species. A population's ability to persist under these threats can depend on its capacity to adapt accordingly. Fire ants serve as both predator and prey of fence lizards, and our lab is conducting a broad research program to examine how fire ant presence can cause rapid adaptation of fence lizard populations. We have previously found that fence lizard populations in fire ant invaded areas have altered morphology and behavior that are assumed to increase survival under this novel threat. Current research includes studies focusing on: how fire ants affect stress hormone levels and alter immune function; quantitative genetics and the heritability of behavioral changes in lizards; and field experiments examining effects of fire ant presence/absence on behavior, growth, and survival. We recently completed a field transplant experiment using fence lizards to investigate how a population's history of coexistence with fire ants affects fitness (survival). We show that both adult and juvenile lizards from populations historically invaded by fire ants have higher survival in the presence of fire ants than do lizards from uninvaded populations. Adult lizards from invaded populations, however, appear maladapted when fire ants are absent, having lower survival than naïve lizards under these conditions, but juvenile lizards do not experience these fitness costs. These ontogenetic differences in the consequences of adaptation to fire ants may derive from the specific outcomes associated with each adaptation. Adults from fire ant invaded sites exhibit behaviors that promote escape from fire ants but expose them to mortality via native predators; whereas juveniles can demonstrate innate avoidance of eating fire ants, which may protect them from envenomation. Studying the downstream effects of pressures imposed by invasive species can provide insights into the longer-term consequences of environmental change on community interactions and the persistence of biodiversity.

7:00

Jimmy Stiles (stileja@auburn.edu), **Sierra Stiles**, **Craig Guyer**, Auburn University Department of Biological Sciences and **James Godwin**, Auburn University,

Environmental Institute *Monitoring the Reintroduction of Eastern Indigo Snakes into Alabama: Survival and Home Range*

A program to reintroduce Eastern Indigo Snakes, *Drymarchon couperi*, to the Conecuh National Forest (CNF) in southern Alabama is currently underway. Monitoring of snakes will be important for elucidating important variables affecting the establishment of a viable population of *D. couperi*. Snakes have been released on CNF for the last 3 years. A proportion of these snakes were outfitted with surgically implanted radio transmitters. Radio telemetry techniques and Geographical Information Systems (GIS) are being used to monitor the success of this reintroduction.

Two strategies are being employed to release the snakes. One release technique (hard release) consists of releasing snakes directly onto the site where they are allowed to move freely across the landscape.. “Soft” releases employ the use of 6 enclosures approximately .5-.75 hectares in size. One or 2 snakes were released into the enclosures then allowed to disseminate after spending time in the enclosures. We are evaluating this technique to determine if penning the reintroduced snakes decreases active ranges and improves survival.

This talk will focus on radio telemetry data gathered from snakes released in 2010 and 2011. Home ranges of snakes were calculated using three different methods: Minimum Convex Polygons, Kernel Density estimators, and Adaptive Local Convex Hulls. Preliminary analysis supports the hypothesis that penning of snakes decreases their active ranges once they left the enclosures. We are also using the home range data to compare areas of overlap between males and females. Understanding how penning affects male-female overlap will be important to determining the effectiveness of soft releases in influencing reproduction. Reproduction in the wild will be a key component to the overall success of the reintroduction program.

Survival rates of the snakes being monitored by radio telemetry is also important for determining the effectiveness of hard and soft release techniques on establishment of a viable population. Kaplan-Meier estimates for censored data suggest a survival rate of approximately 50% for reintroduced snakes, with female snakes having a dramatically higher survival rate than males. Cox Proportional Hazards Models were used to evaluate the two release techniques and determine if the soft release technique is beneficial. While home ranges do appear to be decreased for the soft release snakes, survival rates appear to be higher for hard released snakes. Using survival estimates and home range data to compare the effects of hard and soft release strategies is helping us to elucidate which methodology is best suited for reintroductions of *D. couperi*.

7:15

Brian P. Folt (brian.folt@gmail.com), **James C. Godwin**, and **Craig Guyer**, Auburn University. *The distribution and status of the Alligator Snapping Turtle (Macrochelys temminckii) in Alabama.*

The Alligator Snapping Turtle (*Macrochelys temminckii*) is the largest freshwater turtle in North America but appears to have declined throughout the 20th century as a result of commercial harvesting. In this study, we attempted to evaluate the current distribution and status of *M. temminckii* throughout south Alabama by comparing size-class distributions and relative abundances from 12 sites. Over 734 trap nights from 2004 to 2012, we captured 78 *M. temminckii* in seven of the 12 sites. Midline carapace length averaged 38.6 cm (4.8 – 64.8 cm range) and mass averaged 16 kg (0.048 – 48 kg range). Three large males (60.4 cm, 60.4 cm, and 61.0 cm midline carapace) exceeded the limits of our 50 kg scale, and we were unable to recover mass data for them. Overall catch-per-unit-effort (CPUE) was low (0.04 individuals/trap night) and comparable to data from other historically harvest areas (e.g. Louisiana, Georgia). However, three areas supported relatively high abundances of *M. temminckii*: the Fowl River (0.42), the Bon Secour River (0.24), and the Magnolia River (0.10). While our data suggest that a few relatively robust populations persist in Alabama, *Macrochelys temminckii* is a rare species in the state, and we recommend that protection and conservation measures continue in Alabama.

7:30

Andrew W. Cantrell (Andrew.w.cantrell@gmail.com) and **Yong Wang**. Alabama A&M University. *Thinking Outside the Box: Recycling Materials for Herpetofaunal Research*.

Herpetofaunal research can be conducted in various ways using different trapping techniques. Drift fences, box funnel traps, and coverboards are well known passive or active trapping techniques that can be used to sample amphibians and reptiles. However, the materials for the construction of these sampling tools can be costly and time consuming to assemble. We explored possibilities of recycling materials to construct box funnel traps for a research project examining herpetofaunal response to different silviculture treatments in southern Tennessee in 2009 and 2010. We used coroplast, which is a corrugated plastic commonly used for advertising signs, and salvaged and donated wood to construct box traps. These traps were able to detect 27 out of the 33 total species caught. The successful use of these materials in this study prompted us to investigate what other kinds of ways we could use coroplast and other materials for herpetological field research. For a smaller study looking at herpetofaunal use of Alabama A&M properties, in close proximity to the main campus, we used coroplast not only in the design of the box funnel traps but for the drift fences as well. We also were able to salvage wood and tin for coverboards. To date, the smaller study has detected 11 species, including *Ambystoma texanum* and *Lampropeltis calligaster rhombomaculata*. Recycling materials can not only cut down on budget expenditures, but can also provide more environmentally friendly approaches to conducting herpetofaunal research.

7:45

Sean P. Graham (szg170@psu.edu), **Nicole Freidenfelds**, **Gail McCormick**, and **Tracy Langkilde**. Department of Biology, Pennsylvania State University, 208 Mueller Lab, University Park, PA 16849. *The impacts of invaders: Basal and acute stress profiles of native lizards (Sceloporus undulatus) threatened by invasive ants*.

As anthropogenic stressors increase exponentially in the coming decades, native vertebrates will likely face increasing threats from these novel challenges. The success or failure of the primary physiological mediator of these stressors—the HPA axis—will likely involve numerous and chaotic outcomes. Among the most challenging of these new threats are invasive species. These have the capacity to simultaneously challenge the HPA axis and the immune system as they are often associated with, or the cause of, emerging infectious diseases, and energetic tradeoffs with the HPA response can have immunosuppressive effects. To determine the effects of invasive species on the vertebrate GC response to a novel stressor and on immunity, we examined the effects of invasive fire ants on native lizards, comparing lizards from sites with long histories with fire ants to those outside the invasion zone. We demonstrated higher base line and acute stress (captive restraint) CORT levels in lizards from within fire ant invaded areas; females are more strongly affected than males, suggesting context-specific effects of invasion. We found no effect of fire ant invasion on the immune parameters we measured (complement bacterial lysis and antibody hemagglutination) with the exception of ectoparasite infestation. Mites were far less prevalent on lizards within fire ant invaded sites, suggesting fire ants may actually benefit lizards in this regard. This study suggests that invasive species may impose physiological stress on native vertebrates, but that the consequences of this stress may be complicated and unpredictable.

8:00 Poster Session/Social

SUNDAY

7:30 Breakfast

For those that don't want to return home early on Sunday, the Bon Secour National Wildlife Refuge is located just east of Dauphin Island. The ferry departs Dauphin Island at 8 am and returns from Fort Morgan roughly every 1.5 hours with the last ferry running at 7:15 pm. Round-trip ticket prices for the ferry are \$30 for one vehicle and one driver with an additional \$4.50 per passenger. Alternatively you can walk on the ferry for \$5, but a vehicle is required to get to the Wildlife Refuge once at Fort Morgan. More information about the ferry can be found here: <http://mobilebayferry.com/index.html>.

Alternatively you can drive to the refuge, but you must go back up through Mobile and around to Gulf Shores. Directions can be found here: <http://www.fws.gov/bonsecour/directions.html>.

Sponsor

A big Thank You to FinerGrind Coffee Roasters for donating coffee for this year's meeting. Their mission is "Dedicated to sourcing and roasting the best coffees from around the world. Cup of Excellence, Best Of Panama, Grounds for Health, and select Microlot coffees..." FinerGrind coffee can be purchased in multiple locations around Birmingham and at East Lake Farmer's Market and Pepper Place Market on Saturday mornings.

About Our Chapter

Alabama PARC is chaired by Kayla Bieser and Chris Murray and is a chapter within Southeast PARC (SEPARC) co-chaired by JJ Apodaca and Jessica Homyack. For more information about SEPARC visit www.separc.org. ALAPARC's website is www.alaparc.org. National PARC's website is www.parcplace.org.

How to get to the Dauphin Island Sea Lab

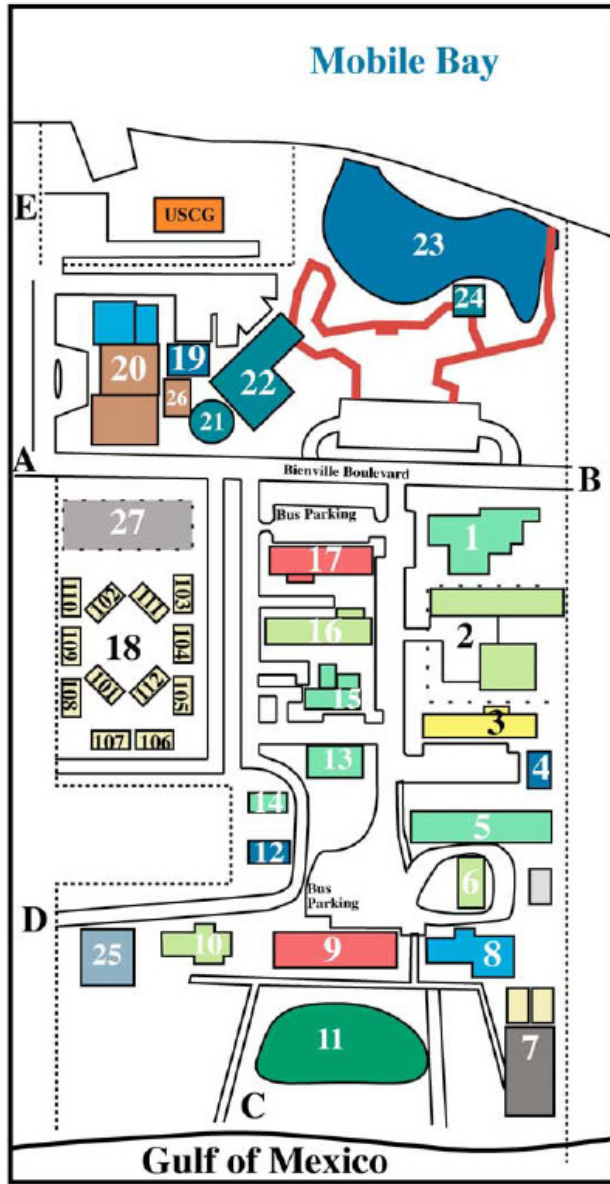


DIRECTIONS TO THE DAUPHIN ISLAND SEA LAB

Take I-65 south to I-10 West, exit on 17-A. This is highway 193, leading through an industrial area. After three red lights, railroad tracks and a bridge, you will come to a 3-way stop, turn left at the stop sign. You will then come to a 4-way stop sign, turn right. Highway 193 resumes and continues all the way to Dauphin Island. Once you arrive on the island, you will come to a 3-way stop sign, go left. Travel approx 2.5 miles passing boat ramps on the left and a campground on the right, look for Agassiz Street on the right. Go to the **next** driveway on the right and turn into the Sea Lab campus. The administration building is located to the left. Please enter the administration building before driving down to the south campus.

Upon arrival at the sea lab: you should have previously received your dorm room assignment. The dorm should be unlocked upon your arrival. There are no keys for the dorm rooms. Please leave the room unlocked when you depart the DISL.

Map of the DISL campus



- * 1. Administrative Offices and Registration
- 2. Maintenance/Vehicle-Boat Yard
- 3. Albatross Hall (Apartments)
- 4. Laundromat
- 5. Multipurpose Building
- 6. Endeavor Hall (Class Room)
- 7. Basketball, Volleyball Courts
- 8. Discovery Hall (Class Rooms/Offices)
- 9. Horizon Hall (Class Rooms/Offices)
- 10. Galathea Hall (Class/Meeting Room)
- 11. Sea Pines
- 12. Swimming Pool
- 13. Mesocosm Facility
- 14. Director's Office
- 15. Cafeteria
- 16. Challenger Hall (Dormitory)
- 17. Beagle Hall (Dormitory)
- 18. Family/Faculty Housing and Recreation Area
- 19. Storage Building
- 20. Wiese Marine Science Hall
- 21. Husbandry Building
- * 22. The Estuarium and Sea Lab Giftshop
- * 23. Living Marsh and Boardwalk
- * 24. Ladner Pavilion
- 25. A. U. Shellfish Research
- 26. Wet Lab
- 27. Shelby Fisheries Center
- 101. Greeter House
- 110, 111. Graduate Student Offices
- * A. To the Water Tower and Audubon Sanctuary
- * B. To Fort Gaines
- C. To Gulf Of Mexico Beach
- D. U.S. Coast Guard Housing (closed)

**** OPEN TO THE PUBLIC**