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# Snakes, and lizards, and frogs, oh my!

*JANUARY 29, 2008*

Lance McBrayer's job description requires him to spend part of his day surrounded by thousands of dead snakes, lizards and frogs.

Such a working environment may seem like a nightmare for most people, but for a biologist who has devoted his career to studying these kinds of animals, it's a dream job.

McBrayer is the curator of the scientifically renowned herpetology collection at Georgia Southern University.

Herpetology is the branch of zoology that deals with amphibians and reptiles, and the collection managed by McBrayer includes approximately 38,000 specimens that were gathered over the course of four decades.

Some 160 different species are part of the collection, which is the second-largest such menagerie in all of Georgia. A few of the specimens came from other parts of the country, but the overwhelming majority of them are native to this state.

In fact, approximately 95 percent of the herpetological species that live in Georgia are represented in the collection.

"The collection gives us a record of what herpetological diversity was like in this region over the last 40 years," said McBrayer, an assistant professor in the Department of Biology at Georgia Southern. "We can look at how species' distributions have changed over that time, and how development has affected the distribution of different species."

Georgia is one of the best places in the entire U.S. for herpetological research. According to McBrayer, when it comes to number of species, only a few states like Florida and Texas rival Georgia in the total number of amphibian and reptile species.

"Georgia is located in kind of a transition zone, so we have herps' from several different regions," McBrayer said. "We have Appalachian fauna in the mountains of north Georgia, which means a lot of salamanders and snakes and frogs. In addition, Georgia is the eastern-most point in the distribution of many central and western species, like the alligator snapping turtle and the bird-voiced tree frog, as well as the southern-most point for many northern species, such as hellbenders and the Ocoee dusky salamander.

"When you move into the Coastal Plain, you have animals like the gopher tortoise and indigo snakes. And as you move from South Georgia into Florida, you find species that are typical of sub-tropical climates, such as the mole skink and the island glass lizard."

The state's remarkable diversity was recognized by Gerald Williamson and Robert Moulis, the two southeast Georgia men whose labor of love resulted in the herpetology collection that now resides at Georgia Southern.

Williamson and Moulis started the collection around 1960. For the next four decades, they spent untold hours walking through countless acres of forests, fields and yards, searching for salamanders and turtles as well as snakes, lizards and frogs. They focused most of their time and effort on the area that ranges from the Low Country of South Carolina, to the Fort Stewart military reservation, to the Okefenokee Swamp on the Georgia-Florida border.

The Williamson and Moulis collection eventually became a part of the Savannah Science Museum. Numbering approximately 36,000 specimens, the collection was transferred to Georgia Southern when the museum closed its doors in 1999.

Since then, Williamson has donated about 2,000 additional specimens from the Savannah-Ogeechee Canal Museum and Nature Center to the University.

‘The real benefit to Georgia Southern is that, for the most part, this is a Coastal Plain collection,’ McBrayer said. ‘Since we’re located in the Coastal Plain, I think it’s appropriate that the collection is here, too. We are very fortunate to have it.’

The herpetology collection is housed in a room on the second floor of the Herty Building. Depending on their size, the specimens are kept in containers that range from a four-ounce jar to a 30-gallon vat. Most of the containers are filled with a 70 percent ethyl alcohol solution that preserves the specimens.

‘Specimens used to be kept indefinitely in formalin or formaldehyde,’ McBrayer said. ‘But scientists learned that if you leave a specimen in formalin, the minerals will leach out of the bones and the skeleton will soften over time.

‘With ethyl alcohol, which is essentially rubbing alcohol, the specimens tend to lose a little bit of the color they had in life, but the benefit is that it’s more stable, it lasts a longer period of time, and it doesn’t destroy the bones.’

However, some of the original containers a few of which are well over 40 years old have started to leak, so they require special attention.

‘When they started this project, Williamson and Moulis didn’t have much in the way of funding, so they had to use whatever they could find,’ McBrayer said. ‘For example, they might stop at a roadside gas station and get an old pickled egg jar to put a specimen in. Obviously, those kinds of containers aren’t ideal for long-term storage and need to be replaced.

‘But, as long as we keep the fluids above the level of the specimen, keep the temperature fairly stable and limit the amount of ultraviolet light, the specimens themselves should last for hundreds of years.’

Of course, all of the specimens won’t be spending the rest of eternity in a jar. The primary purpose of such collections is to let people examine or, in certain circumstances, dissect the specimens.

'Scientists and students make use of our specimens on a regular basis,' McBrayer said.

'Occasionally, we allow someone to dissect a specimen, or extract DNA so that it can be compared to other species.

'For the most part, though, the people who use the specimens are taking measurements of the head and limbs, or studying the shape of the animal, or conducting scale counts for systematic analysis.'

Within their containers, the specimens are stored on specially designed, electronically controlled mobile shelves that can slide apart to provide easy access to the specimens.

Arranged according to family, and then genus and species, most of the specimens have a unique identification number, but some are grouped together in a 'lot' with a single number. For about 90 percent of the specimens, the ID number can be used to reference pertinent information, such as the date, time and location of the specimen's capture.

'Williamson and Moulis were very thorough,' McBrayer said.

The herpetology collection features thousands of snake specimens, ranging from an 18-inch pygmy rattler to an eight-foot eastern indigo. The indigo is the only snake in Georgia listed as a threatened species by U.S. Fish and Wildlife Service.

Another highlight is what may be the world's largest collection of Flatwoods salamander specimens. This threatened species measures about five inches in length with a body color that ranges from silvery to black.

There are approximately 1,200 Flatwoods salamander specimens in the collection, and many of them were taken from the Georgia-South Carolina border, Fort Stewart, and the Pooler, Ga., area, near the Savannah/Hilton Head International Airport.

'Unfortunately, much of the Flatwoods salamanders' old habitat near the airport is now under rapid development into big box stores, strip malls and tract houses,' McBrayer said.

For this reason, McBrayer considers the flatwoods salamander a staple of the herpetology collection.

'Our Flatwoods salamander collection is a real feather in our cap,' McBrayer said. 'They used to be pretty common in certain habitats, but because of logging and agricultural development, they've become rare.

'Williamson and Moulis recognized that this was happening, so they made it a point to collect plenty of specimens.'

In addition to fully formed specimens of different species, the herpetology collection contains a variety of odds and ends: snake skins, turtle shells, frog eggs and salamander larvae. The collection also includes a number of photographs of amphibians and reptiles that were taken by people who encountered the animals in the wild.

Since taking charge of the collection in 2005, McBrayer has spent most of his time organizing and conducting an inventory of its contents. All of the information about each specimen was originally written on paper, which makes data storage and access cumbersome.

'If you wanted to know what kinds of specimens we have from here in Bulloch County, for example, you might have to search through thousands of pieces of paper," McBrayer said.

To bring the herpetology collection into the 21st century, McBrayer and his student assistants are transferring all of the data onto computer files. At some point, they hope to have individual photos of each specimen, too.

The collection will eventually be online and available to people all over the world.

'This is a great representation of Georgia's tremendous herpetological diversity," McBrayer said.

'Because it is such a valuable resource, our ultimate goal is to make sure that it is accessible to any scientists and students who are interested in it, no matter where they are. We hope to achieve this or at least get close in the next one to three years."

Georgia Southern University, a Carnegie Doctoral/Research University, offers more than 120 degree programs serving nearly 17,000 students. Through eight colleges, the University offers bachelor's, master's and doctoral degree programs built on more than a century of academic achievement. The University, one of Georgia's largest, is a top choice of Georgia's HOPE scholars and is recognized for its student-centered approach to education. Visit: [www.georgiasouthern.edu](http://www.georgiasouthern.edu)

## **Alzheimer's and dementia seminar in Savannah on Feb. 1**

*JANUARY 29, 2008*

Health care professionals and caregivers are invited to attend a one-day seminar that will give them a greater understanding of dementia-related conditions.

'Understanding Dementia and Alzheimer's: What Every Health Care Provider Should Know" will be held on Friday, Feb. 1, from 8 a.m. until 4 p.m. at the Coastal Georgia Center in Savannah.

Sponsored by the Continuing Education Center at Georgia Southern University and the Magnolia Coastlands Area Health Education Center, the seminar is ideal for caregivers, nurses, dietitians, counselors, social workers and nursing home administrators.

Keynote speaker Teepa Snow combines experience as an occupational therapist with her work as a dementia care and dementia education specialist.

The seminar will also feature presentations by Frieda Brown, a dietitian with over 30 years of experience, and Sharon Dickol of the Coastal Area Agency on Aging.

The topics of discussion will include how to recognize the beginning signs of dementia, and how to differentiate between dementia, Alzheimer's disease and forgetfulness.

Seminar participants are eligible to receive six hours of continuing education credit from the following entities: the Georgia chapter of the National Association of Social Workers; the Georgia Nurses Association; the Licensed Professional Counselors Association of Georgia; the Georgia Occupational Therapy Association; and the Georgia State Board of Nursing Home Administrators.

The fee for the seminar is \$125 per person, which includes continental breakfast and lunch. To sign up or obtain more information,

visit <http://ceps.georgiasouthern.edu/conted/dementia&aging.html> or call (912) 681-5551.