Introduction

Everyone is enthralled by snakes, from the smallest garden variety to the formidable rattlesnake. We at the Savannah River Ecology Laboratory (SREL) see this reaction almost every day of the year: thousands of people attend presentations given by us to learn more about this remarkable form of native wildlife. Whether we are talking to civic groups, schools, government organizations, or corporations, we meet people who are eager for knowledge about the natural history and ecology of snakes. It is through these encounters that we attempt to impart an enhanced appreciation for wildlife and the world in which we live.

Our intent in this brochure is to answer some of the most frequently asked questions about the snakes that occur in South Carolina and Georgia. We also provide information about the biology of these reptiles, as well as information and photographs useful for identifying the snake species of the region.

Coral snake

animals. For some readers this brochure should help replace fear of snakes with respect for them. For everyone we hope to enhance their experience in future encounters with the snakes of the region.

SREL is a research laboratory of the University of Georgia located on the U.S. Department of Energy's Savannah River Site (SRS) in South Carolina, bordering the state of Georgia. Here our research has uncovered a wealth of ecological knowledge of snakes native to the two-state region. In fact, more is known about the ecology of snakes on the SRS than in most regions of North America or the world.

Black rat snake

Corn snake

Authors of this brochure are actively engaged in field research and have participated in educating the general public about snakes. Our objective is to communicate our own knowledge about and experiences with this fascinating but greatly maligned group of

About Snakes

Snakes are reptiles characterized by elongated bodies and a lack of limbs. Distributed through most parts of the world, they range in length from 5 inches to more than 30 feet. They are closely related to lizards, but do not have external ears or eyelids.

Rough green snake searching for prey

The skin of a snake is dry and scaly, not slimy like some people believe. Snake scales are made of keratin, the same substance that makes up your fingernails.

A snake has a forked tongue that is used to "sample" microscopic particles from the air that are then put into a special organ in the roof of the mouth. This structure, called the Jacobson's organ, is highly sensitive to chemicals, like the nose of a blood hound. But rather than smelling, as we do, snakes "taste" the air. A snake flicking its tongue at you is merely trying to figure out what you are.

Racer tongue

Breeding occurs during spring or fall. Some species lay eggs in early summer; embryonic snakes develop in about two months and hatch in late summer or early fall. Snakes that give birth to live young also tend to have their young in late summer.

Outside temperatures affect the activity of snakes. Because they cannot generate their own body heat like mammals and birds can, snakes remain relatively inactive when it is too cold. They also cannot tolerate extremely high temperatures; therefore, most snakes are active during mild temperatures. During the spring and fall, most snakes tend to be active in the daytime; during the summer, activity may be restricted to warm nights, especially after a rain.

All snakes eat animals, not plants. The primary food items of most snakes are insects, fish, amphibians, birds, rodents, eggs, and other reptiles. Some species are selective feeders, whereas others eat a broad range of food items.

The most common form of defense by snakes, like other reptiles, is avoidance. At the first sign of danger, they usually flee. Any other defensive behavior by a snake, such as biting, striking, and so on, is usually a last resort.

Snakes are a natural and exciting component of the environment, as they have been for the past 160 million years. Their many unusual characteristics have long fascinated humans.

Hatching eastern hognose snake

Glass lizard

Four species of glass lizards, which look like snakes because they have no legs, occur in Georgia and South Carolina. Unlike snakes, glass lizards have eyelids and ear openings. Most glass lizards are found in pinewoods habitats with sandy soil. All are harmless.

Biodiversity

South Carolina and Georgia are fortunate to have among the the highest biodiversity of snakes in the United States. South Carolina has 38 species of snakes and Georgia has 40. Two species (the eastern indigo snake and the striped crayfish snake) are found in Georgia, but not South Carolina.

Snakes in South Carolina and Georgia range in size from the diminutive earth snake, which rarely exceeds 12 inches in length, to the eastern indigo snake, which may grow to more than 8 feet long. Although most species of snakes found in the Southeast are non-venomous, and thus harmless to humans, six venomous species do occur in the region. Five of these are pit vipers (family Viperidae) and include the cottonmouth, copperhead, pigmy rattlesnake, canebrake (or timber) rattlesnake, and the largest rattlesnake in the world, the eastern diamondback. The other venomous species is the secretive, seldom-seen coral snake, a member of the cobra family (family Elapidae).

Ringneck snake

Glossy crayfish snake in a swamp

The high diversity of snakes in South Carolina and Georgia is due primarily to the warm, moist climate and the wide variety of habitats found in the southeastern United States. Snakes can be found from the mountains of northern Georgia to the barrier islands along the Atlantic coast. Some snakes are restricted to very specific habitats, such as the southern hognose snake, which in South Carolina and Georgia is found only in the sandhills communities of the Coastal Plain. Others, such as the black racer, can be found in almost any habitat. Aquatic habitats frequently support a high diversity of snake species, as is evident in the coastal plain regions of South Carolina and Georgia.

Ribbon snake in a wetland

The rich diversity of snake species in South Carolina and Georgia makes this region ideal for observing and learning about the snakes that share the area with us.

Hardwood habitat

Snakes in Your Backyard

It is no surprise that snakes can be found in most backyards, parks, and woodlands in urban parts of South Carolina and Georgia. A variety of small and a few large species occur in the cities and towns of the two-state region. Many species are secretive, spending most of their time underground or under cover. Active gardeners may occasionally see small ringneck, worm, red-bellied, brown, earth, and crowned snakes. None of these species are much bigger than a large earthworm and they do not bite. These species are often discovered under pieces of lumber, shingles, metal, or other yard debris.

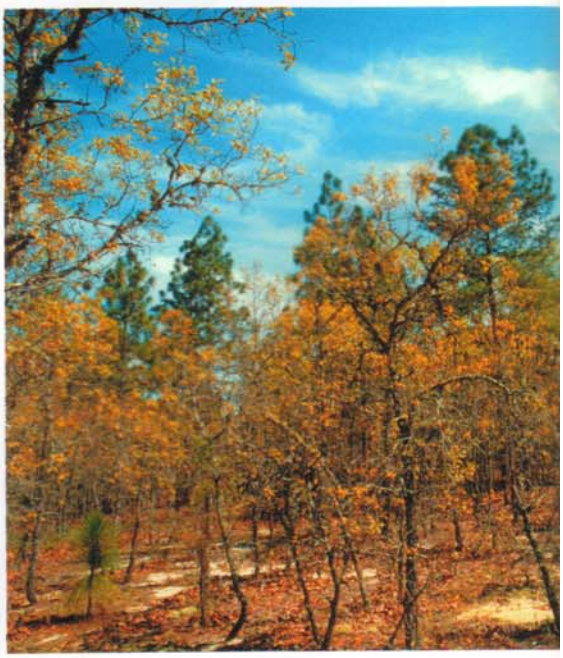
Earth snake

Several larger snake species also frequent backyards, especially corn and rat snakes, as well as racers. All will eat mice, rats, and occasionally birds and their eggs. Snakes often take refuge in piles of brush or firewood. Chicken coops and barns sometimes harbor snakes searching for rodents or eggs. Water snakes, especially banded water snakes, are occasionally found in neighborhoods that border streams, swamps, or farm ponds. In most cases, if cover and prey items are absent from a yard, then any snakes encountered are probably moving through the area. If a nearby woodlot is replaced with a new housing development, displaced snakes may be looking for a new place to live.

Common garter snake by a backyard pond

Snakes are fascinating animals and many are strikingly beautiful. As more and more people crowd into areas where snakes live, encounters between humans and snakes will increase. Be assured, however, that if your backyard contains snakes, it is probably a healthy place for you to live as well.

Searching for snakes under debris



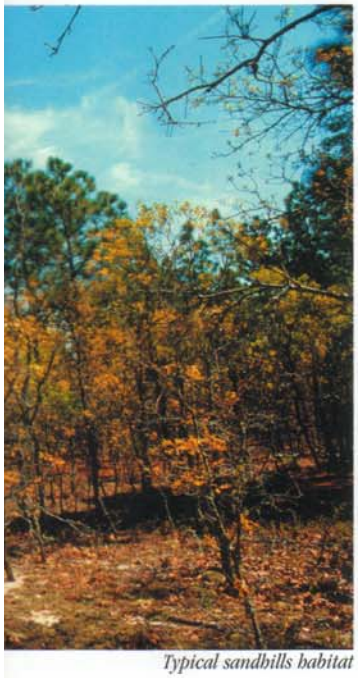
Conservation

Snakes are important components of ecosystems because they play major roles as both predators and prey. Some snakes are specialized in their food preferences, such as the rainbow snake, which feeds primarily on American eels. Other snakes will eat almost anything. For example, the cottonmouth will eat fish, frogs, other snakes, rodents, birds, and carrion. Snakes are important foods for hawks and great blue herons, among other animals.

Scarlet snake

Pine snake in sandbills

Many snakes are important economically because they eat rats, mice, and other animals deemed to be pest or nuisance species. Adult rat snakes in captivity can eat 2-3 rats every two weeks—52-78 rats per year for one snake! Wild snakes may not find this many rats in a year, but clearly one snake could have a significant positive economic impact by reducing the potential for some serious diseases (e.g., hanta virus, Lyme disease) that are enhanced by high rodent populations.



Typical sandbills habitat

Top-level predators like snakes can accumulate toxins and transport them from one area to another. For example, mercury is found to some extent in many waters in Georgia and South Carolina. Water snakes have been used not only to detect the presence of mercury in a river or stream, but also to assess how much might be moving into terrestrial food webs or to other aquatic systems.

Agricultural clearing around a Carolina bay wetland

Like many species, snakes are declining in numbers as a result of human activities. The threats to snakes and other wildlife are many, but primarily stem from lost and altered habitat. If large areas of specific habitats are reduced by agriculture, pine plantations, or commercial development, then species requiring more natural habitats may disappear or may persist only in very reduced areas. The direct and indirect effects of human activities not only affect snakes, but entire communities of animals and plants.

Habitat loss due to development

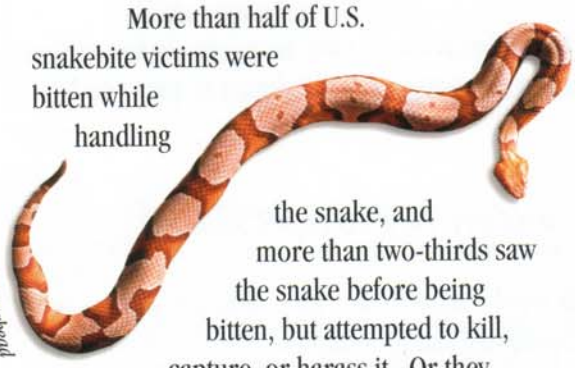
Probability of Snakebite

Cottonmouth fangs

Venomous snakes of Georgia and South Carolina pose little threat to humans who learn to observe them but otherwise leave them alone. Lightning kills many more people every year than snakes do, and the probability of dying in a car accident far exceeds the chance of even being bitten by a venomous snake. By one account, several thousand people are bitten by venomous snakes each year in the United States, but fewer than 10 of these bites actually result in deaths. Also, as many as half of all bites by venomous snakes are mild or "dry" bites in which little or no venom is injected.

Snakes do not hunt humans; we are not their natural prey and are far too large for any U.S. species to eat. Thus, they have no reason to bite us unless provoked. Snakebites occur when a snake is frightened and we force it to react in self-defense instead of allowing it to escape.

More than half of U.S. snakebite victims were bitten while handling the snake, and more than two-thirds saw the snake before being bitten, but attempted to kill, capture, or harass it. Or they failed to move away or maintain a safe distance. In most of these situations, snakebite would have been easily prevented by exercising good judgment.



Copperhead

Certain activities can increase one's chance of getting bitten by a venomous snake. Logs, vegetation, rocks, and other materials provide shelter to snakes and the food they eat. Be cautious when moving such materials and avoid placing your hands or feet where a snake could be hiding. Proper footwear, such as leather boots, can provide protection from snakebites by preventing the fangs of a snake from coming into contact with your feet or legs.

Never pick up a snake unless you are absolutely certain it is non-venomous. Young snakes are sometimes difficult to identify and their small size can give the false impression that they are harmless. Furthermore, occasional snakebites have resulted from snakes presumed to be dead. An injured, but still-alive snake, may strike unexpectedly.

By following these common sense rules, you can enjoy the outdoors without becoming a snakebite victim.

Two young cottonmouths exhibiting color variation that is not uncommon in native snake species.

In Case of Snakebite...

Snakebites from native species are a rarity in both South Carolina and Georgia. However, a few bites still occur every year. The proper response to a venomous snakebite involves both what to do and what not to do. Before snakebite treatment is necessary, the snake must be venomous. You can become familiar with the snakes of the region by studying the pictures and descriptions in this brochure. If you can be sure that a non-venomous (harmless) snake did the biting, you have little to worry about. Washing the scratched area with soap and water is usually sufficient. However, a venomous snakebite can be very serious. The following is a list of what to do and not to do if bitten by a venomous snake:

Canebrake rattlesnake

The DON'Ts

- Do not eat or drink anything, including alcoholic beverages or medicine.
- Do not run or engage in strenuous physical activity.
- Do not cut into or incise bite marks with a blade.
- Do not apply a constrictive tourniquet.
- Do not use a stun gun or other electrical shock.
- Do not freeze or apply extreme cold to the area of the bite.

The DOs

- Get to the nearest hospital or emergency medical facility immediately.
- Try to stay calm!
- Try to identify the offending snake if you can do so easily without putting yourself at risk or wasting valuable time.

Pigmy rattlesnake

The universally accepted treatment for serious snakebite is the use of antivenin or snakebite serum, which should only be administered by a medical doctor. If local doctors are unsure of the correct antivenin to use, advise them to contact the regional Poison Information Center.

Medical doctors who have experience with bites of venomous snakes of the United States do not completely agree on the details of first-aid treatment for snakebites. However, most doctors believe that the DOs and DON'Ts listed here have the highest probability of success in most situations involving venomous snakebites.

The best advice is to learn all of the snakes found in your region and avoid the venomous ones. If you are bitten by a venomous snake, remember to stay calm and get to the nearest hospital quickly.

Field herpetologists consider car keys (and a car) to be the best snakebite kit.