

# AN INTERPRETER'S GUIDE TO SNAKES IN CAPTIVITY



Grey rat snake  
by Jason Carter (2007) -  
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## Introduction

The snake has long been one of the most feared and misunderstood animals on earth. Worshipped by some cultures, persecuted by others, there are few people on the fence when it comes to their feeling for snakes. People are amazed and intrigued by them or they harbor a deep-rooted fear and misunderstanding of these creatures.

Like many other species, snakes around the world are disappearing. The main threat to snakes across the globe, as well as here in Georgia, is habitat destruction and fragmentation. With thousands of acres of habitat being engulfed by urban sprawl every year, snakes are finding fewer and fewer wild places in which to live. Another serious threat faced by snakes is the intentional killing of the individual animals themselves. Every year, perhaps millions of snakes are killed without reason across the United States. This unfortunate eradication is the result, for the most part, of a lack of education and abundance of misinformation.

Some states, including Georgia, have taken some measures to protect native snakes. All non-venomous snakes are protected by law in the state of Georgia. Unfortunately, these laws are extremely hard to enforce, and people will continue to kill snakes despite regulations. This means that next to habitat preservation, education is the best chance snakes have for long-term survival. This is why interpretive animal exhibition is so important. By sharing animals with the public maybe we can change the opinions of people who misunderstand these animals. By informing the public of the importance of snakes perhaps we can eliminate some of the fear people have for these amazing and important animals. At the very least maybe we can awaken a little curiosity, which in turn could stimulate the desire for more facts and information. A public armed with facts instead of overcome by fear would go a long way to ensure snakes are here for many generations to come.

## Snakes of Georgia

Georgia is home to 41 species of native snakes. If broken down into subspecies that number climbs substantially. The only state with more native species is Florida with 43. Our snakes range in size from the diminutive earth snakes, which are usually less than 12 inches in length, to the eastern indigo snake which can approach nine feet. All of Georgia's native snake species belong to the three families listed below:

Elapidae (eastern coral snake)  
Viperidae (cottonmouth, copperhead, and rattlesnakes)  
Colubridae (all other native snakes)

Of the 41 species native to Georgia only six are venomous. These are the eastern diamondback rattlesnake, timber rattlesnake, pygmy rattlesnake, cottonmouth, copperhead and the coral snake. While the copperhead is responsible for most of our snake bites, the Eastern diamondback and cottonmouth account for the majority of serious venomous snake bites in Georgia.

Snakes occur in a variety of habitats from rivers, streams, and lakes, to mountains, forest, and grasslands. Some species have even adapted quite well to an urban environment. These species include the brown snake, garter snake, and the rough green snake.

While snakes in the northern part of our state must become inactive during winter, some snakes in extreme southern portions of Georgia may stay active on all but the coldest days of winter. This is especially true for the darker colored species such as the garter snake, kingsnake, water snakes, black racer, and cottonmouth. The darker coloration of these animals helps them more efficiently absorb the sun's energy.

## What Species to Keep?

Although just about all of Georgia snakes can be kept in captivity (with proper permits), some are extremely difficult to maintain and should only be kept by experienced keepers. Below is a list of animals easily kept in captivity:

Rat Snakes - all of our native rat snakes do well in captivity. These are the grey rat, yellow rat, and the black rat snake. If they are wild caught animals, they are usually nervous and temperamental for a couple of weeks, but almost always settle down. Their length/size makes them popular at interpretive programs.

Corn snake - Also a species of rat snake, the corn snake is the most popular pet snake in the U.S. Its usually docile temperament makes it a great captive animal. Although it does not attain the seven foot plus lengths of other rat snakes, it more than makes up for it with its checker board belly and colors of yellow, orange, and red.

King snakes - Also easily kept in captivity, they are sometimes however, a little more excitable. When handling king snakes during programs be sure to show them first. Try not to handle a king snake after handling another species. The scent of another snake may cause the king snake to mistake you for lunch. While this may be entertaining for the crowd, it can be a little discomforting for the handler.

Pine snakes - Their large size and attractive markings make them popular captive animals and they also do well in captivity. Some pine snakes are extremely nervous. They can have a voracious appetite, eating half a dozen or more large mice per feeding.

Here is list of animals that should NOT be kept unless you are a highly experienced keeper:

Eastern mud snake - Its specialized food and habitat requirements keep it from being kept in captivity.

Rainbow snake - very closely related to the mud snake, its habitat and food requirements are even more specialized.

Scarlet snake - Although extremely colorful and docile, this snake's habit of feeding almost exclusively on amphibian eggs make it almost impossible to keep in captivity.

Water snakes - Although they usually do well in captivity, water snakes tend to be nervous animals, biting repeatedly when handled. The bite from a large water snake can be quite messy.

Racers and coach whips - Large size and nervous temperament make these animals difficult to keep. If kept in too small a cage, they tend to strike the glass at the slightest movement. Eventually this can cause serious injury.

Venomous snakes - Only knowledgeable, experienced keepers should house venomous animals. Maximum care and precautions are required when working with venomous animals. The keeper must always remember that they are potentially one accident away from loss of life or limb, or at the very least, an expensive hospital stay.

## Cage Requirements

There are several methods to house captive snakes. Cages can be built from wood or plastic. Or they can be purchased in the form of glass aquarium, or molded PVC plastic type cages. If you decide to build your own enclosure it needs to be waterproof and well ventilated. Glass aquariums work fine as long as the top can be secured to the aquarium. The practice of staking weight on top of the screen is not recommended. Snakes are extreme escape artists. If the top is not secured to the cage they will get out! The best option for snake enclosures are the many PVC plastic cages on the market today. Cages from companies such as Neodesha, Vision, and Boaphile, to name a few, are manufactured with the snake enthusiast in mind.

The general rules for cage size are as follows.

- Enclosure should be at least half as long as the animal is in length.
- Enclosure should be at least one third the animals body in width.  
*Example - A corn snake 36 inches long needs a cage at least 18 inches long and 12 inches wide.*

Remember, these are the minimum cage requirements. In most cases a little larger never hurts.

### Cage substrates

A substrate is the material put on the floor of your animals enclosure. Its purpose is to soak up moisture, urine, feces, or spilled water. There are several different options for snake substrate. Some of the more popular ones are list below along with advantages and disadvantages of each

Newspaper      Advantages - readily available, often free easy to clean up and replace.  
Disadvantages - non absorbent, not attractive, looks unnatural.

Cypress Mulch      Advantages - fairly cheep, looks somewhat natural, smells natural, provides hiding areas.  
Disadvantages - potentially dusty, bulky, small pieces can be swallowed and impact an animals digestive system.

Paper towels - similar to newspaper

Wood shaving - pine or aspen shavings make great all around substrates. With the only disadvantage being it's a bit pricey. **Never use cedar shavings for any reptile or amphibians.**

### Cage furniture

After substrate the only other necessities for a snake enclosure are a hiding area and a water bowl. Hide boxes are very important to all captive reptiles. They give the animal an opportunity to feel secluded. They can be purchased or made by simply cutting an opening in an appropriate sized plastic container. Make sure not to use a clear container.

## **Animal Acquisition/Quarantine**

The primary two methods of animal acquisition are collections from the wild, or purchasing from a dealer or breeder. Some pros and cons for each method are listed below.

*Note: Before engaging in wild collection be sure you can identify all native venomous species without fail.*

Wild Collection - Although this may be the easiest and most in-expensive method it may not always be the best. With some snake populations in serious decline, removing animals from a habitat could further degrade that particular ecosystem. In some cases removing wild animals may be beneficial. This is especially true in cases where the animal may be destroyed if not removed or relocated. If one decides to remove a specimen from the wild effort should be made to take a species that has a large population base.

Dealer/Breeder Purchase - The main disadvantage to this method is cost. In addition to the initial cost of the animal itself, there is also the potential shipping cost if the animal has to be transported. The many advantages of this method are as follows: Captive bred/raised animals are usually docile and well-mannered. Captive animals are also usually more likely to be free of internal/external parasites or illnesses. That being said, any animal, wild caught or captive, should be subjected to a quarantine period. Never place a new animal in an existing collection without being quarantined first.

Regardless of what method of acquisition is used one must be sure that all wildlife regulations are adhered to at all times. In order to transport a native animal across state lines one must first get an import permit. For information on these and other permit issues refer to the Red Book. At the current time there are no regulations or restrictions regarding most non-native non-venomous snakes in the state of Georgia.

Quarantine - Any new animal should be subjected to a quarantine period before being introduced to an existing collection. During this time the animal should be monitored for any illness or parasites, and treated accordingly. There is no set amount of time devoted to animal quarantine, but a two-week isolation time should be sufficient in most cases.

## Care/Maintenance/Feeding

Heating - The primary two methods of heating an animal enclosure are the basic heat lamp and some form of a radiant heat panel.

Heat lamps are basic reflective metal fixtures with either an incandescent or heat bulb. Advantages to this method are cost effectiveness and they are usually easy to acquire. The main disadvantage is safety. If not set up and monitored carefully a heat lamp can harm or even kill an animal. In order to prevent this make sure your animal has a good cool zone from which it can move back and forth from. Any type of thermometer can be used to measure temperatures in both ends of your enclosure. The other main disadvantage to heat lamps is the fact that they require more energy to operate than heat panels.

Heat panels - there are several forms of heat panels on the market today. They can be either an under tank heating pad, hot rock, radiant heat panel, or a strip of heating tape such as Flex watt. The disadvantage to this method is the initial cost, some of these products can be expensive. However, they draw less power and are safer for the animals.

Whichever heating method you choose, one should still monitor temperatures carefully. Most native Georgia snakes will do well with a hot spot between 85- 95 degrees Fahrenheit. Make sure that the cool area is 15 to 20 degrees cooler than the hot spot. This way the animal can effectively thermo-regulate by moving back and forth in its enclosure. For more precise temperature requirements for a particular species one should consult an experienced keeper or use the internet. *Note: Whichever method of heating one chooses, care should be taken that is wired and maintained properly so as to prevent a fire hazards.*

### Enclosure Maintenance

In the wild a snake is constantly moving about its habitat. This means that any defecation or urine that is emitted is simply left behind and likely not to be seen again. In captivity this is not so, therefore all feces or excess urine should be removed immediately. Water should be changed frequently, *at least* once week or whenever it looks dirty. Captive animals often defecate in their water dish. For this reason *water should be monitored daily*. Water that remains in a dish for an extended period of time can develop algae, bacteria and protozoan. Any one of these can lead to serious illness for a captive animal. Therefore a strict clean water regiment is a must.

Cleaning - In most cases enclosures should be cleaned every two weeks. With larger animals that tend to make a larger mess, cleaning more frequently may be necessary.

Feeding - Most captive snakes will do well on a feeding schedule or every one to two weeks. Different animals eat different amounts, so one must experiment to see how much to feed an animal during feeding. A general rule of thumb is to wait until the animal has readily accepted the first meal and then offer a second.



### Live versus dead prey in feeding

If at all possible it is always best to feed your animals pre-killed mice and rats. The main reason for this is safety. A live rodent can seriously injure or even kill a snake much larger than itself. Frozen rodents are also much cheaper than their live counterparts. If you have to feed your animal live prey, monitor it carefully. Never leave a live rodent in an enclosure unattended. If the snake does not take the live prey in 15 to 20 minutes, remove the rodent and try again later. With some species of snake, getting them to take rodent prey can be quite difficult. In these cases other prey must be used. Some of these animals are listed below along with their preferred prey items.

- Garter Snakes - frogs, toads, lizards, fish
- Water snakes - frogs, fish
- Hognose snakes - toads
- Racers - frogs, lizards, other snakes

With a little effort even these animals can be coaxed into taking rodent prey. It can however, be a time consuming process.

## Snake Programs

Live snake programs are almost always crowd pleasers. In most cases an interpreter will get their largest group numbers at these types of programs. There are certain guidelines and responsibilities one must take to make certain that the program is enjoyable for your visitors while placing the least amount of stress on the animals.

Animals should be kept in dark containers or bags. Snake bags or dark containers should be used to house animals when being transported from their regular enclosure to a program and vice versa. This way you cut off any visual stimuli, potentially keeping the snake from becoming agitated.

Always find out where you Ophidiophobic's are. Before any program ask for a show of hands of people who are extremely afraid of snakes. If your program involves moving amongst the crowd with the animal try to avoid these visitors or you may ask them politely to move to the outside portion of the group or to the back. Never intentionally scare someone by putting the animal near someone who has a fear of snakes. This behavior is completely irresponsible. If a visitor asks to see the animal up close, then take it to them, do not just assume that every one wants to see it up close and personal. Whenever handling a snake in close proximity to visitors always secure the area and instruct them not to make any sudden moves, especially around the head.

Know your animal. Learn as much as possible about your snake's natural history. You may receive questions about your snake's distribution, food and habitat preferences, length, size etc.

Try to keep questions to a minimum. Some of your visitors may have plans after your program. They may not wish to sit through a long Q and A session.

Try to have programs in a cool place. If possible have your program in a cooler environment, room temperature is perfect. The reason for this is snakes tend to get a little rowdy once they get too hot. This can make them extremely hard to work with.

Always keep the snake under your control. Do not allow a visitor to hold the animal completely on their own. If a visitor wants to hold the animal you may let them hold the tail end while you hold the head. Do not allow a crowd to gather around the animal. This can lead to a reactionary bite. Remember all snakes are capable of biting.

Always emphasize that even though you are handling snakes at your program no one, under any circumstance, should ever handle a snake. The majority of snake bites in the U.S. are the result of humans physically engaging the animal.

## **Venomous Snakes in Captivity**

Venomous snakes are some of the most fascinating animals on earth. They are also some of the most dangerous. For this reason they should *only* be kept by individuals with proper facilities and extensive experience.

Enclosure - Venomous enclosures require the utmost in security. They should be closed, with a locking device, preferably one with a key. Never use screen top cages for venomous animals. Accidentally resting your hand or arm on top of screen cage could be disastrous. Venomous enclosures should also be kept in a secure locking facility. As few people as possible should have access to the animals.

Care and Maintenance - Care for venomous species is basically the same as any other snake, except for the extreme caution needed. Always remove the animal before working with the enclosure. Place the animal in a secure container such as a large plastic garbage can. Snake hooks and tongs are a must when working with a venomous species.

Have a Friend - Always have someone else present when working with a venomous animal. It is always good to have an extra pair of eyes and hands in case of emergency.

Maintain Constant Eye contact with the snake - When working with a venomous animal always keep an eye on it. Snakes are acrobats and can maneuver into strike position in an instant. Therefore they require constant attention and respect.

In case of accidents - What to do if you are bitten:

- Secure the animal - No matter what, secure the animal first. Do not leave a venomous animal unattended. Your mistake should never put someone else in danger.
- Keep a venom extraction device on hand at all times. The Sawyer extractor pump is a great example.
- Apply a compression bandage. Take gauze or similar material and wrap the limb. Do not stop the blood flow, just slow it down.
- Proceed to the nearest medical facility as soon as possible. Call the hospital and inform them of the situation. Where the bite is, what symptoms may be showing already. It may not be beneficial to wait for an ambulance. If necessary have the EMT meet you en route to the hospital.

## Frequently Asked Questions

How many types of snakes are there? Although we do not know exactly how many snake species there are. Scientist estimate there are somewhere between 2,800 and 2,900 known species of snake earth.

How many types of snake are in the U.S.? Approximately 140 with 41 of these living in Georgia.

What is the fastest snake on earth? The black mamba can reach speeds of over 10 mph. This is not faster than a healthy adult human however.

What is the most dangerous snake in the U.S.? The copperhead accounts for two thirds of all venomous bites while the western diamondback rattlesnake accounts for the majority of fatal bites at around 2.5 deaths per year.

What is the most venomous snake on earth? The Australian inland taipan or fierce snake. One drop of this snake's venom kills over 100,000 rodents. That could equate to 100 humans. Interestingly that species has never caused a human fatality.

What snake is the most dangerous on earth? It is probably a close race between the saw scaled vipers and the Indian Cobras. Both which account for up to 20,000 deaths per year.

What states have the most fatal snake bites? Arizona, Texas, Alabama, Georgia, Florida are the top five.

What country has the most fatal snake bites? India, Sri Lanka, Myanmar "Formerly Burma." These 3 countries account for about 2 thirds of snake bite fatalities.

What is the longest venomous snake? The king cobra at 18 feet. What is the longest snake on earth? The reticulated python has been measured at over 28 feet.

Can you tell how old a rattlesnake is by counting its rattle? Absolutely not. A rattlesnake gets a new section every time it sheds. A healthy snake may shed four times a year. Also, rattles tend to break off.

Is it true that a coral snake has to chew on you to inject venom because its fangs are in the back of its mouth? No, a coral snake is front fanged, and while a small coral snake would have to find a finger tip or loose fold of skin to get a good grip, a large coral snake could inject a lethal dose to any part of the human body, and could do so instantly.

Can a cottonmouth bite underwater? Yes, one of the cottonmouths favorite prey items is fish, and these are usually found underwater.

How is antivenom made? First, raw snake venom is injected into a livestock animal, usually a horse or sheep. Over time this animal builds up antibodies to the venom. Blood is then removed and the antibodies are separated, refined, dried, and placed in storage. In the event that the antivenom is needed, it is mixed with a solution then administered intravenously.

You can always tell a venomous snake by the shape of its head or its body shape and size? False, while all of our native pit vipers have triangular/arrow shaped heads and are heavy bodied. The same can be said of other species, especially water snakes.

## **Venomous Snake Identification**

Before engaging in physical contact with any of Georgia's native snakes, one should be sure that he or she can correctly identify all of our states venomous snakes.

Coral snake - A member of the Elapid family which includes Cobras, kraits, and mambas. As with the other members of its family it produces a neurotoxic venom and is considered the most venomous snake in the new world. Bites are rare however, mostly the results of careless handling. The rhyme "red touches yellow kill a fellow - red touches black friend of Jack" is a good way to distinguish the coral snakes from its harmless mimics. This rhyme only holds true for north American coral snakes. Max size 3 feet.

Copperhead - The smallest and least toxic of all native pit vipers. While its bite is highly unlikely to be fatal, it can be extremely painful. Color can range from pink or orange to brown with darker hourglass cross bands. Young copperheads have a bright yellow tail which they use as a lure to attract prey. Maximum size 4.5 feet.

Cottonmouth or Water Moccasin - A large aquatic pit viper. Cottonmouth are closely related to copperheads and have very similar hour glass bands when younger. As the snake ages the cross bands fade to more of a solid color, usually brown or black, sometimes gray. Although not an aggressive animal as legend has it, its bite is potentially 10 times more dangerous than the copperhead and can be lethal. Max size 6 feet.

Pygmy Rattlesnake - A small, sometimes feisty rattlesnake. It is common in areas with a high frog population. Small frogs are its preferred prey. While bites from this animal are common, there has yet to be a fatal bite involving this snake in the U.S. The rattle is usually inaudible due to its small size. Many wild animals also have lost some or all of their rattles. Color ranges from light brown to gray. Often they have an orange stripe running down the back. Max 2.5 feet.

Timber rattlesnake - A large rattler with chevron shaped cross bands. Although usually more mild mannered than our other rattlesnakes it is still extremely dangerous. Until the early 80's the southern population was known as the canebrake rattlesnake. They are now considered one species. Max 6.5 feet.

Eastern diamondback - The largest rattler in the world, and probably the most dangerous snake in the U.S. Habitat destruction and persecution have severely depleted its numbers to the point that seeing one in the wild is extremely difficult. One should use extreme caution if encountered. Its large fangs and venom glands enable it to deliver a deep tissue bite. Max size 8 feet.

**Sources / Supplies**

KingSnake.com is widely considered the best source for reptiles/amphibians and supplies. One can find everything from breeders and dealers to caging, heating, and feeding supplies. There are thousands of sources on this site and one can find just about anything in regards to captive reptile husbandry.

Retailers such as PETCO, and PET SMART and their web sites are also good avenues to try.

Rodents can be purchased live at the local pet store or ordered online at places like Rodentpro.com or the mouseemporium.com, just to name a couple.

Snake handling equipment can be found at midwesttongs.com, acornnaturalist.com, or CCCreptile.com