

Encountering Native Snakes in Arkansas

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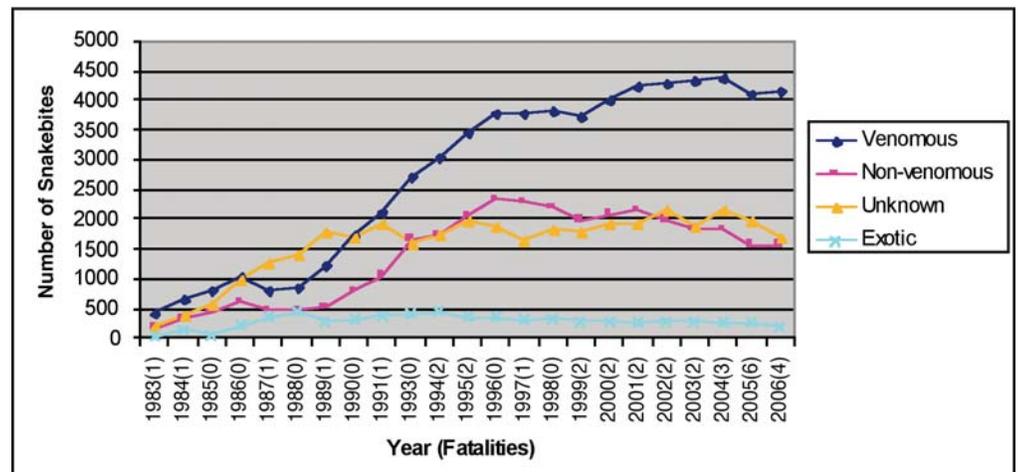
Snakes are feared more than any other wildlife species in Arkansas (Figure 1). According to psychologists and animal behaviorists, the fear of snakes is a learned behavior. Recent findings indicate our brains are pre-conditioned to readily accept this fear. Yet statistically, venomous snakebites account for fewer deaths than bee or wasp stings or lightning strikes, though these are also rare. Despite their rarity, data from annual reports of the American Association of Poison Control Centers indicate a trend of increasing numbers of venomous snakebites (Table 1). On average, a total of 8,200 snakebites occurred annually between 2000 and 2006 in the United States, of which about half were from venomous snakes. Of the 30,000 reported venomous snakebites during that time, only 21 resulted in mortality, or 0.07 percent of all venomous snakebites.



Figure 1. This juvenile eastern hognose (*Heterodon platirhinos*) is a common nonvenomous snake found throughout Arkansas. Photo by Kory Roberts.

According to the Arkansas Department of Health, from 1960 to 2007 only three Arkansas residents died from native snakebites, with all three occurring in the 1960s. One death in 1960 was a rattlesnake bite, while the other two in 1964 and 1965 were by unspecified snake species.

Table 1. Number of snakebites and fatalities in the United States, 1983-2007, reported to Poison Control Centers. American Association of Poison Control Centers. (Note: Data from 1992 are absent because of reporting problems.)



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In 1995, one nonresident died in Arkansas from a rattlesnake bite acquired in another state, and in 2004 another nonresident died after being bitten by an exotic, nonnative pet snake.

Despite their low incidence, occasionally snakebites occur, and with quick medical treatment, the vast majority of victims survive. Obviously, avoiding encounters with snakes will decrease the odds of being bitten. An antivenin is available for all native pit vipers, so it is helpful, but no longer imperative, to determine the particular species of pit viper.

Arkansas Snakes

Snakes serve an important role in our environment. They prey on rodents, insects, toads, frogs, crayfish, minnows and other snakes and are themselves food for

hawks, owls, foxes, bobcats, raccoons, fish and many other species. Of the 36 species of native snakes in Arkansas, only six are venomous (Table 2). Several excellent resources are available for identifying snakes.

The Amphibians and Reptiles of Arkansas by Stanley E. Trauth, Henry W. Robison and Michael V. Plummer. The University of Arkansas Press. 421pp.

Arkansas Snake Guide – available free from the Arkansas Game & Fish Commission (800-364-4263) or http://www.agfc.com/pdfs/dfm/arkansas_snake_guide.pdf.

Snakes of Arkansas web site: www.SnakesofArkansas.com sponsored by the Arkansas Herpetological Society.

Table 2. Venomous snakes of Arkansas.

Image	Species	Characteristics	Habitat
 <p>Photo by Kory Roberts.</p>	Copperhead <i>Agkistrodon contortrix</i>	Tan with darker brown hourglass-shaped bands. Bands sometimes thinly bordered with white. Belly mostly patternless but sometimes with lower spots between bands extending onto belly. Heat-sensing pits. Pupils elliptical. Juveniles with bright yellow tail.	Occurs statewide in mixed pine-hardwood forests, bottomland hardwood forests, rocky or brushy fields and hillsides.
 <p>Photo by Kory Roberts.</p>	Cottonmouth <i>Agkistrodon piscivorus</i>	Aquatic. Black or with dark, obscured patterning. Dark stripe from nostril to neck. Labial scales lighter and without vertical bars. Heat-sensing pits. Pupils elliptical. May gape white “cotton mouth” when disturbed. Buoyant swimmer. Juveniles with bold pattern contrast and bright yellowish-green tail.	Occurs statewide in variety of wetland habitats: swamps, oxbow lakes, sloughs, drainage ditches and streams.
 <p>Photo by Kory Roberts.</p>	Western Diamondback Rattlesnake <i>Crotalus atrox</i>	Mottled brown, tan and black with large, roughly diamond-shaped middorsal blotches. Blotches thinly etched with white except toward tail. Heat-sensing pits. Eyes elliptical and between light, diagonal stripes. “Coon tail” with rattle.	Occurs in west-central Arkansas in upland rocky, open pine-hardwood forests and rocky outcrops.

People mistakenly kill snakes when in fact they pose no threat. Most venomous snakes are slow to strike and do so only if provoked. Typically, snakes will go to great lengths to avoid a confrontation with people. A study of cottonmouths in the field (45 snakes) and laboratory (36 snakes) found half of the snakes encountered in the field tried to escape. In the lab where escape was not an option, over three-fourths used threat displays and about a third (13 of 36) bit an artificial hand used in the tests.

Some nonvenomous snakes share common characteristics with venomous snakes, perhaps to appear more threatening. The nonvenomous eastern hognose or “puff adder” will increase its head size and emit a smelly musk (Figure 2). If this doesn’t cause the threat to leave, the snake will roll over and play dead. The hognose, as well as other



Figure 2. The eastern hognose (*Heterodon platirhinos*) will puff out its head to appear more dangerous than it really is. Photo by Kory Roberts.

nonvenomous snakes, have color variations and patterns that can be mistaken for rattlesnakes. Some nonvenomous snakes will vibrate their tails against dead leaves, making rattlelike sounds. Although these characteristics are intended to improve survivability, these adaptations may lead to the opposite outcome when snakes encounter snake-intolerant people.

Table 2. (continued).

Image	Species	Characteristics	Habitat
<p>Photo by Kory Roberts.</p>	Timber Rattlesnake <i>Crotalus horridus</i>	Grayish, yellowish or light brown background with dark, jagged crossbands and rust-colored middorsal stripe. Head with darker band from eye to jawline (less obvious in some individuals). Heat-sensing pits. Eyes elliptical. “Velvet tail” with rattle.	Statewide in hardwood, mixed pine-hardwood, bottomland hardwood forests and rocky or brushy fields and hillsides.
<p>Photo by Kory Roberts.</p>	Western Pigmy Rattlesnake <i>Sistrurus miliarius</i>	Smallish. Gray with black crossbands and rust-colored middorsal stripe. Crossbands usually incomplete with gaps along sides of body. Head boldly patterned. Heat-sensing pits. Eyes elliptical. Diminutive rattle.	Statewide in open brushy lowlands, open hardwood and mixed pine-hardwood forests.
<p>Photo by Kelly Irwin, Arkansas Game and Fish Commission.</p>	Texas Coral Snake <i>Micrurus tener</i>	Rare. Alternating black, red and yellow bands so that “red touches yellow.” Bands extend onto belly. Red bands often with specks of black. Snout all black and stubby with next band being yellow.	Occurs in southwestern portion of state in moist pine, hardwood or mixed pine-hardwood forests with loose, sandy soils and pine straw, leaf litter and logs for cover.

Adapted with permission from *Snakes of Arkansas* web site, www.snakesofarkansas.com, and *Arkansas Snake Guide* by the Arkansas Game and Fish Commission.

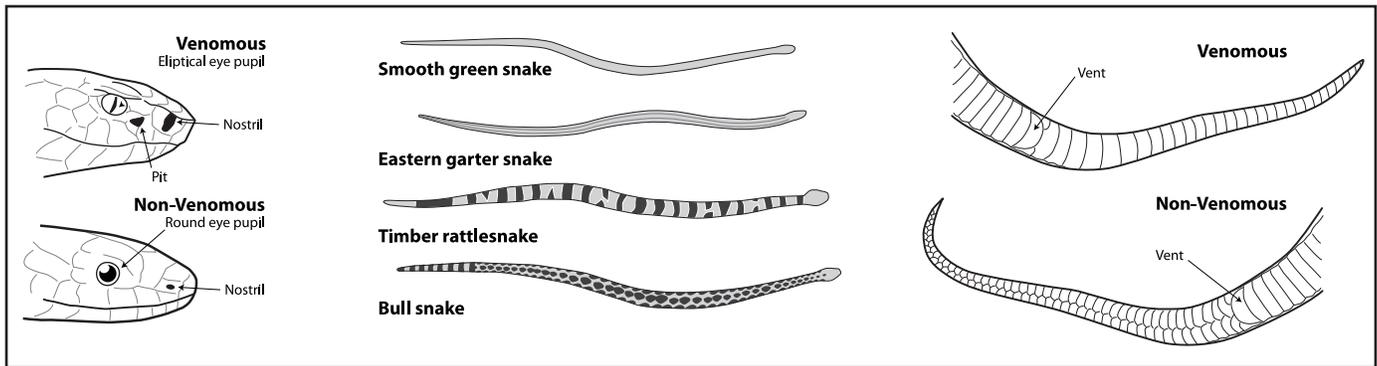


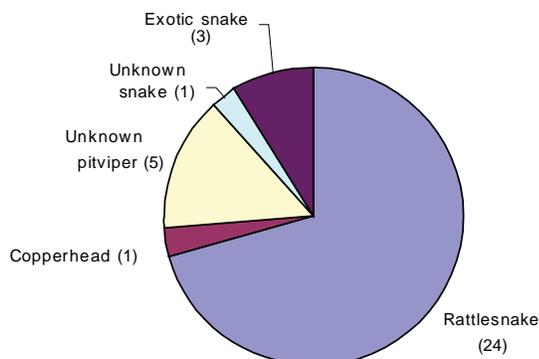
Figure 3. Characteristics of venomous versus nonvenomous snakes. Illustration by Chris Meux.

Venomous Versus Nonvenomous

Venomous native snakes present in Arkansas are the copperhead (*Agkistrodon contortrix*), cottonmouth (*Agkistrodon piscivorus*), western diamondback rattlesnake (*Crotalus atrox*), timber rattlesnake (*Crotalus horridus*), western pigmy rattlesnake (*Sistrurus miliarius*) and Texas coral snake (*Micrurus tener*). All but the Texas coral snake are in the family *Crotalinae*, also called pit vipers, with retractable fangs to inject venom and subdue prey. Snakes in the pit viper family are identified by a **combination** of characteristics including patterning and coloration, head shape, elliptical pupil (i.e., “cat eye”), presence of pits between eye and nostril, body thickness and unbroken tail scales behind the vent (Figure 3). Rattlesnakes are easily identified by the distinctive rattles on the end of their tails, which are used when rattlesnakes are frightened as an avoidance alert.

The venom of pit vipers is hemotoxic, which means it destroys red blood cells, capillaries and tissue. Rattlesnake venom is the most severe of the pit vipers. Nationally, rattlesnakes account for the vast majority of snakebites (Table 3). At least 24 of 34 reported snakebite deaths were from rattlesnakes between 1983 to 2006. Case studies indicate several were caused by a combination of alcohol

Table 3. Number of fatalities caused by venomous snakes in the United States from 1983-2006 reported to Poison Control Centers.



American Association of Poison Control Centers.

consumption and poor judgment or an allergic reaction to the antivenin. No deaths were recorded from coral snakes during this time.

A Texas coral snake’s coloration distinguishes it from nonvenomous snakes. Remember the saying, “red touch yellow – kill a fellow; red touch black – venom lack,” to help prevent mistaken identity with similar nonvenomous species such as the milk snake. The coral snake has potent venom which is neurotoxic, attacking the nervous system of its prey. Venom is injected through short fangs, requiring the coral snake to bite and chew its prey for delivery of venom. Fortunately, the coral snake is usually docile and seldom bites when disturbed. Few people come into contact with coral snakes because of its highly secretive habits in forests in southwestern Arkansas.

Avoiding Snake Encounters

Understanding snakes and their habits can help with avoiding a snake encounter. Oftentimes movies and the popular press play upon people’s fear of snakes for entertainment purposes. Snakes do not chase someone down and try to do harm. A venomous snake observed from a distance and left alone is completely harmless.

The camouflage of pit vipers makes them well-suited to hiding undetected in locations where prey species are likely to be present. Snakes wait for their prey underneath or beside logs, rocks and debris. To avoid pit vipers, walk on paths with clear visibility and little ground cover where snakes may be easily seen. Never step over logs or other obstacles unless you can see the other side. Carry a walking stick, make noise and be wary, particularly of where your foot is about to step. When walking or hiking outdoors in an area known for snakes, wear snakeproof boots at least 10 inches high or snake leggings.

Pattern your outdoor activity to avoid snakes. Snakes are ectothermic or “cold-blooded,” which means their body temperature is similar to their surroundings. Most snakes prefer to maintain body heat at about 86 degrees F, though they are active in temperatures ranging from 50 to 104 degrees F. Snakes often seek

particular locations to regulate their body temperature. In the heat of summer, snakes are more active at night and seek cooler areas for daytime retreat. When walking at night in the summer months, use a flashlight. In the late fall and early spring, snakes seek rocks or patches of sunlight to bask and heat their bodies and tend to be more active during daylight hours. Be snake alert when walking through rocky areas or in leaf litter, which can camouflage a snake.

When cleaning debris, watch where you put your hands and feet. If possible, don't put fingers under debris you intend to move. Use a wooden pole to move or flip the object first to make sure a snake isn't hidden underneath.

If you encounter a snake, step back and allow it to go on its way. Snakes usually don't move fast, and you can retreat from the snake's path.

Dealing With Snake Problems

There are several options for dealing with snake problems including habitat modification, exclusion from buildings, capture/release of nonvenomous snakes, constructing a snakeproof fence or birdhouse and leaving them alone.

Habitat modification. If snakes are a problem, keep snakes from your yard by mowing the lawn regularly and removing piles of logs, brush, rocks or debris where mice and other prey may live. Eliminate cool, damp areas where snakes hide. Keep mulch in flower beds to a minimum and avoid low-growing plants, particularly near the home. Controlling for insects and rodents can help control snakes. Avoid leaving dog food, cat food or excess seeds from bird feeders outside. Keep grains or other rodent attractants in sealed containers, and set mouse traps to control rodents around your home.

Exclude from buildings and chicken houses.

Use caulk, weather stripping, spray foam, mortar or other material to seal small openings around foundations and spaces around plumbing pipes, heating/cooling and electrical ducts. Snakes can enter a hole the size of a dime, so seal every possible entry.

Capture and release of nonvenomous snakes.

Nonvenomous snakes found indoors can be removed from your property and relocated.

- Nonvenomous snakes found indoors can be removed by sweeping them into a large bucket or trash can and releasing outdoors. It is not recommended that you capture snakes by hand.
- In basements or outbuildings, place a pile of damp burlap sacks in a corner to concentrate the snakes. Place a dry sack on top to keep the moisture from evaporating. The next day, use a shovel to move the pile of bags outdoors and release the snakes.

- Glue boards or glue trays can be used to capture and release snakes from buildings. Fasten about 144 square inches of glue boards to a $\frac{1}{4}$ ×24×18-inch piece of plywood (Figure 4) and place it along the wall. Alternatively, one to four rodent glue boards can be nailed to plywood, depending on the size of the snake to be captured. If you are squeamish about getting close to a snake, drill a $\frac{3}{4}$ -inch hole in one corner of the plywood to remove the board using a hook or long stick. Check glue boards often, at least daily. Release outdoors by pouring vegetable oil over the snake to break down the glue.

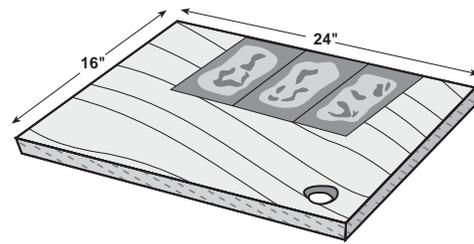


Figure 4. Nonvenomous snakes can be captured inside buildings and released outdoors using a homemade glue board. Illustration courtesy of University of Missouri Extension.

Snakeproof birdhouses. Snakes are adept at climbing and eating bird eggs and fledglings. Snakes can climb smooth poles, even ones that have been greased. A cone guard mounted on a metal pole or PCV pipe can be effective at deterring snakes. Cone guard baffles can be purchased where wild bird supplies are sold or made from galvanized sheet metal (Figure 5).

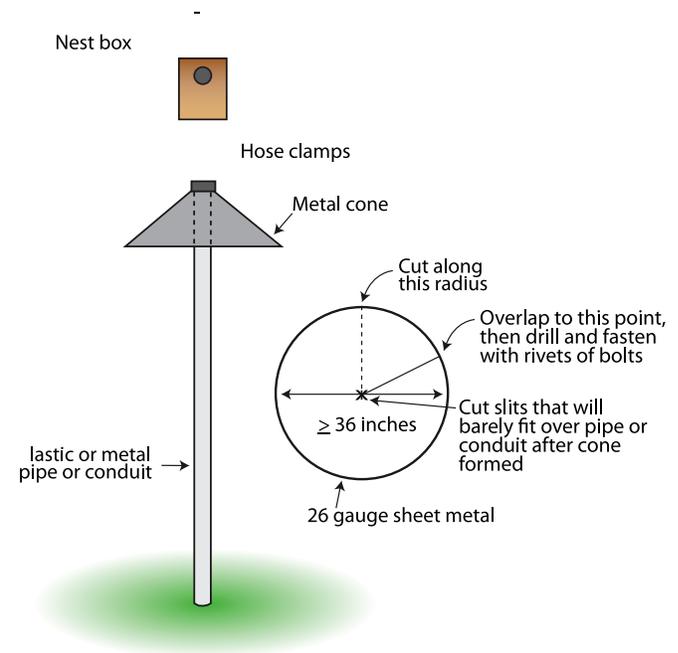


Figure 5. A cone guard or baffle can prevent snakes from entering songbird nest boxes. Illustration by Chris Meux.

Snakeproof fencing. Under certain circumstances, such as a small backyard, lakeside yard or play area, constructing a snakeproof fence is an option (Figure 6). Use 36-inch high galvanized hardware cloth with a 1/4-inch mesh. Bury the fence 6 inches deep and slant outward at a 30-degree angle. The gate should fit tightly and swing into the area. Clip vegetation around the fence to keep snakes from crossing over.

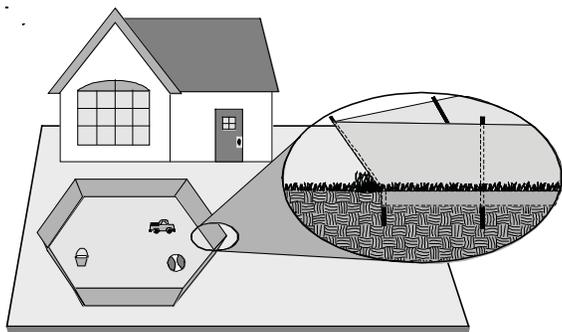


Figure 6. A snakeproof fence can be an option for enclosing small areas. Illustration courtesy of University of Missouri Extension.

Repellents. No repellents have proven effective for snakes. Dr. T's Snake-A-Way (7 percent naphthalene and 28 percent sulfur), a commercial snake repellent, has not proven successful in repelling western rattlesnakes and plains garter snakes. Several potential home remedies have been tested on black rat snakes and have also proven ineffective. These include gourd vines, moth balls, sulfur, cedar oil, a tacky bird repellent, lime, cayenne pepper spray, sisal rope, coal tar and creosote, liquid smoke, artificial skunk scent and musk from a king snake (which preys on other snakes).

Leave alone. If the snake is not causing harm, oftentimes the best response is to simply leave it alone. Do not pick up or handle an unknown snake species. Many snakes have different pattern variations as juveniles and color phases as adults. Also some species of nonvenomous snakes consume rodents and other snakes (Figure 7), including



Figure 7. Speckled kingsnakes (*Lampropeltis getula holbrooki*) have a reputation for consuming other snakes which can be larger than themselves. Photo by Lela Riley.

venomous snakes. So having nonvenomous species around your yard could be beneficial.

Killing a snake is not recommended. Many people get bitten in the process of trying to kill a venomous snake. Leaving a snake alone often is the best option. If lethal removal is necessary, a venomous snake should be struck with a long stick, rod or other tool, such as a garden hoe. Keep outside of the snake's striking range, which is usually less than one-half the total length of the snake. Be cautious when removing the snake. A dead pit viper, even if it has been decapitated, can bite and inject venom for several hours after the initial blow. Placing a warm object, such as a hand, near the snake's mouth may trigger a biting response.

Legal Aspects

All native snakes, including venomous snakes, are protected by law and are illegal to kill unless they "pose reasonable threat or endangerment to persons or property" on your private property, according to the Arkansas Game and Fish Commission wildlife code. The Arkansas Game and Fish Commission enforces regulations that prohibit killing nongame species, including snakes, except under limited circumstances (Figure 8). Evidence indicates some snake species are declining due to habitat destruction and human activities. The Arkansas Wildlife Action Plan (www.WildlifeArkansas.com) identifies seven snake "species of concern" because of declining numbers, including two venomous species, the western diamondback rattlesnake and the Texas coral snake.

Snakebite Treatment

If bitten by a snake, move away to avoid further bites. Do not attempt to catch or kill the snake, as this could result in additional snakebites and also wastes time when treatment should be the priority. If there is uncertainty whether the snake is a venomous pit viper, check the injured area for one or two (and on rare occasions three) fang marks in addition to teeth marks. Typically, there is swelling and pain in the bite area, followed by black and blue discoloration of the tissue and possibly nausea.



Figure 8. Nonvenomous water snakes, such as this midland water snake (*Nerodia sipedon pleuralis*) can be mistaken for cottonmouths and are illegal to kill. Photo by Kory Roberts.

Remain calm so as not to increase blood circulation and spread venom more quickly throughout the body. Remove rings, watches, bracelets, shoes and other restrictive clothing near the bite. Seek medical attention immediately. Call ahead, if possible, to alert medics, or call your local emergency medical facility if you need transportation. Keep the bite area immobilized as much as possible. **Do not** apply ice. **Do not** make cuts. **Do not** apply a tourniquet. Wash the bite site with alcohol or soap and water, if available. Be sure to wipe in the direction away from the wound.

A snakebite victim may go into shock if the tissues in the body do not receive enough oxygen or nutrients. Symptoms of shock are the skin becomes clammy and pale, the person becomes confused or loses consciousness or complains of chest pain, as the heart isn't receiving an adequate oxygen supply. Lay the person down in a safe place and try to keep him or her warm until emergency assistance arrives.

If a coral snakebite is suspected, seek immediate medical attention. Because of their tiny teeth, a coral snake's bite is difficult to detect. Their bites, though rare, are easy to miss. They are painless, with little change in the surrounding tissue. Local numbness may occur and breathing will become labored. As symptoms progress, these symptoms may become more difficult to reverse medically.

Although exotic venomous snakebites are rare, more fatalities are predicted as more people keep them as pets. Keepers of exotic snakes should keep venom protocols. Seek immediate medical attention and alert medics quickly as it may be difficult to find antivenin for these less common, nonnative snakes.

If bitten by a nonvenomous snake, treat the wound as you would any minor scrape or cut. Keep it clean and apply antibiotics to reduce the risk of infection. A bite from a nonvenomous snake may feel like a pinch or pin prick and may itch, but it shouldn't sting like a venomous snakebite. The bite wound will correspond with the rows of sharp, pointy teeth found in a snake's mouth. The bite may bleed more than one might expect due to the sharpness of the teeth and anticoagulant properties of the snake saliva.

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Acknowledgments – Thank you to the following reviewers of this fact sheet: Kory Roberts, Arkansas Herpetological Society, Kelly Irwin, Arkansas Game and Fish Commission, and Dr. Phil Tappe of the University of Arkansas - Monticello and Arkansas Forest Resources Center.

Printed by University of Arkansas Cooperative Extension Service Printing Services.

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FSA9102-PD-12-08N

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