Illinois SNAKES



yellowbelly water snake *Nerodia erythrogaster*



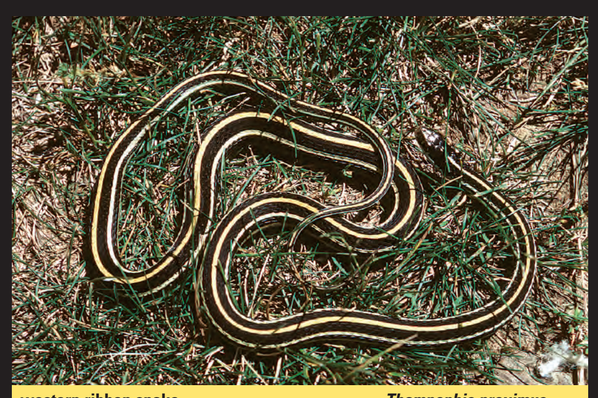
eastern hognose snake *Heterodon platirhinos*



eastern worm snake *Carphophis amoenus*



racer *Coluber constrictor*



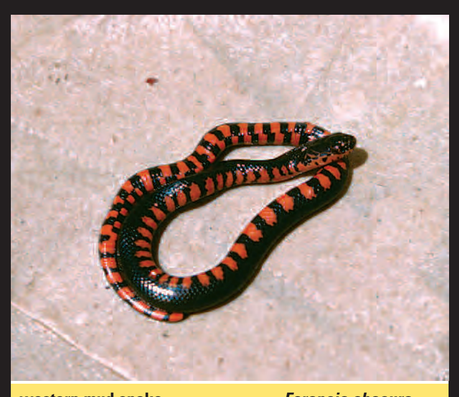
western ribbon snake *Thamnophis proximus*



Graham's crayfish snake *Regina grahamii*



northern water snake *Nerodia sipedon*



western mud snake *Farancia abacura*



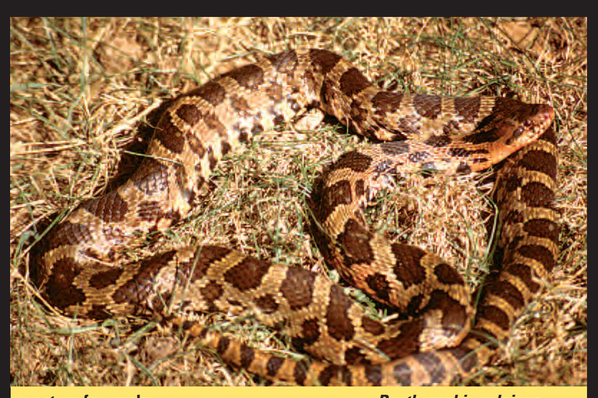
smooth earth snake *Virginia valeriae*



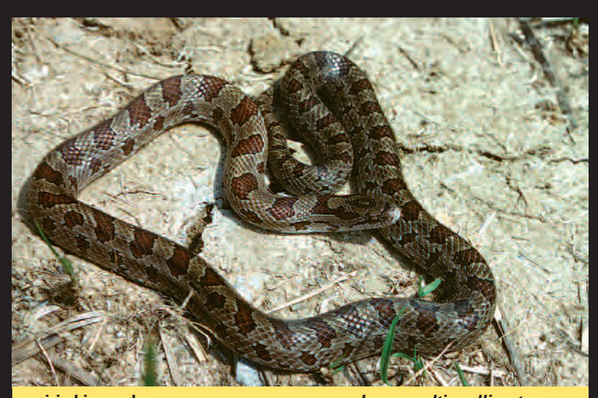
common garter snake *Thamnophis sirtalis*



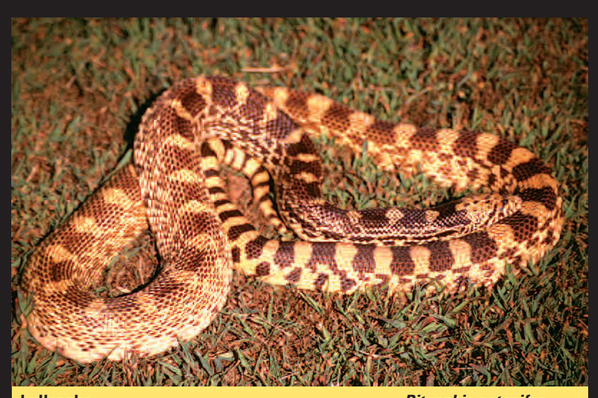
redbelly snake *Storeria occipitomaculata*



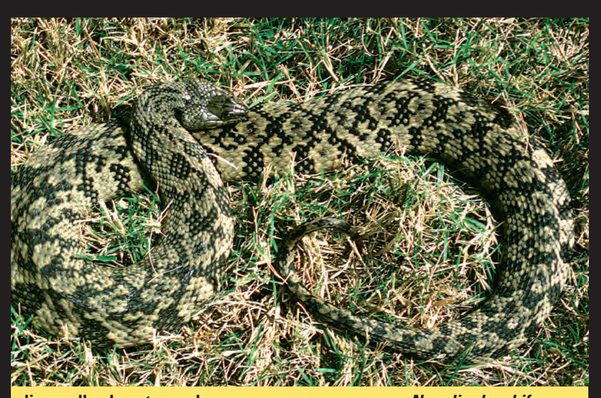
western fox snake *Pantherophis vulpinus*



prairie kingsnake *Lampropeltis calligaster*



bullsnake *Pituophis catenifer*



diamondback water snake *Nerodia rhombifer*



common kingsnake *Lampropeltis getula*



red milk snake *Lampropeltis triangulum syspila*



brown snake *Storeria dekayi*



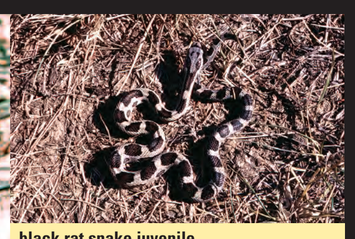
rough green snake *Opheodrys aestivus*



ringneck snake *Diadophis punctatus*



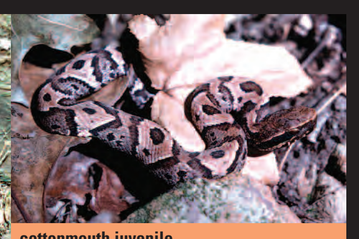
black rat snake *Pantherophis spiloides*



black rat snake juvenile



cottonmouth *Agkistrodon piscivorus*



cottonmouth juvenile



timber rattlesnake *Crotalus horridus*



timber rattlesnake juvenile



copperhead *Agkistrodon contortrix*



copperhead juvenile



eastern massasauga *Sistrurus catenatus*



eastern massasauga juvenile

Thirty-nine species of snakes inhabit Illinois, dwelling in forests, grasslands, marshes, swamps, ponds, lakes, streams, rivers, and sloughs. Some species are quite common, while others are very rare. These reptiles are solitary predators that eat a variety of prey. Snakes have interesting structural features including the **Jacobson's organ**, which is used to detect odors. They lack legs, ear openings, and eyelids. Four species of Illinois snakes, the copperhead (*Agkistrodon contortrix*), the cottonmouth (*Agkistrodon piscivorus*), the timber rattlesnake (*Crotalus horridus*), and the eastern massasauga (*Sistrurus catenatus*), are **venomous**. The chief conservation concerns for Illinois snakes are habitat alteration and loss, and over-exploitation for the pet trade. Misinformation, lack of information, and irrational fears have also affected snake populations.

glossary terms defined on reverse

Species List

Classification:
Kingdom Animalia
Phylum Chordata
Class Reptilia
Order Squamata

Snakes are not shown in equal proportion to actual size.

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Family Colubridae

eastern worm snake	*Carphophis amoenus*
racer	*Coluber constrictor*
ringneck snake	*Diadophis punctatus*
western mud snake	*Farancia abacura*
eastern hognose snake	*Heterodon platirhinos*
prairie kingsnake	*Lampropeltis calligaster*
common kingsnake	*Lampropeltis getula*
red milk snake	*Lampropeltis triangulum syspila*
yellowbelly water snake	*Nerodia erythrogaster*
diamondback water snake	*Nerodia rhombifer*
northern water snake	*Nerodia sipedon*
rough green snake	*Opheodrys aestivus*
black rat snake	*Pantherophis spiloides*
western fox snake	*Pantherophis vulpinus*
bullsnake	*Pituophis catenifer*
Graham's crayfish snake	*Regina grahamii*
brown snake	*Storeria dekayi*
redbelly snake	*Storeria occipitomaculata*
western ribbon snake	*Thamnophis proximus*
common garter snake	*Thamnophis sirtalis*
smooth earth snake	*Virginia valeriae*

Family Viperidae

copperhead	*Agkistrodon contortrix*
cottonmouth	*Agkistrodon piscivorus*
timber rattlesnake	*Crotalus horridus*
eastern massasauga	*Sistrurus catenatus*

This poster was made possible by:

Illinois Department of Natural Resources
Division of Education
Division of Natural Heritage
Illinois State Museum

Illinois Department of Transportation

Text: Scott R. Ballard, IDNR, Division of Natural Heritage
Design: Illinois State Museum

Anatomy

Snakes, like all reptiles, have a scale-covered body. The dry scales reduce moisture loss through the skin. Depending upon the species, scales are either **keeled** or smooth. Snakes do not have eyelids. Each eye is covered with a clear, hard scale. The snake's tongue is used in the sense of smell. By flicking its forked tongue out of the mouth, a snake can pick up chemical particles from the air around it. When the tongue is pulled back into the mouth, the fork tips are placed into the **Jacobson's organ**, located in the front part of the roof of the mouth. The snake detects odors by analyzing the particles with its nervous system. The sense of smell is important to this animal for recognizing prey, enemies, and a mate. Snakes have teeth that are curved toward the back of the mouth so that prey items cannot easily escape once they are in the mouth. The lower jaws are movable which allows the snake to take in large food items.

Snakes do not have legs, yet they can move quickly and easily in a variety of habitats. Their flexible movements are the result of their reduced skeletal system, composed of a skull, many vertebrae, and many ribs. The skeletal and muscular systems along with the platelike **scutes** on the belly work together to allow a snake to move swiftly, pushing off of surface irregularities in the places it crawls.

The male snake has paired reproductive organs called the **hemipenes** stored in the base of the tail, one part along each side. They are used to transfer sperm to the female. Only one **hemipenis** is used at any time, and the one used depends on which side of the female's body the male snake is crawling along.



A black kingsnake (*Lampropeltis getula nigra*) flicking its tongue to pick up chemicals from the air.

Life History

Illinois snake species **hibernate** during the cold winter months, becoming active in spring as temperatures and day length increase. Snakes are **cold-blooded** and can be seen **basking** in the sun on logs or other objects. They are generally active during the day, but can become nocturnal when summer temperatures rise. Snakes are solitary predators. They use their sense of smell to track prey items. Once encountered, the prey is either overpowered, **constricted**, or injected with **venom** to subdue it, and then swallowed whole. After feeding, the snake seeks out a place to hide until the prey is digested. Snakes eat a variety of prey including invertebrates, fishes, lizards, birds, rats, mice, and other small mammals. Some snakes even eat other snakes.



A copperhead (*Agkistrodon contortrix*) shedding its skin. Notice the bright pattern on the snake where the old skin has peeled away.

Although the snake's body grows throughout its life, its outer skin layer does not. The snake must shed its old skin to allow the new skin layer underneath to continue growing. At this time, the body produces a milky-blue fluid that separates the two layers of skin, which causes the clear scales over the eyes to become milky in appearance and the overall color of the snake to be drab. After a few days, the eye scales become clear, and the snake begins rubbing its head on rough objects to loosen the skin. It then crawls out of the old skin. Snakes shed their skin two to four times per year depending on how much they eat. The shed skin is usually turned inside out.

Snakes come together in the spring and fall for mating. Spring matings result in young born or hatched in the late summer or early fall of the year. If a female mates in fall, she will store the sperm in her body until spring. If she does not encounter a male in the spring, she can still produce young using the stored sperm. Snakes are either **oviparous**, **ovoviviparous**, or **viviparous**. Oviparous snakes lay leathery-shelled eggs in late May and June. The eggs are placed in moist, warm areas such as rotting logs and stumps. The young have a small egg tooth on the snout that enables them to cut through the shell. After hatching, the egg tooth falls off. Ovoviviparous and viviparous snakes retain the developing embryos in their body until late summer. Their young are born live in thin, transparent membranes from which they emerge. Snakes do not exhibit parental care for their young. Young snakes live for a few days on yolk stored in their stomach before seeking their own prey.



Recently hatched snake eggs in moist, rotting wood.

Venomous Snakes

Four native Illinois snake species are venomous: the copperhead (*Agkistrodon contortrix*), the cottonmouth (*Agkistrodon piscivorus*), the timber rattlesnake (*Crotalus horridus*), and the eastern massasauga (*Sistrurus catenatus*). Venom is a toxin for subduing prey. It is delivered through a pair of hollow fangs in the front, upper mouth that fold up when the mouth is closed and drop into place when the snake bites. The fangs are shed and replaced periodically. Venomous snakes strike, inject venom, then pull away. They find and eat the prey after it dies. Illinois' venomous snakes produce venom that affects the blood of the prey. **Juvenile** snakes have venom equal in potency to that of the adult, but they produce lesser amounts.



The head of a timber rattlesnake (*Crotalus horridus*) shows the characteristics of a pit viper. Note the elliptical pupil in the eye and the heat-sensing pit, which is seen just above the upper lip, between the eye and the nostril.

Illinois' venomous snakes are **pit vipers**, having a large opening, or "pit," on each side of the head between the eye and nostril. It is used to detect heat emitted by potential warm-blooded prey. Besides the pit, venomous snakes can be recognized by the elliptical pupil in the eye. With the exception of the timber rattlesnake, the tip of the tail is bright yellow in all juvenile Illinois venomous snakes.

Venomous snakes tend to be restricted to specific habitats. Copperheads occur in the southern one-third of Illinois, south of Route 16, and in the lower Illinois River valley. They prefer upland forests or river bluffs with limestone or sandstone outcroppings. Cottonmouths live in swamps and wet bottomlands in southern Illinois, south of Route 13. Timber rattlesnakes may be found in the southern one-fourth of the state (south of Interstate 64), in the lower Illinois River valley, in the Mississippi River valley and in a few other locations. These snakes prefer heavy timber with rock outcrops and bluffs. Eastern massasaugas live in scattered locations within the counties of Madison, Clinton, Piatt, Knox, Warren, Will, Cook, and Lake. Their habitats are prairie wetlands and river floodplains.

While venomous snakes are not aggressive and tend to bite people only when stepped on, picked up, or cornered, their bite is a serious matter. Even freshly killed snakes can bite. These snakes should be avoided and precautions taken (wear leather boots, do not reach under rocks or logs, do not step over rocks or logs, look around before you sit) if you are entering an area possibly inhabited by venomous snakes. Although usually not deadly, the bite is painful and can cause swelling, nausea, and the risk of infection. If you are bitten, go to a hospital for treatment immediately.

Conservation

Eleven Illinois snake species are listed (as of 2007) as either state **endangered** or state **threatened**. Endangered Illinois snakes include the Great Plains rat snake (*Pantherophis emoryi*), the coachwhip (*Masticophis flagellum*), broad-banded water snake (*Nerodia fasciata*), and the eastern massasauga (*Sistrurus catenatus*). Illinois threatened snakes include Kirtland's snake (*Clonophis kirtlandii*), the timber rattlesnake (*Crotalus horridus*), the western hognose snake (*Heterodon nasicus*), the Mississippi green water snake (*Nerodia cyclopion*), the flathead snake (*Tantilla gracilis*), the eastern ribbon snake (*Thamnophis sauritus*), and the lined snake (*Tropidoclonion lineatum*). Several of these species are at the edge of their geographic range in Illinois, occurring in only a few counties and having never been present in large numbers. Kirtland's snake, the eastern massasauga and timber rattlesnake, however, are sharply declining over a large area of the United States.

Habitat alteration and loss are major factors in the declining populations of snake species. Many people do not consider snakes beneficial and are not concerned about destroying the forests, grasslands, swamps, and sloughs where snakes live when developing and building. Another factor is the illegal trade of reptiles in Illinois. There are several laws designed to protect all native Illinois snake species. However, selling reptiles can be profitable and is tempting to some people even though it is illegal. Killing of snakes because of human misinformation, lack of information and irrational fears has also affected populations. Habitat preservation, law enforcement, and education are the keys to conserving Illinois snakes.



The eastern massasauga (*Sistrurus catenatus*), a rattlesnake species, is endangered in Illinois.

Illinois SNAKES

Glossary

bask	to expose the body to the direct rays of the sun (e.g., snakes may be seen basking on rocks or logs)
cold-blooded	having a body temperature that varies with that of the environment
constriction	method used by some snakes to kill prey by coiling tightly around the prey item to prevent it from breathing
endangered species	a species in danger of becoming extinct within all or part of its range
hemipenis; hemipenes (pl.)	paired organ in male snakes used to transfer sperm to the female in sexual reproduction
hibernate	to become inactive during cold periods of the year
Jacobson's organ	chemically sensitive organ in the mouth that is used with the tongue to detect smells
juvenile	individual that has not attained sexual maturity
keel; keeled	raised ridge on the scales of the sides and back of some snakes
keratin	hard, tough, fibrous protein produced in the skin - the basic substance that makes up scales, claws, fingernails, and hair
oviparous	animals producing eggs that hatch outside the body of the female
ovoviviparous	species in which the eggs develop and hatch inside the female's body
pit viper	a venomous snake with a heat-sensing pit on each side of the head
scute	an enlarged scale on a reptile, such as that found on the belly of snakes
threatened species	a species likely to become endangered
venom	a poisonous secretion transmitted by a bite or a sting
venomous	secreting and transmitting venom
viviparous	species in which the young are born live after developing completely within the female's body

Snake Facts

- The smallest snake in Illinois is the flathead snake (*Tantilla gracilis*). The longest Illinois specimen measures eight inches (20.3 cm).
- The largest Illinois snake is the bullsnake (*Pituophis catenifer*), with the Illinois record length at seven feet, two inches (218.5 cm).
- A snake can swallow prey that is three times larger than the size of its own head.
- Snakes are very efficient rodent controllers. Large and medium-sized snakes can eat up to nine pounds of rats and mice per year. That amount of rodents could fill a king-sized pillowcase!!
- Females of some snake species can store sperm for as long as five years inside their body.
- Snake scales and rattlesnake rattles are made of **keratin**, a hard protein also found in the hair, fingernails, and hooves of other animals.
- Snakes have four rows of teeth in the top of the mouth and two rows on the bottom of the mouth.
- Rattlesnakes add a new segment at the base of the rattle each time the snake sheds its skin. Old segments at the tip may disintegrate or break off.
- Kingsnakes are immune to the venom of copperheads, cottonmouths, and rattlesnakes.
- When threatened, a hognose snake spreads its head and neck, somewhat like a cobra would, then rolls over and plays dead if it continues to be disturbed.

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Agency Resources

Information about snakes is available from the Illinois Department of Natural Resources (IDNR). The Illinois Natural History Survey, Illinois State Museum, and Division of Natural Heritage study distribution and population levels of these species, maintain research collections, and develop and implement management plans. The Division of Ecosystems and Environment reviews development plans proposed by local and state governments and recommends measures to reduce or avoid adverse impacts to endangered and threatened species and their habitats. The Division also provides information about the distribution of endangered and threatened species in Illinois. The IDNR Division of Education offers professional development opportunities and provides educational materials for teachers.

Illinois Department of Natural Resources

Division of Ecosystems and Environment
One Natural Resources Way
Springfield, IL 62702-1271
217-785-5500
http://dnr.state.il.us/orep/nrrc/

Division of Education
One Natural Resources Way
Springfield, IL 62702-1271
217-524-4126
dnr.teachkids@illinois.gov
http://dnr.state.il.us/lands/education

Division of Natural Heritage
One Natural Resources Way
Springfield, IL 62702-1271
217-782-6424
http://dnr.state.il.us/orc/

Illinois Natural History Survey
1816 South Oak Street
Champaign, IL 61820-6970
217-333-6880
http://www.inhs.uiuc.edu/

Illinois State Museum
502 South Spring Street
Springfield, IL 62706-5000
217-782-0061
http://www.museum.state.il.us

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