

Illinois TURTLES



alligator snapping turtle *Macrochelys temminckii* Photo © Scott R. Ballard



painted turtle *Chrysemys picta* Photo © Dr. E. O. Moll



snapping turtle *Chelydra serpentina* Photo © Dr. E. O. Moll



river cooter *Pseudemys concinna* Photo © Dr. E. O. Moll



slider *Trachemys scripta* Photo © Dr. E. O. Moll



common map turtle *Graptemys geographica* Photo © William Wengelewski



false map turtle *Graptemys pseudogeographica* Photo © Dr. E. O. Moll



Ouachita map turtle *Graptemys ouachitensis* Photo © Dr. E. O. Moll



spotted turtle *Clemmys guttata* Photo © Dr. E. O. Moll



Blanding's turtle *Emydoidea blandingii* Photo © Scott R. Ballard



eastern box turtle *Terrapene carolina* Photo © Scott R. Ballard



ornate box turtle *Terrapene ornata* Photo © Scott R. Ballard



eastern mud turtle *Kinosternon subrubrum* Photo © Scott R. Ballard



Illinois mud turtle *Kinosternon flavescens spooneri* Photo © Scott R. Ballard



common musk turtle *Sternotherus odoratus* Photo © Dr. E. O. Moll



smooth softshell *Apalone mutica* Photo © Dr. E. O. Moll



spiny softshell *Apalone spinifer* Photo © Scott R. Ballard

Turtles appeared on the Earth some 230 million years ago. They lived during the age of the dinosaurs, before there were mammals, birds, lizards, snakes or crocodiles, and continue to thrive today. Turtles are unique among vertebrates because they possess a shell into which they can withdraw their head, neck, limbs and tail. This ability greatly reduces their exposure to predators.

Two hundred sixty species of turtles occur worldwide. Seventeen of these species inhabit Illinois, dwelling in forests, prairies, marshes, swamps, ponds, lakes, streams and rivers. Those **aquatic** species that **bask** are regularly seen on sunny days lining logs and sand banks. Other species are most often encountered in the spring while crossing highways and fields in search of new habitats, mates or nesting sites. The chief conservation issue for turtles is the loss or alteration of critical habitats. Over-exploitation of turtles for food and the pet trade are also serious problems in Illinois.

[glossary terms](#) defined on reverse

Species List

All turtle species currently recognized in Illinois are depicted above. Turtles are not shown in equal proportion to actual size.

Family Chelydridae	
snapping turtle	<i>Chelydra serpentina</i>
alligator snapping turtle	<i>Macrochelys temminckii</i>
Family Emydidae	
painted turtle	<i>Chrysemys picta</i>
spotted turtle	<i>Clemmys guttata</i>
Blanding's turtle	<i>Emydoidea blandingii</i>
common map turtle	<i>Graptemys geographica</i>
Ouachita map turtle	<i>Graptemys ouachitensis</i>
false map turtle	<i>Graptemys pseudogeographica</i>
river cooter	<i>Pseudemys concinna</i>
eastern box turtle	<i>Terrapene carolina</i>
ornate box turtle	<i>Terrapene ornata</i>
slider	<i>Trachemys scripta</i>
Family Kinosternidae	
Illinois mud turtle	<i>Kinosternon flavescens spooneri</i>
eastern mud turtle	<i>Kinosternon subrubrum</i>
common musk turtle	<i>Sternotherus odoratus</i>
Family Trionychidae	
smooth softshell	<i>Apalone mutica</i>
spiny softshell	<i>Apalone spinifer</i>

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Classification & Anatomy

Turtles are members of the Phylum Chordata, Class Reptilia and Order Testudines. Their unique shell (Figure 1), lack of teeth and bony jaws, which are covered with a hard, **keratinized** beak somewhat like that of birds, make them unusual. A turtle shell has as many as 60 bones. It has two sections: a **carapace**, covering the animal's back, and a **plastron**, covering its belly. The carapace and plastron are connected on the turtle's right and left sides by a bony bridge, which is formed by extensions of the plastron. The shell is fashioned from bones originating in the skin, which fuse with one another as well as with the ribs, vertebrae and parts of the shoulder girdle (Figure 2). In most species, large scales, called **scutes**, overlay the bones. However, in softshell turtles, a tough, leathery skin replaces the scutes.

Most Illinois turtles are able to withdraw their head and neck into the shell by bending the neck into a vertical S-shaped curve. In species such as box turtles and mud turtles, the plastron is hinged, allowing it to close on the carapace. This feature provides the animal with more complete protection. Turtles usually have a prominent tail that varies in size with sex (tails of males are longer and heavier than those of females) and with species (snapping turtles have the longest tails of Illinois species). Turtles use their limbs to propel themselves in water as well as over land. The toes of most species are extensively connected by webbing, an adaptation that aids them in **aquatic** locomotion.

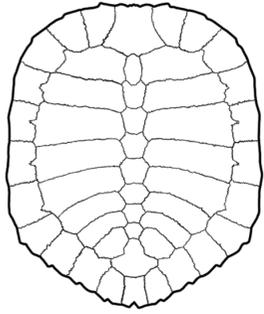


Figure 1: Outside of carapace with scutes removed

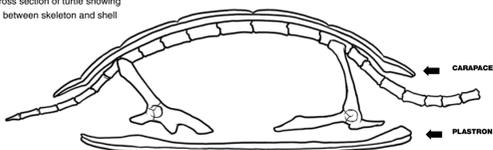


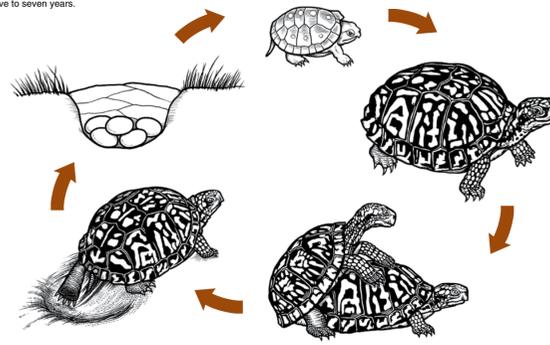
Figure 2: Cross section of turtle showing relationship between skeleton and shell

Reproduction

Turtles' courtship and mating commonly occur in the spring and fall. The courtship of sliders (*Trachemys scripta*), painted turtles (*Chrysemys picta*), false map (*Graptemys pseudogeographica*) and common map turtles (*Graptemys geographica*) consists of the relatively small male swimming backward, ahead of the female, while fanning his elongated front claws in front of her snout. In those species where the female is the smaller sex, the male typically uses aggressive behavior to immobilize the female so that he can obtain a mating position at the back edge of her shell. He may, for example, bite at the female's head and legs. In box turtles, the female's shell is quite high, requiring the male to hook the claws of his hind feet beneath her shell and then rear up into a vertical stance in order to mate.

All turtles must nest on land. Egg-laying typically occurs between mid-May and early July. A nest is usually a flask-shaped hole scooped out with the female's back feet. After egg-laying, the female again uses her back feet to pull dirt into the hole and pack it down. When the nest is covered, she abandons it, never returning to see her young. The Illinois mud turtle (*Kinosternon flavescens spooneri*) female is an exception. She digs a nest burrow with her front legs and then remains with the eggs in the burrow for several days to two weeks. Nevertheless, she is long gone by the time the eggs hatch. Most Illinois turtles lay oval eggs, but softshells and snapping turtles lay spherical eggs. Small species, such as the spotted turtle (*Clemmys guttata*), may lay only three to five eggs in a nest, while the larger snapping turtle (*Chelydra serpentina*) lays 20 to 40 eggs. Spotted, snapping and Blanding's (*Emydoidea blandingii*) turtles lay eggs once per year. Others, including the common musk turtle (*Sternotherus odoratus*), map turtles, the painted turtle and the slider, commonly nest two or three times per year, at two to three week intervals.

The life cycle of the eastern box turtle (*Terrapene carolina*) is typical of most turtles. After mating, the female digs a nest in the soil with her rear legs. She deposits the eggs, then uses her rear legs to cover them with dirt. Hatchlings must dig their way out of the nest. The turtles reach adult stage in five to seven years.

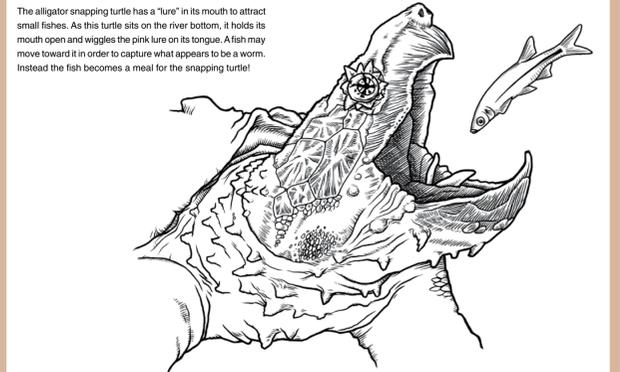


Habitat & Diet

Some turtle species are associated with specific habitats. For example, Illinois' two **terrestrial** turtles, the eastern box (*Terrapene carolina*) and the ornate box (*Terrapene ornata*), are associated with woodlands and prairies, respectively. Rivers are the favored habitat of the smooth softshell turtle (*Apalone mutica*), alligator snapping turtle (*Macrochelys temminckii*) and common map turtle (*Graptemys geographica*). Blanding's turtles (*Emydoidea blandingii*) are commonly associated with marshes. Mud turtles tend to frequent temporary ponds or wetlands, while the closely related common musk turtle (*Sternotherus odoratus*) resides in permanent water. The highly adaptable snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*), slider (*Trachemys scripta*), and spiny softshell turtle (*Apalone spinifer*) thrive in a variety of habitats and conditions.

Most Illinois turtles are opportunistic **omnivores**. Even a snapping turtle's diet may include large amounts of plants along with the animal food it usually eats. A few species are chiefly **carnivorous** or **herbivorous**. Softshells are carnivores, feeding on **aquatic** invertebrates, such as aquatic insects. Map turtles feed on snails, clams and some insects. Diets of certain species change with age. For example, young sliders are carnivores, feeding on insects. Adult sliders, however, mainly eat plants. River cooters (*Pseudemys concinna*) are mainly herbivorous as adults. Their diet consists of a mixture of algae and plants.

Few turtles have the speed or agility to catch fast-moving prey. Most search for food slowly along the bottom or over weed beds, grazing on vegetation and eating slow-moving animals. The occasional dead fish or fruit fallen from a riverside tree may attract large numbers of turtles. A few species catch fast-moving prey by ambush. Such turtles usually are colored to blend with their environment and have long, muscular necks that can strike out at prey from a distance. A snapping turtle with its long, bumpy neck, mud-colored body and algae-covered shell, illustrates these characteristics well. The softshell turtle's pancake-like shape allows for quick hiding beneath a thin layer of the sand bottom from where it can surprise its prey.



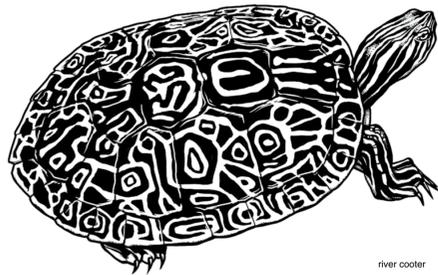
The alligator snapping turtle has a "lure" in its mouth to attract small fishes. As this turtle sits on the river bottom, it holds its mouth open and wiggles the pink lure on its tongue. A fish may move toward it in order to capture what appears to be a worm. Instead the fish becomes a meal for the snapping turtle!

Conservation

In Illinois over the last century and a half, humans have cut down much of the forest; converted most of the prairies to agriculture; channeled, dammed and polluted many of the rivers; and drained almost 90 percent of the state's wetlands. Only 11 percent of the original vegetation now remains intact. This drastic alteration of the original habitat has had a major impact on the state's wildlife and plants. In 2008, of the state's 17 turtle species, four (the alligator snapping turtle, *Macrochelys temminckii*; the river cooter, *Pseudemys concinna*; the spotted turtle, *Clemmys guttata*; and the Illinois mud turtle, *Kinosternon flavescens spooneri*) are state **endangered** and one (Blanding's turtle, *Emydoidea blandingii*) is state **threatened**. Declines of the latter three can be attributed in part to loss of wetlands. **Siltation** and **channelization** of Illinois rivers have seriously affected other species.

Exploitation is another important cause of declining turtle populations. Snapping turtles and softshells are often sought for food in Illinois. While local consumption has not been a serious problem and is regulated by the Illinois Department of Natural Resources, a new concern is the growing demand for turtle meat and products in Asia. Food species (sliders, snappers, softshells) and pet trade species (box turtles, spotted turtles) draw high prices in that market. As Asian species disappear, markets shift to the United States to meet the demand. While a special license is needed to collect turtles in Illinois for commercial purposes, their high asking price makes poaching tempting to some people.

The keys to conserving Illinois' turtles will be the rigid enforcement of current protective laws and the setting aside and maintenance of ample clean, **aquatic** and **terrestrial** habitats. If these guidelines are followed, we can expect turtles to remain in our Illinois forests, prairies, wetlands and waterways for many years to come.



river cooter

Illinois TURTLES

Glossary

- aestivate** to become inactive during warm/dry periods of the year
- aquatic** water based, or living in water
- bask** to expose the body to the direct rays of the sun (e.g., many species of turtles regularly leave the water to bask on logs or rocks)
- carapace** the top, or back, portion of a turtle shell
- carnivorous** feeding on meat (animals)
- channelization** the straightening and/or deepening of a river channel
- cloaca** a chamber in the abdomen of some vertebrates that receives products of the reproductive, urinary and digestive tracts before emptying to the exterior through the anus
- embryo** an organism in its early stages of development
- endangered species** a species in danger of becoming extinct within all or part of its range
- herbivorous** feeding chiefly on plants
- hibernate** become inactive during cold periods of the year
- juvenile** individual that has not attained sexual maturity
- keratin** hard, tough, fibrous protein produced in the skin; the basic substance that makes up scales, claws, fingernails, and hair
- omnivorous** feeding on a mixed diet of animals and plants
- plastron** the belly, or bottom, portion of a turtle shell
- scutes** enlarged scales such as those covering the bony shell of most turtles
- siltation** deposition of fine mineral particles (silt) on the beds of streams or lakes
- terrestrial** land based, or living on land
- threatened species** a species likely to become endangered

Turtle Facts

- In the wild, **aquatic** turtles are known to survive from 40 to 70 years while certain **terrestrial** species (including the eastern box turtle, *Terrapene carolina*) may live 100 years or more.
- The largest Illinois turtle is the alligator snapping turtle, *Macrochelys temminckii*. In some locations it may grow to a shell length of 30 inches (77 cm) and a weight of more than 250 pounds (112.5 kilograms). The largest Illinois specimen on record weighed about 160 pounds.
- The smallest Illinois turtle is the spotted turtle, *Clemmys guttata*. Its greatest recorded shell length in Illinois is 4.7 inches (12 cm).
- Many species of turtles have temperature-dependent sex determination (TSD). The sex of the **embryo** depends on the temperature within the nest at a critical period. For these species, hatchlings may be all male or all female.
- In Illinois, turtle eggs typically require about two months to hatch. Hatchlings of some species, like painted turtles (*Chrysemys picta*), overwinter in the nest and do not move to water until the next spring.
- Most aquatic turtles **hibernate** underwater, often burying in the bottom muck. All but the softshells have thin-walled sacks attached to the **cloaca** that absorb oxygen from the water during winter.
- Illinois mud turtles (*Kinosternon flavescens spooneri*) typically inhabit temporary prairie ponds for two or three months in the spring, then **aestivate**/hibernate on land throughout the rest of the year.
- Softshell turtles have a hard, bony shell. Their name refers both to the leathery skin covering the shell (as opposed to hard **scutes**) and to the rear portion of the **carapace** that is tough but flexible.
- The flesh of eastern box turtles (*Terrapene carolina*) may be poisonous at times because their tissues store toxins of poisonous mushrooms that the turtle may eat.
- With age, the shell and skin of male sliders (*Trachemys scripta*) become dark in color. The turtles appear dull brown to black, losing the bright colors that characterize females, **juveniles**, and younger adult males.

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Agency Resources

Information about turtles is available from the Illinois Department of Natural Resources (IDNR). The Division of Fisheries regulates harvest of turtles for game purposes. The Illinois Natural History Survey studies turtle distributions and population levels and maintains a research collection of turtles. 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 provides a variety of **aquatic** educational materials for teachers. Educators may borrow a wetland kit through the Education Section of the Illinois State Museum.

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