



In the Company of **DINOSAURS**

By William S. Hoffman

Photos provided by author

I find myself staring down into an accumulation of woody debris stacked along the stems of maple and alder on the bank of a meandering forested stream. The area is flanked by fallow fields and mixed forest. Movement in the randomly stacked branches, roots and other forest debris caught in the creek's flow, catches my attention. Another piece of wood, or so I think at first, descends gracefully through the branches suspended atop and into the pool beneath. I reach in and grab it, only to find it is a young snapping turtle (*Chelydra serpentina*).

A few weeks later, I'm precariously making my way through deep muck along the edge of a weed-choked pond, peppered with emerging sprouts of arrow arum, water shield and lily pads. I'm searching for yet another species of turtle. Once again movement catches my eye, and I see a massive snapping turtle has turned to face me, basking in the midday sunshine. The creature has minimized its exposure to the air and direct sunlight with only its nostrils and the middle of its carapace exposed; a behavior characteristic for this species.

Such instances illustrate the variation in habitat in which snapping turtles can be found. The flowing water in the gravelly riverine system provides consistently oxygenated habitat, while the still, mucky waters of the pond are largely oxygen-poor. The fact that snapping turtles can be found in both habitats demonstrates the species' adaptability. Simply stated, the evolution that this ancient turtle species has undergone throughout the course of millions of years has allowed it to make its home in a wide variety of habitats and conditions. And they are surviving.

Modern day snapping turtles are well-preserved remnants of ancient chelonian life that dates back as far as 90 million years. They developed by adapting to the gradual changes of earth's climate, the carving and filling of lakes and rivers, the rise and fall of oceans, changing land features created by the process of plate tectonics, and the predators they evolved alongside. This is how they became the current snappers we know and should respect. The sheer length of time they've inhabited planet earth is not only a feat of nature, it also suggests they survived the event that largely contributed to the extinction of the dinosaurs 65 million years ago.

Description

Designated New York's official state reptile in 2006, snappers are large-bodied turtles; the largest freshwater species found in our region. Some individuals have reached more than 70 pounds in weight, but most adults average 8-35 pounds. Like all turtles, they have a shell made up of a carapace (top half) and plastron (bottom half). The shell is composed of individual bony segments, with overlying keratinous plates called scutes. In snapping turtles, the plastron is reduced in size, exposing large fleshy areas around the base of each leg.

The carapace of a snapper is heavy and widely domed. The front edge is smooth and rounded, while the rear section bears heavy, angular, pointed bony plates that give the species its characteristic serrated appearance. A typical carapace ranges in size from 8 to 16 inches, and can easily approach 20 inches. It's not unusual to see the carapace of a snapper sporting algae, bacteria, or fungi, as well as leeches and other aquatic invertebrates.

Thick tails extend well beyond the edge of the carapace in both sexes. In adults the cloaca—the external orifice for the digestive, urinary and reproductive tracts—is located underneath the rear edge of the carapace in females, but extends well beyond the edge in males.

Broad, muscular heads and oversized jaws aid snappers in grasping prey, and can inflict injury on would-be predators, including the bipedal variety. The turtle's massive legs and claws serve as strong anchors to grasp and drown captured prey items, and the hook-shaped claws help remove flesh and appendages.

Snapping turtles are long-lived, averaging 30-40 years in the wild.

Reproduction

Like all turtles, the snapping turtle reaches sexual maturity later in life—around 10 years of age in New York. Mating can occur any time during the active season (April to early November) and takes place in the water.

Following mating, females often make lengthy migrations, both overland and in the water, to suitable and oftentimes ancestral nesting grounds. Using their powerful legs and long claws, females excavate nests on land—usually in open areas with loose or sandy soils, such as backyard gardens or mulched areas, road shoulders, sand and gravel quarries, streamside sand, and gravelly bars—and deposit 20 to 30 (up to 80) eggs. After covering the eggs, females return to the water. No care is provided the eggs or young.

Eggs incubate for several months. Hatchlings use a small egg tooth to break out of the shells—generally around mid-August—and then dig their way out of the nests. Sometimes hatchlings overwinter in the nest, emerging in the spring. The temperature in the nest determines the sex of the hatchlings, with hotter temperatures producing all females.



New York's largest freshwater turtle, snapping turtles have been known to reach more than 70 pounds in weight, but most adults average 8-35 pounds. The carapace (upper shell) is heavy and widely domed with a smooth front and serrated back edge. The plastron (bottom shell) is reduced in size, exposing large fleshy areas around the base of each leg.

Food and Foraging

Aquatic in nature, snappers primarily forage in the water. They are omnivores, eating a wide variety of plants and wildlife they encounter, including aquatic vegetation, invertebrates, fish, birds and mammals. Relatively slow swimmers, adults prefer to use the sit-and-wait strategy for catching prey. Certain animals may be difficult to capture, or hold and swallow, while others may present efficient opportunities for capture and can be swallowed whole, minimizing energy expenditure.

Carrion, or dead organisms, comprise a fair portion of their diet as well. Being long-lived, snapping turtles may collect a cumulative experience and familiarity with cycles of food abundance throughout their active season. Research outlining changes in their diet as the year progresses through spring, summer and autumn has shown that as daylight increases following spring emergence and into summer, their diet is marked by selection of both vertebrate and invertebrate prey. Analysis of snapping turtles' diets during the decreasing hours of daylight into autumn showed their diet to be heavy in aquatic plant matter. The increase in plant matter may be a means to stabilize metabolism or evacuate the gut before entering the semi-dormant period of their annual overwintering cycle.

Mortality

Powerful jaws, formidable claws, large size and assertive nature have made adult snappers nearly invulnerable to predation. Young turtles, however, are vulnerable from the time the eggs are deposited in the nest until they reach about six years of age. The vast majority of turtle nests are raided by predators such as raccoons and skunks, while newly hatched turtles can fall victim to foxes, raccoons, birds, skunks and snakes. Of the newly hatched turtles that do make it to the water, some will be eaten by fish, bullfrogs or other snappers. Fortunately, the young turtles quickly become resistant to predation as their shell hardens.



Snappers are highly adaptable, occurring in a wide variety of habitats and conditions, such as these overwintering sites.

When predators do attack, you might expect that as turtles, they would pull themselves into their shells, however their small plastrons preclude that ability, leaving large portions of flesh exposed. Instead, to defend themselves, they exude a foul smelling substance called musk from a series of openings along the bridge of the shell that connects the carapace to the plastron. This can deter a predator that comes into contact with it.

Another strategy these turtles employ to protect themselves is to extend their front legs outside of the shell to make as much room as they can to retract their heads. Many turtles can live long lives missing a limb or two, but they need their heads!

During migration (primarily during the nesting season), many snappers are vulnerable to being struck by an automobile or truck, and it's not unusual to see one squashed on a road. In addition, snappers face another threat: collection of them for food markets and the pet trade.

Behavior

Each year, turtles in North America go through an annual cycle divided into two major periods: active and inactive. Not surprisingly, the active season occurs during the longer days of the year from spring through early fall. As reptiles, turtles need the warmer temperatures to successfully forage and breed.

Winter is the inactive period for turtles. In New York State, this can range from four to six months. During this time, turtles generally remain dormant, avoiding freezing temperatures and the depletion of oxygen. Snapping turtles overwinter in a variety of aquatic habitats, including buried in mud and other plant debris, or beneath submerged logs and trees, or even exposed on the bottom of lakes, streams, marshes and other wetland formations they inhabit. They have also been found to use muskrat huts and beaver lodges.

In colder winter months, their metabolism slows down; they neither feed nor digest. Like some other species of turtles, snappers can endure short periods of anoxia (devoid of oxygen)



during the winter. But this is not an ideal survival strategy as hypoxia and death can occur.

Snapping turtles are often described as aggressive, mean-spirited animals with uncontrolled dispositions that make them fight tooth-and-nail when encountered, particularly on land. While it is true they won't hesitate to inflict serious and rapid injury to a potential threat, they generally are not the aggressors. In fact, they try to avoid confrontation. What appears to be aggressive behavior is really defensive behavior.

Snappers spend most of their lives in the water, where they will generally swim away from people when encountered. The few times they are on land, however, their heightened activity and exposure raises their stress levels and can result in their defensive behavior response: striking rapidly and upwards. It's this behavior that led to their common name, the snapping turtle.

Harvesting Snappers

The snapping turtle is legally classified as a game species in New York. A number of people find snappers delicious to eat, however, they are known to bioaccumulate contaminants such as heavy metals and organochlorides.

To hunt snappers, you must have a valid New York State hunting license. The open season for taking snappers is from July 15 – September 30. These dates are designed to deter the harvest of female turtles migrating to nesting grounds, which usually occurs before the season opens. Snappers must have a straight line carapace length of 12 inches or longer to be taken. The current daily bag limit is 5, with a season bag limit of 30 individuals. Harvest is allowed during any time of the day using a gun or a bow; trapping is prohibited.

William S. Hoffman is a seasonal fish and wildlife technician with DEC.

Turtle Tussle

While kayaking on a southern Adirondack lake in early summer, Frank and Lilka Lichtneger captured this encounter between two large snapping turtles. The turtles were completely focused on each other and seemed totally unconcerned with the humans' presence. The Lichtnegers were amazed at the size of the turtles' claws, length of their tails, and overall size, which they described as the size of bed pillows. Assuming the turtles were mating, and not wishing to disturb them, they snapped a series of photos and paddled away.

Snapping turtles can mate anytime from April to November; however, what the Lichtnegers witnessed was more likely an aggressive territorial encounter between two competing adult snappers. Snappers generally mate on the bottom of a waterbody, and usually not in this position, but rather with the male's plastron against the female's carapace. This encounter may be an attempt by the turtles to dunk each other until one quits and retreats. Like many animals, turtles will squabble over a number of things, such as the best habitat, good foraging grounds, or a suitable mate.

