It's Winter - Where Are the Turtles?

By Cathy Justis

On a bright early November day on the upper Wolf River in West Tennessee, a turtle or two can still be seen basking on stumps or logs in the slow-moving river channel, soaking up the last of the warm sunshine. Brave a canoe ride in the cold of January, though, and the turtles have disappeared. So what happens to them when the weather turns cold?

Turtles are “cold-blooded” or ectothermic creatures, with a body temperature determined by the temperature of the external environment, a trait they share with all other reptiles, amphibians, fish and invertebrates. Mammals and birds are “warm-blooded” homeotherms, able to maintain a constant body temperature and therefore stay active throughout the year.

During the coldest months of the year, the beavers stay busy gnawing on cypress and tupelo trunks in the Ghost River section of the Wolf, resupplying their lodges with new limbs, and slapping their tails violently when startled…Great Blue Herons stalk fish in the shallows… the loud rapping of Pileated Woodpeckers resonates through the trees…but the mosquitoes, the frogs, the snakes and the turtles are nowhere to be seen.

According to Kurt Buhlmann, Tracy Tuberville and Whit Gibbons, authors of the book Turtles of the Southeast, published by University of Georgia Press, Athens, Ga., in 2008, 75 percent of the 56 turtle species in the continental United States are found in the Southeast, where a “diversity of habitats, mild climate, and geologic history have combined to make the region rich in turtles and other biodiversity.”

There are 15 turtle species in Tennessee. The Wolf River can claim 10 of these. Mississippi and Alabama each have about 30 species. By contrast, the entire state of California has only five turtle species, not including marine species in coastal waters.

All of Tennessee’s turtles can be considered aquatic or semi-aquatic, according to Carl H. Ernst and Jeffery E. Lovich, authors of Turtles of the United States and Canada, Second Edition, published by The Johns Hopkins University Press, Baltimore, Md., 2009. The terrestrial Eastern Box Turtle, which forages in the leaf litter of hardwood forests and nests in pastures and other sunny places, still needs moist soil for burrowing and a good soak in a puddle now and then. Our farm and beaver ponds, seasonal wetlands, bogs, rivers, floodplain swamps and oxbows, springs and small streams each appeal to a particular contingent of other species.

In general, Tennessee turtles are active April through October, though the active period may be extended to March through November or even February through December in warmer parts of the state. A few species may be active all year long, and many will be briefly active on warm winter days. For the most part, however, turtles enter a state of dormancy with the onset of cold temperatures, and to do this they must find a place that is sheltered and safe.

Where do they go? Let’s start with the turtles most familiar to people: the box turtle and the basking turtles, which include Painted Turtles, Cooters, Sliders, Map Turtles, and Mud Turtles. Usually with the first hard frost, box turtles disappear into the forest floor that sustains them the rest of the year, burying themselves as much as two feet beneath leaf litter and loose soil, typically close to tree stumps, logs or thick bushes. They may also use flowerbeds in suburban areas, woodland edges, sand, mud, or mammal burrows. Box turtles are remarkably tolerant of freezing, an important adaptation since hibernacula are fairly shallow. They are more likely to be killed when fooled by a few warm, wet winter days into emerging too soon, only to caught in a cold snap, according to the book Turtles of the United States and Canada, Second Edition.

The basking turtles may all climb onto floating log for some warm winter sunshine, but otherwise remain inactive through the winter. The pretty Painted Turtle will hibernate underwater, buried sometimes

several feet into the soft bottom of a pond or wetland. It has also been found in muskrat lodges, or burrowed into banks or on land in floodplain woods or pastures. River Cooters, known for basking in large numbers, also hibernate underwater in the mud.

Sliders hibernate underwater in muskrat lodges, hollow stumps, beneath banks or logs, or in other shelters. The common Map Turtle is known to hibernate exposed on the bottoms of the rivers it inhabits.

The life histories of our other two Map Turtle species are not very well-known; juvenile False Map Turtles hibernate in shallow backwaters which makes them susceptible to freezing in low temperatures, and what the Ouachita Map Turtle does in the winter remains to be documented. Mud Turtles will stay underwater – or they will hibernate up to 275 meters from water, burrowing into a rotting log or leaf litter. Like many wetland species, mud turtles depend on the upland habitat around a wetland, not just the wetland itself, something we should keep in mind when deciding how best to conserve wetlands, according to the book Turtles of the United States and Canada, Second Edition.

Less obvious to us are the turtles which seldom bask and, when they do, tend to bask in shallow water or on low sandbars or mud banks. The highly aquatic Common Snapping Turtle will stay underwater for the winter, burrowed into the bottom or ensconced in a cavity like a beaver or muskrat lodge. The Alligator Snapping Turtle does the same.

The “stinkpot” or Common Musk Turtle seeks out underwater shelters such as muskrat lodges year-round, and in winter buries itself under about a foot of mud or in a bank near water under rocks, logs or leaf litter. Stripe-necked Musk Turtles are river-dwellers which hibernate in submerged rock crevices or in the bottom muck – or, again, in muskrat or beaver lodges.

The Bog Turtle is a habitat specialist found in the far northeastern corner of Tennessee that depends on clear headwater springs, streams, wet meadows, and bogs – the loss of these fragile and ephemeral habitats is the main threat to a species which is found in just a handful of places. In the winter, Bog Turtles will bury themselves in the bottom sediments, in sedge tussocks or tree stumps, or they might choose the burrow of a meadow vole, jumping mouse, muskrat, or other rodent. They are small turtles, reaching a length of only 3.5 inches.

The interesting and highly aquatic Spiny Softshell and Smooth Softshell Turtles bury themselves in the substrate throughout the year to hide themselves from both predators and prey; in the winter, that’s where they can be found as well. One naturally wonders how the species that spend their winters entirely submerged can survive. They have lungs, after all, for breathing air. Unlike mammals, however, they have another option, at least when hibernating. Many and probably all of our aquatic and semi-aquatic turtles are capable of bimodal respiration, the ability to absorb oxygen both from air through the lungs and from water through the skin.

To varying degrees, all of the aquatic hibernators can rely on getting their oxygen from the water. Furthermore, as would be expected of both hibernating animals and any ectotherm under the influence of cold temperatures, a turtle’s metabolic rate and demand for O_2 decreases dramatically in the winter. The leathery-shelled softshell turtles respire largely through their skin all year. A Spiny Softshell can stay underwater voluntarily for 20-50 minutes, but if forced can stay submerged for 100 days, reports Turtles of the United States and Canada, Second Edition.

Tennessee turtles keep a low profile in winter, for the most part buried somewhere, either on land or water. A cursory examination of even this relatively uncomplicated winter behavior, however, has conservation implications: upland habitat can be an important part of a semi-aquatic turtle’s life cycle; water-dwelling rodents provide important refuges for many species, as do fallen logs and old stumps; headwater streams and ephemeral wetlands are critical habitats for certain specialists.

In general, our turtles depend on habitats rich in both aquatic and upland vegetation and with old logs and stumps, on clean water, and on the presence of other animal species. These are most likely to be found in unaltered aquatic systems like the Ghost River section of the upper Wolf River and others across the state, which support a large part of Tennessee’s remarkable biodiversity.

Turtles are ancient creatures, having been around for some 200 million years. It seems shocking after such an incredible length of time that they now face an uncertain future. Road crossings, the pet trade,

habitat loss - these are some of the threats to turtles. Chief among these is the loss of habitat. Many of our wetlands have been drained or developed, many rivers have been dammed or channelized and many acres of woodland have been cleared. The turtles of the Wolf River are fortunate to have a group, the Wolf River Conservancy, dedicated to the river's protection. As the days grow short and the turtles prepare to take a break from a dangerous world, we humans are perhaps even more fortunate to be able to count on their reappearance come spring.

(Cathy Justis is the education director for the Wolf River Conservancy, a non-profit land trust dedicated to the protection and enhancement of the Wolf River corridor and watershed. The Wolf River is a 90-mile long river flowing through Fayette and Shelby counties, and a primary recharge source for the Memphis Sands aquifer.)