



“What do the frogs, turtles, and fish do during winter?”



Yes, this is a snapping turtle on top of a frozen lake!

(Photo source <http://monarchbfly.com/2009/03/08/snapping-turtle-ice/>)

The autumn colors have faded, the leaves have fallen, and the temperature is dropping...we know that winter is coming, and, whether we like it or not, we've been preparing. While some folks have left New Hampshire, retreating to more tropical locales, most of us have stayed behind, making sure we have enough fuel to keep our houses warm, pulling out our hats, gloves, and boots, and ensuring that the snow blower works and our driveway will be plowed.

While we are busy getting ready for winter, it's pretty quiet at the lake. The boats have been taken out and cottages and camps closed-up. The loons have gone to the ocean and the ducks and geese have flown south. But, ever wonder how the frogs, turtles, and fish that stay behind are preparing to survive through the winter?

During a typical New Hampshire winter, lakes and ponds are sealed off from the rest of the world with a thick layer of ice for at least a couple of months. The aquatic organisms that weren't able to go south in search of warmer waters face the challenge of adjusting to water temperatures low enough to freeze their homes and declining levels of oxygen which could cause them to suffocate. To deal with these adversities, frogs, turtles, and fish have adapted many unique strategies which allow them to survive.

Frogs: As the air temperature drops throughout the fall, the body temperature of frogs (and other amphibians and reptiles) drops as well, alerting them to head for their overwintering site. Some frogs overwinter by burrowing down in the thick layer of decomposed leaves along the shoreline where their bodies may partially freeze. They don't freeze completely, however, thanks to a high amount of glycerol or glucose that their bodies

produce which acts like antifreeze. Other amphibians and reptiles that can't tolerate freezing spend their winter at the bottom of the lake in the mud where the ice can't reach.

Turtles: Most turtles burrow into the mud and become inactive during the coldest winter months. However, some turtles have an unusual ability to survive very long periods of time without oxygen—in fact, their metabolism can continue uninterrupted without needing oxygen. These turtles enjoy their normal activities throughout the winter. Take a look under the ice this winter and you might see a painted turtle or snapping turtle swim by!

Fish: Like other cold-blooded animals, fish adjust their body temperature to decreasing water temperatures and can modify their metabolism to tolerate cold. Some fish are able to reduce the amount of fat in their bodies and produce an antifreeze-like substance inside their bodies—trout, salmon, and yellow perch are particularly good at this. This allows them to remain active during the winter, but their movements are slow. These fish often migrate to the deepest part of the waterbody where the water is the warmest. Other fish, such as bass and sunfish, unable to tolerate the cold water, spend the winter in a resting state by burying themselves in the mud and leaves at the edge of the waterbody. Amazingly, bullheads, and other members of the catfish family, can completely freeze during winter and thaw in the spring without being harmed!

Although, the activity level of these cold-blooded aquatic animals drops during the winter, it typically does not stop entirely. Instead of going into a state of inactivity (commonly referred to as 'hibernation') like some warm blooded animals, certain fish and many turtles and frogs go into a period of reduced activity called 'brumation.' During a warm spell, like a January thaw, they may get heated up enough to venture out of their winter home.

Their biggest winter threat: The biggest threat to the aquatic organisms that stay behind in New Hampshire each winter is not the cold weather—it's the loss of winter habitat. Man-made alterations along the shoreline (such as retaining walls) can prevent frogs and other amphibians and reptiles from reaching their vital overwintering habitat on land. Unfortunately, the removal of natural vegetation along the shoreline can eliminate overwintering habitat altogether. Also, water level drawdowns conducted too quickly during autumn can strand organisms out of the water before they are able to relocate to their overwintering site, causing them to perish. And, drawdowns conducted too deeply can result in ice reaching the lake bottom farther from shore and to a deeper depth in the lake than in previous years, adversely impacting the amphibians and reptiles that spend the winter in the lake bottom.

You can help protect our lakes and the animals that live in them! If you own property along a lake, one thing you can do to keep your lake healthy is to keep or replant vegetation along the shoreline. By doing so, not only will you provide critical overwintering habitat for frogs and other amphibians and reptiles you'll beautify your property and reduce the amount of pollution that flows into the lake. If you need help figuring out what to plant, contact NH LAKES—we can help!

NH LAKES is the only statewide, member-supported nonprofit organization working to keep New Hampshire's lakes clean and healthy, now and in the future. The organization works with partners, promotes clean water policies and responsible use, and inspires the public to care for our lakes. For information, visit www.nhlakes.org, email info@nhlakes.org, or call 603.226.0299. We hope that you will share this article with others—we just ask that you include the following: This article was originally published by NH LAKES.