



## Nature Guides

### Where Do Frogs Go in the Winter?

Late November 2010

Featured Process: Frogsicles

Quite soon, buried in shallow soil beneath leaf litter, some frogs will turn into frogsicles. As the temperature plummets, Wood Frogs and Spring Peepers, among others, fill their cells with glycerol, a natural antifreeze derived from sugar. This allows more than half the water in a frog to freeze, without disrupting cells, tissues or organs. Breathing and heartbeat stop as they become little blocks of ice, which can thaw and become active again in as little as an hour (note: watching this video, except at the very end, is something akin to watching paint dry; still, it's very cool). Here's a good little 4.5 minute PBS segment on the same phenomenon, with some good, time-lapse defrosting.

Here are some other nifty ways that amphibians and reptiles get through the winter:

#### Top R4R Picks

Resources for extending the learning

**Beaver, Moose, and Freshwater Turtle: The Dependence of Canada's Iconic Species on Freshwater Habitats**

Elementary, Middle

**Big Water Ideas 2**


Elementary

**Canada's Boreal Forest: Vol. 8- Tradition and Transition**

Middle, Secondary

Method	Herptiles
Overwinter in mud at bottom of ponds and marshes	<u>Green Frogs</u> , <u>Bullfrogs</u> , <u>Mink Frogs</u> , <u>Snapping Turtle</u> , <u>Midland Painted Turtle</u> , <u>Musk Turtle</u> aka Stinkpot (these turtles are true hibernators)
Overwinter in mud at bottom of streams and rivers	<u>Leopard Frog</u>
In loose soil, burrows or crevices below the frost line	<u>American Toad</u> , <u>Eastern Red-backed Salamander</u> , <u>Blue-spotted Salamander</u> , <u>snakes</u>
Other quick-frozen critters	<u>Boreal Chorus Frog</u> , <u>Western Chorus Frog</u> , <u>Gray Treefrog</u> ; <u>turtle hatchlings that overwinter in nest: Painted Turtle</u> , <u>Eastern Box Turtle</u> , <u>Snapping Turtle</u> (very occasional), possibly <u>Blanding's Turtle</u>
Semi-active in water	Aquatic <u>salamanders</u> such as the <u>Mudpuppy</u> and <u>Red-spotted Newt</u>

Other Happenings:

- Bats in Ontario are also hibernating in caves and mines. Unfortunately, in the Atlantic states these important creatures  are contracting White-nose Syndrome (likely from the fungus Geomyces destructans) while in

hibernation, leading to massive deaths. The syndrome includes a skin infection that creates holes in and scarring of the bats' wing membranes. Researchers are unsure of the chain of events that leads to death by what appears to be starvation. The leading hypothesis is that the fungus irritates the bats' skin, which causes them to arouse from hibernation more frequently to groom it off and results in them consuming their fat reserves until, ultimately, they starve to death. This syndrome (and fungus) has now spread to Ontario, possibly through spores on the clothing of people who have been in infected caves and then explore 'clean' ones.

- Now that most of the leaves are down, basketball-sized [leaf balls](#) are very evident in some trees. These are actually squirrel nests ([Red](#) or [Eastern Gray](#)), and are called dreys. They are lined with shredded vines and grasses, and may have a floor of twigs. Here's a view in [cross-section](#). Squirrels will also utilize cavities in trees, adapt old crow's nests or even use large bird boxes. Red Squirrels will also burrow underground, often in a scale [midden](#) (note the burrow entrance) that they produce by shredding cones to get at the seeds. By doing this in the same place, year after year, a [midden](#) builds up. If you go quietly enough through the woods, you can often hear Red Squirrels tearing these cones apart with their teeth. Squirrels are active all winter, hunkering down only in the worst weather.
- Migrating [Bald](#) and (more occasionally) [Golden](#) Eagles are arriving here in the Kawarthas, and may visit your area as well. As northern lakes and rivers freeze, these birds are forced south to look for food. Areas of high deer populations attract eagles, as they will scavenge on carcasses. They will also feed on fish and ducks, or ducks either frozen in new ice, or unable to take off across it. A good place to look for eagles is your local dump early in the morning. [Golden Eagle 42](#) is still hanging out in Canada, and is slowly moving south-west.
- [American Crows](#) are migrating. Look for flocks high in the sky, moving towards the southwest. Over 200,000 crows gather each winter in a number of [roosts](#) in Essex and Chatham-Kent Counties, near Windsor. For some hypotheses on why crows do this, go [here](#) and scroll down a bit. American Crows are fairly [easy to identify](#) and count making them an ideal subject for outdoor student investigations. With [Crows Count!](#) you can help scientists answer the question "How do crow (and other Corvid) group sizes change with seasons?" [BirdSleuth](#) curriculum and homeschoolers kits include other activities to involve students in nature, science and inquiry, while collecting valuable data.
- Enjoy the first snows. [Snowflakes](#) come in many shapes and sizes, depending on the [atmospheric conditions](#) where they formed, and as they made their way to the ground. Go outside during a light snowfall, and catch flakes on jacket sleeves or mitts (but perhaps not [tongues](#)), and look at them through a magnifying lens. Here's a great [site](#) about snowflakes - you can even watch snowflakes [grow](#). Activities for kids can be found [here](#).

World Fisheries Day:  
November 21st, 2010