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# LIVING

## Pools of life

In early spring, a little-known woodland habitat takes on critical importance. "Vernal" or spring pools fill with water and become a temporary home to some of the forest's most attractive and fascinating creatures. On mild, wet April nights, frogs and salamanders join ghost-like shrimp in these transient bodies of water in response to the ageless urge to reproduce.

Also known as ephemeral pools, these small bodies of water are located in low areas of the forest floor or adjacent fields. They usually begin to fill in the autumn as the water table rises, and then receive additional water in the spring from rain and melting snow. However, under average weather conditions, most of these pools will dry up by mid to late summer. This occasional drying is extremely important because it prevents fish from establishing permanent populations. In turn, this allows many amphibian and invertebrate species to rely on the pools as a breeding habitat that is free of predation from fish. As we shall see, certain species simply cannot survive in the presence of fish.

Those animals whose survival depends on the presence of vernal pools for at least part of their life cycle are called obligate species. The most easily-recognizable obligate species in the Kawarthas are the fairy shrimp, the spotted and blue-spotted salamanders and the wood frog. Without vernal pools, these species could not successfully reproduce and would disappear.

Fairy shrimp (*Eubranchipus* sp.) are a sure indicator that the water body in question is indeed a vernal pond. Only one to two centimetres in length, these crustaceans spend their entire lives in these ponds. They seem to appear like magic, even in pools that have been dry for many years. They are very aptly named because their graceful movements and pastel color do indeed invoke the analogy of fairies. Clouds of these strange crustaceans can often be seen in melt-water pools immediately after the snow and ice disappear.

Fairy shrimp are usually red-orange in colour but can also appear quite translucent at times.



OUR CHANGING SEASONS  
Drew Monkman

Curiously, they swim upside down with a wave-like beating motion of their 11 pairs of swimming legs. The leg movements also collect tiny food particles and direct them towards the mouth parts. Females lay two types of eggs. There are both summer eggs, which hatch right away, and winter eggs, which have been known to remain dormant for up to 15 years before the proper conditions allowed hatching to

occur. Winter eggs remain in the mud at the base of the pool and dry out with the pool. They are resistant not only to desiccation, but also to heat and freezing. Fairy shrimp can complete their life cycle in an amazingly short 16 days. The presence and abundance of fairy shrimp can fluctuate markedly from year to year in a given habitat.

Wood frogs (*Rana sylvatica*), too, are entirely dependent on vernal pools. As their name suggests, this species spends its entire life in moist woodlands. These small, brown frogs are quite common in the Kawarthas and very easy to identify. Look for a distinctive black mask which contrasts with their white upper lip. They are also usually the first frog of the spring to begin calling — although quacking or chuckling would be a more accurate description. The chorus of male suitors serves to attract females to the pond where mating occurs. A female will mate with the male whose song she likes the best. Females often lay their eggs together in communal masses which are more efficient at trapping solar heat, thereby accelerating the development of the embryos. The tadpoles develop quickly and are soon ready to join the adults in adjacent upland areas where they will spend the rest of the year. Wood frogs overwinter in the leaf litter and actually freeze solid.

Another group of amphibians known as the mole salamanders share this upland forest habitat with the wood frog. Their life cycle, too, is inextricably linked to vernal pools. On the first, mild, rainy nights of April, thousands of these beautifully-marked salamanders make their way over



Photos courtesy of the Ontario Vernal Pool Association

Clockwise, from top: a woodland vernal pool; a spotted salamander; and a wood frog. You can visit the Ontario Vernal Pool Association on the web at <http://www.ontariovernalpools.org/index.html>.

snow, ice, rocks, leaf litter and roads to breed in their ancestral vernal pool. They are probably following an imprinted memory of their birthplace with its specific odours of mud and decaying vegetation. The two mole salamander species that we have here in the Kawarthas are the spotted (sometimes called the yellow-spotted) and the blue-spotted salamanders. They usually measure 10 to 14 centimetres in length.

Salamander mating begins with a sort of underwater dance in which large groups of males gyrate and rub up against the females. If the female is willing, the pair will leave the group and the male will deposit a spermatophore (a small, jelly-like package of sperm) on underwater debris. The female becomes fertilized by taking the spermatophore into her genital opening. Later, she will deposit from one to three gelatinous clumps of eggs on underwater vegetation. About six weeks later, tiny, gilled tadpole-like larvae are born. They will leave the vernal pool by mid-summer as air-breathing terrestrial salamanders — that is unless the water dries up before they have matured. Mole salamanders go on to spend most of their lives in burrows on the forest floor.

For much of the public, salamanders and frogs crossing roads on rainy nights are probably the only sign of the importance of vernal

pool habitats. Depending on the vagaries of the weather, it may still be possible to see this ancient migration this spring. Temperatures of at least 8 C along with rain seem to provide the best conditions. Armed with a strong flashlight, slowly drive along back roads that pass through low woodlands and treed, swampy areas. By watching carefully, you might be able to see salamanders on the road. You should then park your car and get out and walk. Don't forget your camera.

A large number of other amphibians and invertebrates often breed in vernal pools, as well. However, they also have the option of breeding in more permanent water bodies. Some of the more familiar species include spring peepers, chorus frogs, American toads, dragonflies, midges and, of course, mosquitoes.

Like almost every other kind of natural habitat, vernal pools are under assault in much of central and southern Ontario. Urban sprawl, deforestation and the over-extraction of groundwater are all important threats. Because the infrastructures that are necessary to service housing developments such as sewers and roads increase water runoff, the water table often drops. This, in turn, may mean insufficient water for vernal pools. Roads often bisect woodland habitats and become dangerous obstacles for amphibians to cross

as they make their way to vernal pools.

In many areas around Peterborough, amphibian mortality levels are extremely high. Some communities actually arrange road closings during peak migration nights and invite people out to see "the march of the amphibians."

### What to watch for this week

Biologists are keeping a close eye on the western chorus frog, a widespread and locally common species in southern Ontario, including southern Peterborough County. This amphibian is declining in parts of Ontario and Quebec, and an effort is being made this spring to survey as many known chorus frog breeding locations as possible. This will provide better documentation of the magnitude and spatial extent of declines. If you are aware of chorus frog breeding sites, you may wish to send an e-mail to Mike Oldham at the Ontario Natural Heritage Information Centre. His e-mail address is [michael.oldham@mnr.gov.on.ca](mailto:michael.oldham@mnr.gov.on.ca). Please supply UTM or latitude/longitude co-ordinates if possible.

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### Still looking for Hockeyville recipes

We've received several good submissions for our Kraft Hockeyville food feature later this month, but we're still looking.

Send us your recipe for a pre-game meal, and we'll publish some on the Food page April 19.

Recipes must be received by Wednesday. You may include a

Kraft product in your recipe, but you don't have to.

Send your recipe to Life editor Rob McCormick by e-mail to [life@peterboroughexaminer.com](mailto:life@peterboroughexaminer.com), fax it to 743-4581 or bring it to our offices at 730 The Kingsway.

Be sure to include your name, address and telephone number.