

Spring-to-Life PONDS

Like magic, **snowmelt** and **rainwater** form **pools** that come alive each spring.



When I was 12 years old, I sneaked away from my evening farm chores to *vernal* (spring) ponds in the nearby woods. The creaky songs of chorus frogs lured me to their small aquatic homes.

Sensing my presence, they ceased their calls as I approached. A little searching revealed their egg masses attached to grasses under water at the pond's edge, but I had to make many trips to the ponds before I was able to see the tiny, striped frogs.

Throughout spring, I visited these small wetlands. I saw tadpoles, aquatic insects, and once a large, striped spider walking on the water.

As spring warmed to summer, I watched the ponds shrink. By July only mud puddles remained of these loud, dynamic ponds of April. By August even the mud had dried. All traces of the ponds had vanished.

But next April, the pond scene reappeared.

A vernal pond is a temporary gathering place for critters from across the animal kingdom. Crustaceans such as fairy shrimp, insects such as beetles and flies, arachnids such as spiders, and mollusks such as snails and clams all abide here. Amphibians, reptiles, birds, and a few mammals show up too. Some critters come to find a mate. Some stop by for a bite to eat. This story tells about a vernal pond's life cycle and introduces some of its visitors.

By **Larry Weber** Illustrations by **Vera Ming Wong**



Pools of Snow and Rain

In early spring, as days grow longer and temperatures warm, snow begins to melt. Then spring rains arrive. Before long, snowmelt and rainwater have formed a pool of water called a *vernal pond*.

All vernal ponds are small. Some are in fields or other open land, but most are surrounded by woods. In the shade of trees, ponds retain water longer. Dead leaves on the forest floor become the pond bottom. A rich supply of dead leaves serves as food and shelter for pond dwellers.

By mid- to late summer, most vernal ponds dry up. Because they are sometimes dry, vernal ponds do not have fish. This makes them a safe place for tadpoles and other critters that fish would eat.

spring peeper

Frogs Hop In

Starting in April, keep an eye (and ear) on nearby ponds. The early rising chorus frogs, wood frogs, and spring peepers wake from hibernating under leaves and logs. In the excitement of the new breeding season, they go straight to the ponds and begin calling for mates.

Only male frogs call. They call to attract females and to tell other males of the same species to stay away. The chorus frog's call sounds like a thumb scraping across the teeth of a comb. The quacking-clucking calls of wood frogs sound like the "glucking" of a gathering of ducks. The penetrating peeps

of spring peepers can be heard a mile away on a calm night.

All three of these frog species lay their eggs in gelatinous masses slightly under water. The spring peeper lays her eggs one at a time. The chorus frog lays small clusters of eggs, and the wood frog produces a single cluster with hundreds of eggs. Soon the eggs hatch into tadpoles.

During May, listen for the buzz or musical trill of gray tree frogs and the high-pitched trill of American toads. Look for tadpoles from all these species in May and June. Those from the early trio will have grown legs, and they'll move onto land by July.

wood frogs

caddisfly larva

Sallies Galore

Much more quietly than their amphibian cousins, blue-spotted salamanders go to vernal ponds during April nights to mate. No calling from them; the males court females with various movements.

Females lay small egg masses. An egg hatches into a *larvae* with legs and gills on the back of its head.

Blue-spotted salamanders are the most common Minnesota salamanders to breed in vernal ponds. Spotted and tiger salamanders also lay aquatic eggs.

blue-spotted salamander

fairy shrimp

Fairy Shrimp

Swimming in the clear waters of vernal ponds are orange critters about 1 inch long. You can easily spot these fairy shrimp as their undulating movements propel them.

Fairy shrimp take their name from the way they suddenly appear, like magic, each spring. They never show up at another time or in large bodies of water. Year-round residents, they drop their eggs in the pond bottom. The eggs stay tucked in sediments and mud when the pond dries and the weather turns

cold. When spring comes and the water returns, the eggs hatch into fairy shrimp.

A fairy shrimp lies on its back and paddles its pairs of feathery legs in synchrony. For a couple of weeks, it swims and feeds by filtering microscopic organisms from the water.

This tiny crustacean is the largest of many crustaceans living in the pond. A distant relative of shrimp that people eat, fairy shrimp are food for aquatic insects, amphibians, and waterfowl.

diving water beetle

whirligig beetles

water strider

water boatman

water scavenger beetle

mosquito larva

Swimming Insects

Aquatic insects arrive at vernal ponds after spending winter in larger waters or hibernating on land under leaves. Look for the streamlined shapes of water beetles and water boatmen swimming under water. Water boatmen use their long legs as oars.

Atop the water, watch

for whirligig beetles scurrying in circles and water striders walking on their outstretched legs.

Young insects (*larvae*) abound in vernal ponds. Bright red midge larvae, called bloodworms, survive in bottom muck. Larvae of phantom gnats, as transparent as ghosts,

and mosquito larvae swim about. A baby caddisfly builds a shelter of plant bits around itself. With head and legs sticking out, it pulls its shelter along as it searches for food.

Meadowhawk dragonfly and spreadwing damselfly lay eggs that can overwinter here.

dragonfly larva

caddisfly larva

Fishing Spiders

Fishing spiders spread their eight legs and run over the pond's surface in search of food. No webs for these spiders; they catch insects both above and below the water.

Another arachnid common to vernal ponds is the water mite. Small, round, and eight-legged, it feeds on small aquatic organisms.

Snack and Rest Stop

While lots of creatures come to find mates and reproduce young, some visitors just stop by. Mallards, wood ducks, sandpipers, sora rails, herons, and songbirds such as phoebes and warblers visit. Some stay awhile. Others pause only to rest or have a quick snack.

Raccoons and muskrats come by. So do star-nosed moles, shrews, and meadow voles (field mice). Voles sometimes stay all summer because they find food, water, and shelter here even as the ponds shrink.

Burrowing Snails and Clams

Several species of snails and a few fingernail clams live in vernal ponds year-round. Most are less than ½ inch long. They survive dry times by settling into the vegetation or burrowing into soil on the pond bottom and *estivating* (staying dormant during summer).

masked shrew
(eating diving beetle)

water strider

spreadwing
damselfly

pond snail

painted turtle

fishing spider

Visiting Turtles and Snakes

Painted turtles move to vernal pools from nearby lakes and wetlands, dining on tadpoles. In spring, garter snakes leave their underground *hibernaculum* and search for frogs near vernal pools. While not dependent on vernal ponds, these reptiles find ample food and shelter for a few months.

Race to the End

As spring turns into summer and the days get hotter, the pond water warms and begins to evaporate. Some small ponds will be

dry by July. Others stay wet until fall. And some might hold water for a few years, only to dry up during a hot and arid time.

Before their pond vanishes, pond critters must grow up and move away or go into a dormant stage to cope with the dry season.

fingernail clams

pond snail

Invisible Life

Because vernal ponds are small and temporary, they often go unnoticed and unprotected. When a vernal pond is dry and invisible, someone might build a house on it, plow it for planting, or pave it for a road.

The land around it needs protection too because frogs, toads,

salamanders, and other critters live there until the pond forms again in spring. Without the pond, they will have no place to gather for spring breeding. You can help protect vernal ponds by finding them and telling your friends and neighbors about them.

Listen

Go to the woods in spring and listen for frogs singing. Be silent to hear the male frogs' loud breeding calls. Stand still and watch their activity at dusk or early evening, but do not catch the frogs. They need this time and place to breed. Search for and find the jellylike egg masses, but do not bring any home. Leave them here to hatch into tadpoles. Then return to see them grow up. Note how the pond changes in summer. Come back next spring and observe pond life again.

Return Visitor

During the half century since my first visit to a vernal pond, spring has reached me in many different locations, but I have always visited nearby vernal ponds to watch the season unfold. Throughout my teaching career, I have taken my students to see these ponds and their inhabitants. Now I have several such ponds on my land in northern Minnesota, and they still impress me with their changing nature. And I still sneak off to observe these small wetlands when the waking frogs and other residents tell me that their season has begun. 📍

A NOTE TO TEACHERS

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whirligig beetles

painted turtle

caddisfly

yellow-rumped warbler

water striders