

Woodland pools offer safe breeding grounds for amphibians

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While walking through the forest in early spring, you might hear a raucous quacking off in the distance. Make your way toward the sound, and you'll likely find a small pool of water bustling with activity. The commotion quickly stops as you approach the pool's edge, leaving the water smooth and silent. The pool is fairly small, not much bigger than a swimming pool, and only a few feet deep. It isn't connected to any other water bodies, though water may flow out of the pool after it has become swollen from spring rains or snowmelt.

These temporary forest wetlands are commonly referred to as vernal pools. Vernal derives from the Latin *vernal*, which loosely translates to "of the spring." But because pools can also form after heavy autumn rains, "woodland pool" is a more accurate way to describe this unique ecosystem. Names aside, the key feature of woodland pools is that they are not always wet. Relying on rain or snow melt as their primary sources of water, the pools commonly dry up during the summer months. This keeps fish out, allowing a suite of wildlife, such as frogs and salamanders, to use them for reproduction.

Amphibians are perhaps the most recognized inhabitants of woodland pools. On the first warm, rainy nights in spring, thousands of frogs and salamanders venture from their homes in the forest floor to low-lying woodland pools to mate and lay their eggs. While the adults are a rare find because of their affinity for darkness, you can easily spot their eggs this time of year. The gelatinous masses are about the size of your fist, located just beneath the water's surface. Some are clear, some are white, and some occur in large groups. An individual pool can contain hundreds of egg masses, each containing hundreds of individual embryos. Salamander eggs are attached to sticks under the water and covered in a thick jelly coat.

In the northeast, spotted, marbled, blue-spotted and Jefferson's salamanders all breed in woodland pools. Large groups of eggs at the water's surface belong to wood frogs. The eggs hatch into frog tadpoles and salamander larvae that remain in the pool until early summer when they undergo metamorphosis and move into the forest.

Other animals found in woodland pools include caddisflies, which use vegetation in the pool to build protective "houses" around their bodies, majestic fairy shrimp, rhythmically swimming just below the water's surface, dragonfly and damselfly nymphs, water beetles, and countless other small creatures. The variety of life in woodland pools is amazing, and what ties it all together is that these animals can only survive in aquatic habitats without fish.

While pools only last a few months, they produce an abundance of wildlife. A single pool can yield thousands of amphibians. Woodland pools act as miniature recycling depots in the forest. When leaves fall from trees into pools, they are broken down by bacteria and fungi. These are fed on by small insects, which are then eaten by larger animals such as amphibians. When amphibians and insects emerge from the pools, they are fed on by forest-dwelling animals such as birds and bats, completing the cycle of energy from trees back to the forest. These pools play a key role in the food web of the forest in which they occur.

While it is obvious that woodland pools are important for wildlife to effectively promote their conservation, we need to recognize their value to our own health and well being.

Imagine a forest with 20 or so of these pools, each holding an average of 60,000 gallons of water for a total of 1.2 million gallons of water. In their absence, this excess water would contribute to flooding. Pools with healthy populations of predators, such as salamander larvae, may also help keep mosquitoes under control, limiting human exposure to diseases such as West Nile virus. The amphibians that breed in woodland pools are also very sensitive to changes in the environment, and are often the first animals that respond to new chemicals or pathogens. This makes them important indicators of environmental health.

Given their importance, it would be easy to assume that pools are protected. Sadly, this is far from true. Here in New York state, protection is only afforded to wetlands that are 12.4 acres or greater in size. This is too large for woodland pools, and many other wetlands as well. Federally, the Clean Water Act protects wetlands, but over the past decade efforts have focused on those attached to flowing, navigable waters. Most woodland pools fall outside of this definition, leaving them vulnerable. Piecemeal approaches to wetland protection have made it hard for conservationists to safeguard woodland pools. Adding to the dilemma, if we want to ensure woodland pools are viable breeding grounds for amphibians, we also need to protect surrounding upland habitat.

The frogs and salamanders that breed in the pools can move up to 1,000 feet from pools into the nearby forest, where they spend most of their lives. If pools are protected while the surrounding forest is developed, amphibians will still disappear. As protecting the upland habitat surrounding a single pool could require the conservation of 70 acres or more of land, regulating the protection of woodland pools may be a fruitless endeavor. Instead of regulation, conserving this unique habitat requires the development of public support for their protection which will ultimately lead to better land use planning.

We in the Hudson Valley are fortunate to have a bounty of natural resources. Woodland pools are arguably one of the most productive ecosystems in the region, and to affect their conservation, we need to recognize that we possess one of the most dynamic ecosystems in the world, right in our own backyards.

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Where to see woodland pools

(Always stay on trails and know the rules of the preserve)

The Winnakee Nature Preserve: Pools can be seen throughout this 105-acre preserve located in the heart of Hyde Park. Go to www.winnakeeland.org for map and directions.

James Baird State Park in Pleasant Valley: A number of wetland systems including woodland pools can be found in the northeastern section of this park along the blue and red trails (<http://nysparks.com>).

Black Creek Preserve: This Scenic Hudson Preserve is located in Esopus and boasts a number of pools along its Red Trail (www.scenichudson.org).

On the Web

To learn more about woodland pools and for a calendar of local woodland pool-themed events, go to www.facebook.com/groups/hvpools.

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Abstract (Document Summary)

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