

Virginia's Vernal Pool Ecosystem



What is a Vernal Pool?

Vernal pools are temporary freshwater wetlands that form in shallow depressions through precipitation, runoff, and snowmelt during the fall and winter. Because they dry up in the summer, fish cannot survive in them, providing ideal habitat for an interesting host of wildlife and plants.

1. Amphibians migrate to vernal pools to breed during the first rainy nights of spring when temperatures are above 40F. Many get hit by cars crossing roads on their way to those breeding grounds. Drive slow on rainy spring nights, and assist amphibians crossing roads when it is safe to do so.
2. Researchers, community scientists, and enthusiasts can observe wildlife safely from the edge of vernal pools. Bring a headlamp or flashlight and dress warmly for rainy nights. Walk slowly, limit habitat disturbance, and follow leave no trace guidelines.
3. Predators, including owls and foxes, also benefit from vernal pools by taking advantage of migrating amphibians as prey.
4. Researchers monitor the depth of vernal pools and how quickly they dry up to study changes across time.
5. Wood ducks utilize dead snags (and nest boxes as a surrogate cavity) for nesting, and use large vernal pools as habitat.
6. Stewardship of vernal pools can include removing invasive plants, planting native plants, picking up trash, and educating others.
7. Spring Peepers are opportunistic breeders in vernal pools. Their calls can be as loud as a rock concert. They can be heard calling from February-June.
8. Eastern Newts are opportunistic breeders and can be found in vernal pools and permanent bodies of still water. They can often be seen making an easy meal out of salamander eggs.
9. Spotted Salamanders are obligate breeders in vernal pools. These salamanders leave packets of sperm, called spermatophores, on leaves and sticks for females to pick up. Their egg masses can be clear or cloudy. This species has a symbiotic relationship with an algae that turns their egg masses green.
10. American Toads are opportunistic breeders in vernal pools. They lay thousands of eggs in curly, clear tubes. They can be heard singing from March-June.
11. Vernal pools provide conditions for special plants, such as skunk cabbage, to grow. Keep an eye out for spring ephemeral plants during this season.
12. Jefferson Salamanders are obligate breeders in vernal pools. They are among the earliest visitors to vernal pools, even when there is still ice on the water. Their egg masses are clear and gelatinous.
13. Pickerel Frogs are opportunistic breeders in vernal pools. This species waits until warmer weather to visit the pool. They can be heard calling from March-June.
14. Wood Frogs are obligate breeders in vernal pools. This species can freeze solid in winter and is typically the first frog to start calling in spring. Their eggs are laid in large masses, with no gelatinous coating. They can be heard from February-March.
15. Marbled Salamanders are obligate breeders in vernal pools. They lay their eggs before the pools fill with water, allowing their larvae to hatch, before other salamanders, as soon as the pool fills.

Fingernail Clams are tiny mollusks found only in vernal pools. They move from pool to pool by attaching themselves to salamander limbs.

Fairy Shrimp are only found in vernal pools, each generation hatches, breeds, lays eggs, and dies within one season.

Illustration by Nick Garnhart/Smithsonian

For more information on vernal pools and conservation, visit VAWorkingLandscapes.org and nationalzoo.si.edu/center-for-species-survival/amphibians