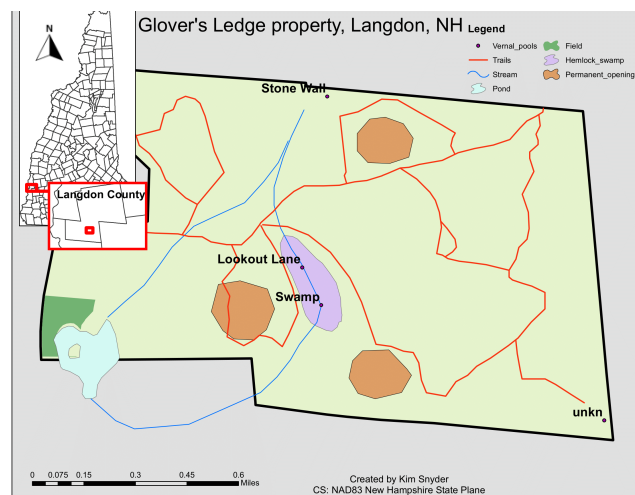


Vernal Pools at Glover's Ledge

Environmental Studies Department
Glover's Ledge
December 4, 2020

What is a vernal pool? Simply put, a vernal pool is a temporary body of water, fed by rain and snowmelt that dries up in the summer or fall. They are unique habitats vital to several key species that breed in them. In 2020, Antioch Master's student Kim Snyder observed Glover's Ledge's pools over the year and documented how they changed over a typical year.



Map of Glover's Ledge habitats and known vernal pool locations.

The Glover's Ledge Pools

Glover's Ledge is lucky to have several different types of vernal pools dotted across our landscape. Towards the center of the property, in our cinnamon fern swamp, we have two ephemeral stream-fed pools: the Lookout Lane pool and the Swamp pool. The Swamp pool is also fed by an underground seep, keeping it filled throughout the year.

On the northern edge of the property, we have two other pools, Stonewall and Corner, which rely on rainfall and snowmelt to fill every year. At the southeastern corner, there is another potential pool, although this one has not been studied yet. Snyder's study looked at Lookout Lane, Swamp, and Stonewall over the local amphibian breeding season.

Winter

During the cold New Hampshire winter, vernal pools are dormant. The snow and ice that accumulates is where most of the water present in spring comes from. Amphibians are in deep sleeps under the mud. The Glover's Ledge pools freeze over in the winter and only begin to show signs of life once they start to thaw.

Spring

As the ground thaws, amphibians start to move. The ice may not even be completely gone from pools before the first visitors arrive. Adult wood frogs are a typical early breeding species in vernal pools. However, Snyder's study did not reveal many using the pools to breed. They instead used the large pond at the southwestern edge of the property.

On warm spring nights, Spotted and Jefferson salamanders congregate in the pools to mate and lay their eggs. Egg masses are thick clumps of jellied eggs that a mother lays attached to sticks and debris in the pool. Snyder's study revealed that amphibians in these pools laid their eggs in mid-April, with larvae emerging in late May. Lookout Lane was the pool with the highest number of egg masses.



Egg masses and larvae from the pools.

Summer

As summer heats up, the water level in the pools starts to drop. 2020 was a very dry year so the Glover's Ledge pools didn't receive much additional water after winter.

Larvae hatched and grew quickly, the warming water spurring them to eat and metamorphose. By

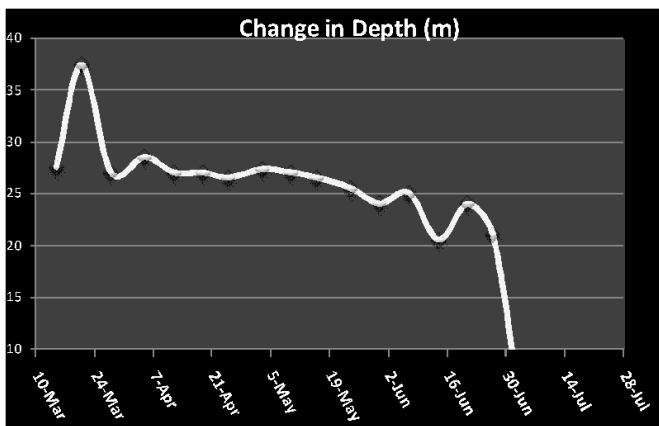
the end of July, all of the vernal pools had no standing water remaining.



The Lookout Lane pool in late March (left) and mid-August (right) 2020.

Fall

By autumn, all of the pools were empty of water. But that doesn't mean these pools are lifeless! Invertebrates like caddisflies and mayflies were metamorphosing from the dregs of water. And as leaves fall, the pool is filled with food for next year's amphibian larvae.



Graph of changes in the Lookout Lane pool depth from Snyder's report.

Landscape Perspective

Amphibians are a vital link in forest food webs – accounting for a significant amount of biomass. They are an important food source for mammals and birds and a top consumer of insects and dead vegetation.

Our vernal pools act as vital breeding grounds for our community of amphibians. With amphibian populations declining all across the northeast, protecting our pools and managing our habitat for our amphibians is very important.

Snyder's thesis recommends that Glover's Ledge prioritize management that maximizes the amount

of time that the pools contain water. This could look like maintaining forest patches around the pools, preventing the pools from filling in with debris and soil, and continuing to monitor pools year after year so we have a better understanding of how they operate.



Swamp pool in April.

Vernal pools are delicate habitats and too much human presence can harm the species that rely on them. As a visitor to the pools, you can be respectful of them whenever you visit!

As a visitor to the pools please be respectful by: staying on the shoreline, even when pools are dry, observing species and egg masses from a distance, and leaving egg masses where they are.

Things to look for:

During summer and early fall, most of our pools are dry and can be hard to see. Look for slight depressions in the ground with a lot of leaf litter and fallen branches. In the late winter and spring, pools are full of water. In April, egg masses can be spotted from the shore: look for blobs of jelly with black specks. Pools can also be located by sound right around sunset as adult frogs chorus loudly from the water.

Learn more about vernal pools

Wildlife.state.nh.us