

Identifying Potential Vernal Pools in Late Summer, Fall, and Winter



The only sure way to tell if a pool, or dried depression in the landscape is in fact a vernal pool is to patiently wait until the spring time breeding season when adult amphibians, fairy shrimp, and egg masses are present, or early summer when you might be able to find wood frog tadpoles or salamander larvae.





Throughout the seasons, vernal pools change dramatically in appearance.

The following slides contain examples of features to look for during the “off season” that will help you determine whether you might have a pool that should be revisited in the spring.

Summer





In the late spring/early summer once wood frog egg masses have hatched, tadpoles are often visible on the pool bottom, or in the sunny patches at the surface.



Salamander larvae are much more difficult to see. They tend to spend the day camouflaged on pool bottoms on or under leaf litter, downed woody material, or rocks. Using a small net, you can carefully scoop the pool bottom in search of salamander larvae. Their external gills are more visible when in water. Do not keep them out of the water for long or dip-net early in the season, as they are very fragile. It is very difficult to tell the difference between spotted and blue-spotted salamander larvae.

Fall





Pools that only hold water during the spring and early summer often look like this shallow depression that has upland species growing around its perimeter and wetland species within the basin.



Look for wetland plants that are constrained to growing in a depression (wet or dry) that are not found in the surrounding upland forest. In these examples, you can see sedge tussocks, skunk cabbage, royal fern, and sensitive fern.



Look at the herbaceous plants to see if they indicate that you might be in a dry vernal pool. In this photo, you see a mat of dried Royal Fern (*Osmunda regalis*) which is an obligate wetland species that often grows in or around vernal pools. Ground cover is also a good hint. As you see here, there is a thick carpet of sphagnum moss indicating that the site is wet.



Some pools are rimmed by or contain clumps of wetland shrubs such as high-bush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), winter holly (*Ilex mucronata*), or speckled alder (*Alnus incana*).



Dry hummocks or mounds within a depression may be small islands of upland that contain dry site plants that tolerate flooded roots for part of the year. At its highest water level, this pool turns the hummock in the foreground into a small island. The contrast in micro-topography may tip you off that water is present for some of the year.



In the fall, you may find a raised water table that fills the depressions between hummocks as you can see in this photo. In the background, you can just make out the larger deeper pool basin. In the foreground and around the edge of this pool, hummock and hollow topography is present.



Autumn rains and raised water tables often result in pools partially refilling in the fall, as seen in this isolated upland depression pool in Baxter State Park.



However, please note that fall rains and raised water tables may also fill shallow depressions that are not vernal pools.



In dry pools, look for leaves that are darkened or stained by water. This feature lasts long after standing water has disappeared.



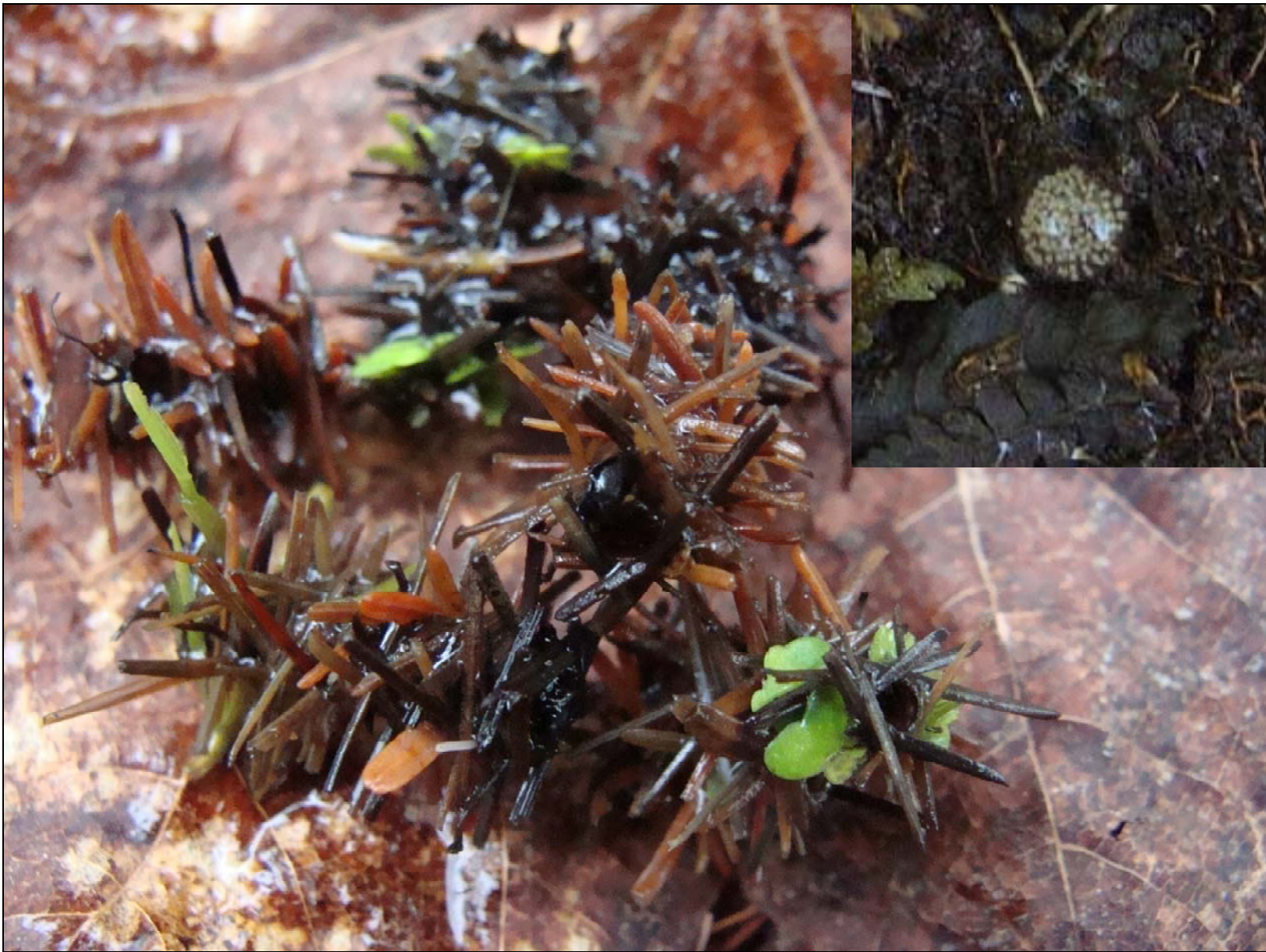
Trees that grow in wet areas often have multiple trunks or swollen buttresses at the base, as you can see in these floodplain pool photos taken during spring high water and mid-summer.



Also look for evidence that trees are shallowly rooted with their roots exposed at the ground surface. If you find this piece of evidence, please make sure you are within a depression as shallow rooting can also happen in rocky soils.



Caddisfly larvae cases are often found on the floor of dried pools. They can get up to roughly an inch long and be made of a variety of available materials found on the pool bottom.



Another example of caddisfly larvae cases. In the corner is an egg mass of caddis fly. They are deposited on the pool bottom or along the margins in the fall. This egg mass is roughly $\frac{3}{4}$ " in diameter.



Fingernail clams are as their name implies....roughly the size of a fingernail (often even smaller). Paw through leaf litter in a dry basin and the presence of fingernail clams will indicate that the site is flooded for part of the year. Fingernail clams do not live exclusively in vernal pools and may be found in a variety of other water bodies, but if you find them on dry ground, you are likely in the depression of a vernal pool.

Winter





In early winter with the leaves off trees, it is easy to spot frozen pools that are not yet snow covered.



Under a carpet of snow vernal pools may appear as openings in a forested landscape devoid of vegetation as you see in this photo, or they may contain the persistent remains of wetland plants such as cinnamon fern, royal fern, woolly sedge, or cattails, or wet shrubs such as meadowsweet, steplebush, winterberry, red osier dogwood, or highbush blueberry. Be aware that old log landings may appear as similar gaps in the forest, but typically contain early successional species such as raspberry canes, goldenrods, milkweed, and poplar trees that don't typically grow in sites with annual inundation. If you think you have come across a vernal pool in the winter, try digging down to see if the pool re-filled in the fall and there is a layer of ice below the snow. Note the location and return in the early spring to look for evidence of vernal pool indicator species.



Please only use the images and information provided here as confirmation that a site should be revisited in the spring during the breeding season.