

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

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We thank the Of Pools and People team for contributing the science, photography, and figures for this presentation.....

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The appearance of a vernal pool can be dramatically different depending upon the season. These four photos show the variation nicely. At the peak of high water in the spring breeding season this pool is often reaches a depth of 3-4 feet. In the summer it is thick with shrubs and ferns, but in the winter it just looks like a small clearing in the woods.

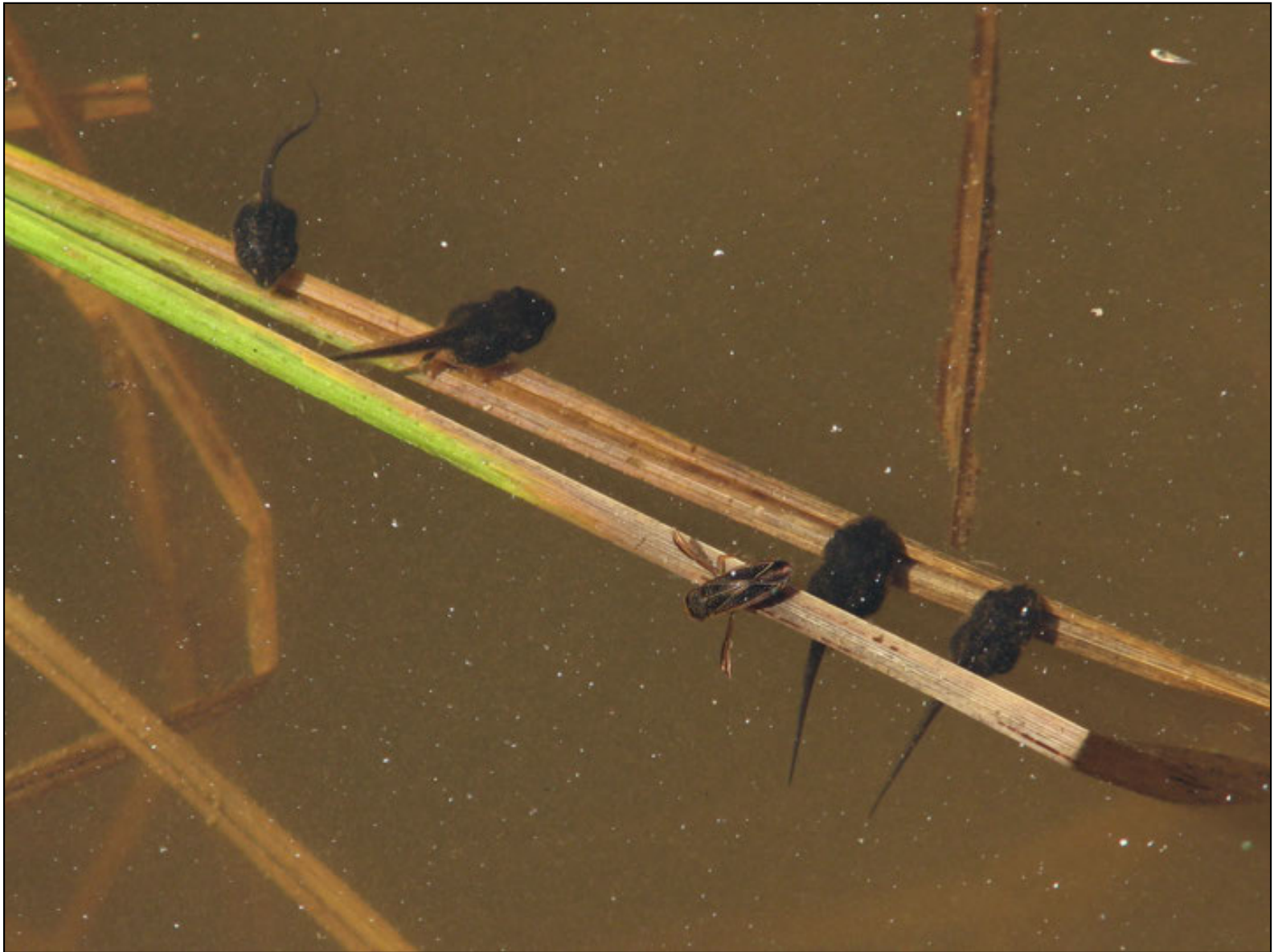
**The following slides contain examples of features to look for during the “off season” that will help you determine whether you might have a pool that should be revisited in the spring.**



**Summer**



After wood frog egg masses have hatched, in the late spring and early summer, tadpoles are often visible in the sunny shallows or on the pool bottom.



Later in the summer when they are a little larger, you may see them hanging out feeding on submerged vegetation.



Salamander larvae are much more difficult to see. They tend to spend the day camouflaged on pool bottoms on 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. It is very difficult to tell the difference between spotted and blue-spotted salamander larvae.



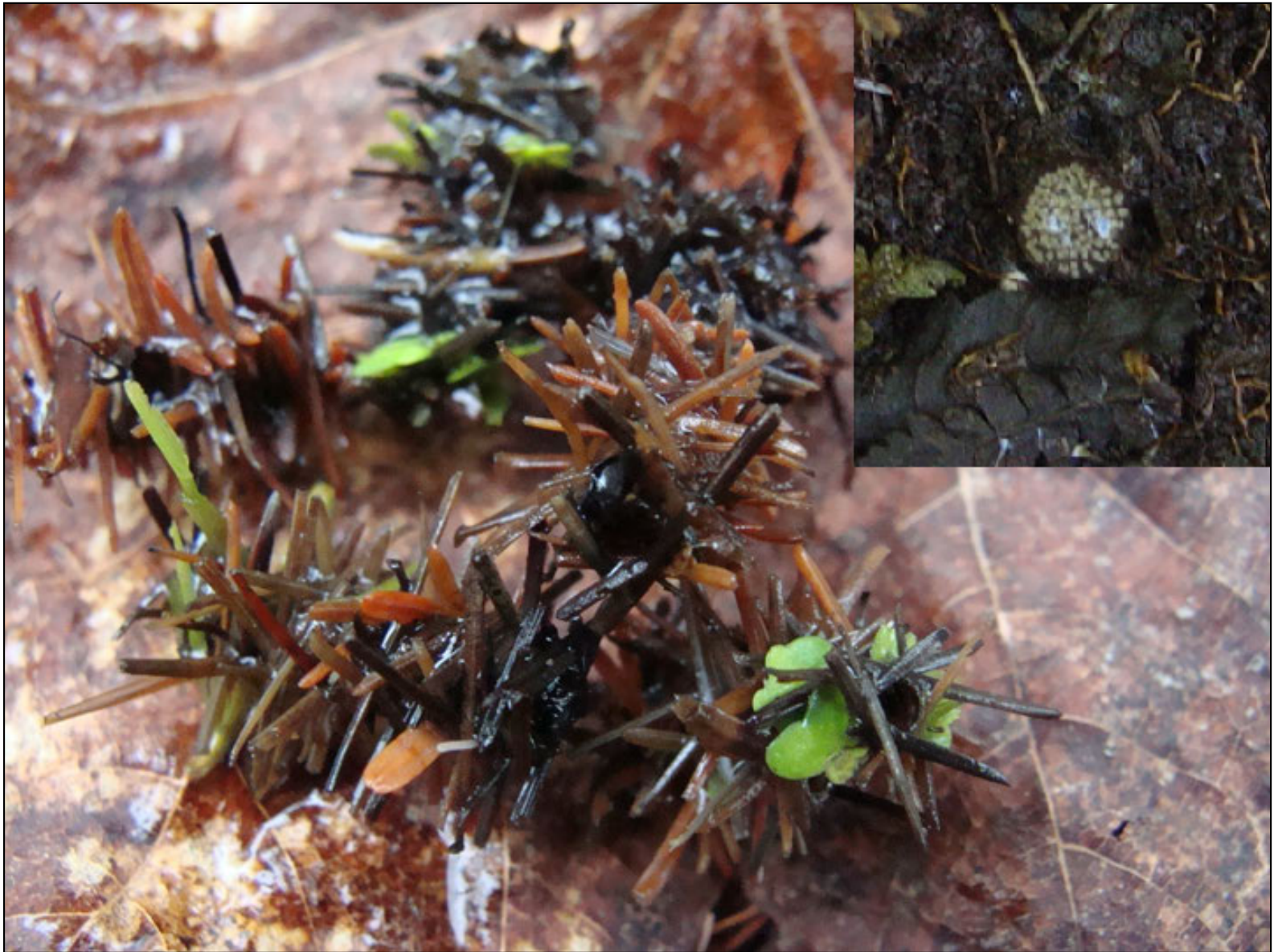
**Fall**



Pools that only hold water during the spring and early summer might look like this shallow depression that has upland species growing around its perimeter and may have wetland species within the basin or clams or caddisfly cases in the leaf litter..



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



Another example of caddis fly larva 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.



Caddis fly 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.



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. Likely a vernal pool. (Fingernail clams do also live in other bodies of water, not exclusively in vernal pools).



Look for wetland plants such as these sedge clumps (Woolly Sedge – *Scirpus Cyperinus*) growing in the depression but not in surrounding forest.



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 a vernal pools. The 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.





Sphagnum moss is always an indicator of wet growing conditions, but also grows in many other sites as well. If it's growing in a depression in the landscape it may be an indication that you are in a vernal pool.



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 incanna*).



Dry hummocks 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.



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.



Fall rains and raised water tables often result in pools partially refilling in the fall as seen in this forested wetland pool complex.

**Winter**



In early winter with the leaves off trees it may be easier to spot frozen pools that are not yet snow covered.



Sometimes a frozen surface combined with landscape setting is a good indication that the site should be revisited in Spring.





It is often very difficult to identify potential vernal pools under a carpet of snow. They 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, wooly sedge, or cattails, or wet shrubs such as meadowsweet, steeplebush, 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.

**Although all of these features may indicate the presence of a vernal pool, they may also be found in other types of wetlands.**

**Bottom Line: always recheck the potential pool in the Spring**