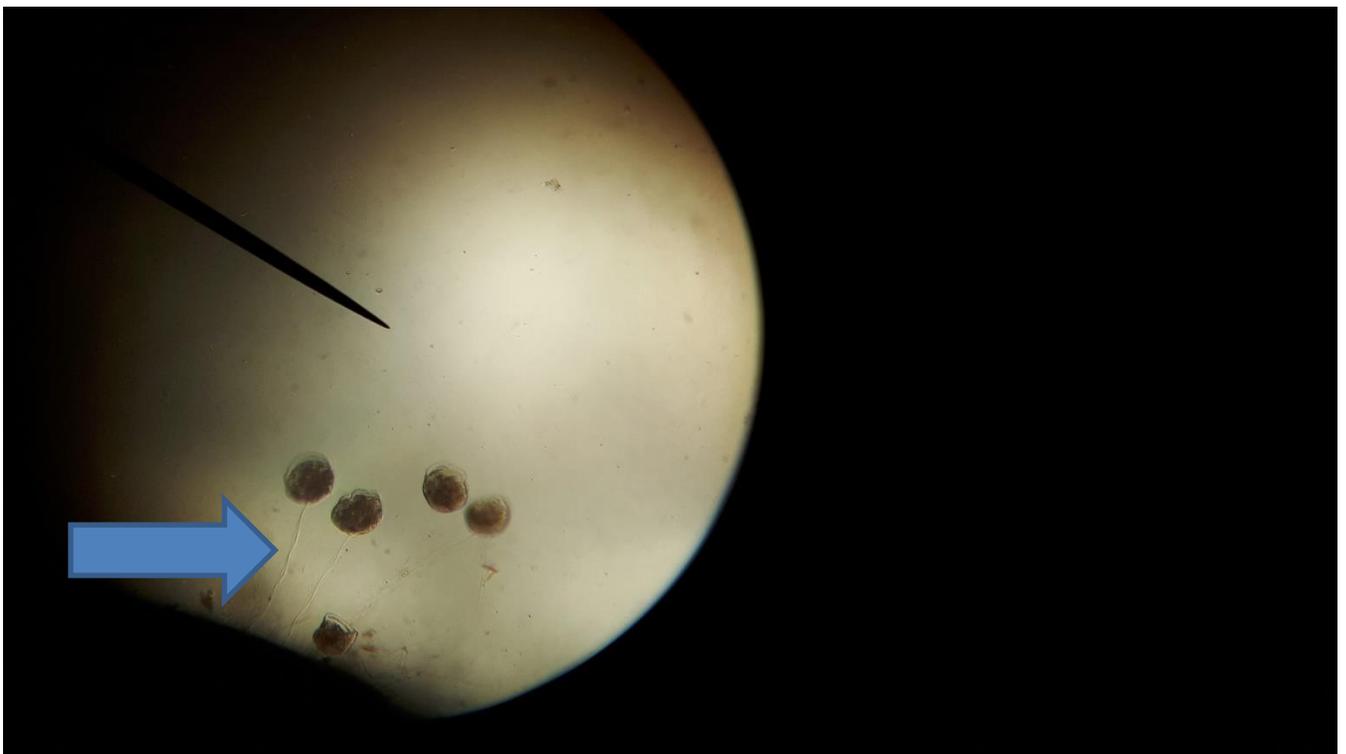


Environmental Science: What to do during the cold winter months.

Source: Even during the winter, there are some wet swampy areas that defy freezing. Sometimes it's the current; sometimes it's the heat from decomposition that keeps the water from freezing. Alternatively chopping through ice in a shallow swampy area would also give you access to the bottom detritus. A sample was taken from my backyard pond on Dec 10th.

Sample: When taking a sample, ensure that there is plenty of vegetation. Some will still be green. You may find Duck Weed, or some kind of filamentous algae. A 500 mL sample will provide enough material for several classes. I re-purposed a used blister pack to act as well slides for this activity. When glued to popsicle sticks, my mechanical stage easily gripped this. That allowed me to have 6 samples on the stage at once.

Observations: A significant task for an environmental scientist is identifying the organisms found in a study area. This work can be made significantly easier by taking photographs. This photograph was taken using a cell phone camera and positioning it above the eye piece on my microscope. The microscope was set on medium power. As holding the cell phone steady required both my hands, my lab partner clicked the pictures. Many shots were taken as the image was difficult to keep in view. These were then downloaded to my computer, and the best ones were selected.



Identification: Many of the common protozoans can easily be identified using on-line dichotomous keys, drawings of protozoans, and or by consulting more experienced teachers in your department. This picture shows 4 Vorticella extended on their stalks. The blue arrow points to a stalk. The bottom Vorticella has contracted (coiled) its stalk and the rim of its vestibule (oral cavity) can be seen. It is cup shaped, and while they cannot be seen at this magnification, they are ciliated. The stalks are firmly attached to a piece of decaying vegetation.

Ecology: Vorticella feed on decayed bits of vegetation, living vegetation, and smaller living protozoans. They do not fit easily into the categories and definitions of herbivore, omnivore, carnivore or members of the detritus chain. Rotifers have been observed eating vorticella. Pickerel feed on rotifers, shortly after they have exhausted their yolk. With this information, a very simple food chain can be created.

Global Warming: When pickerel first hatch, they remain attached to their yolk sac. They fall to the bottom, feeding for 3 days on the yolk. Sampling the water above the breeding ground, no rotifers are to be found. With the inexplicable synchrony of nature, the pickerel rise in search of food. Sample the water now, and many rotifers can be found. That would not occur if protozoans like the vorticella did not provide the important link, allowing rotifers to feed.

Wade Leonard is a biologist, fish farmer (pickerel, sucker minnows) and a local high school teacher. He once voiced his concern. What if the synchrony described above was adversely affected by rising global temperatures? It may cause the fish to hatch early, rise and find no rotifers in the water. The results on the pickerel population would be disastrous.

Dave Gervais

STAO Safety Committee Chair

For more biology and environmental science activities, be sure to attend the STAO 2020 conference. Dave Gervais will be presenting Biology Labs Do Not Have To Stink. (March 26, 2-3pm). He will also be co-presenting Three Fun Environmental Activities on Friday March 27, in the playground sessions.