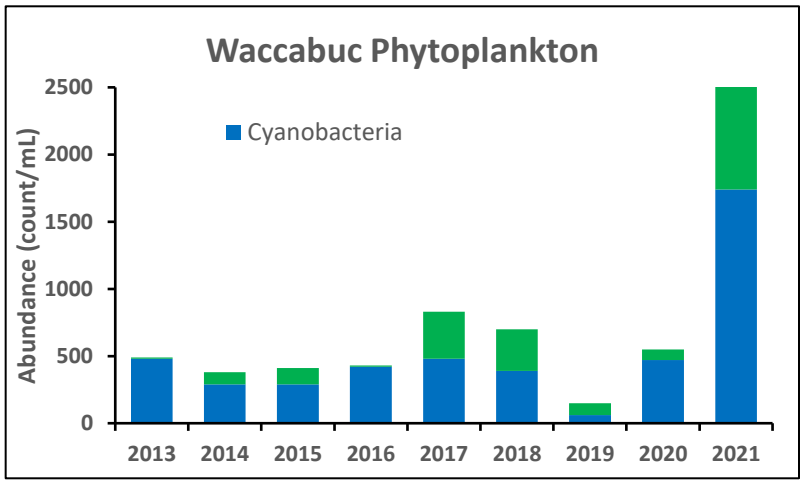
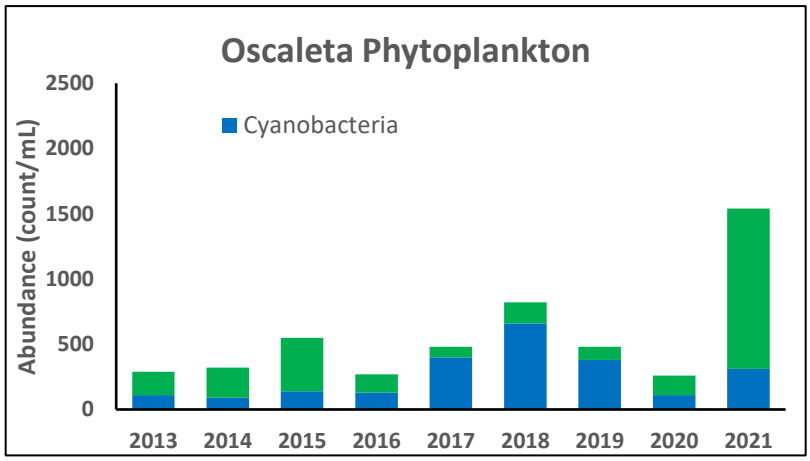
Three Lakes Council Plankton Summary 2021

In addition to our usual water quality samples, we collect algae and zooplankton samples once each year. These are analyzed by Solitude Lake Management, and help us assess trends in algae and zooplankton over time. For algae, while the overall levels of algae affect the clarity and aesthetics, we especially track the cyanobacteria (blue-green algae) levels because those species can sometimes form toxins. It would be better if we took more frequent samples, but we get a point in time comparison.

We also track zooplankton, which are the microscopic animals. These are an important component of the food web and provide food to many of the animals that live in our lakes. Zooplankton are also an important consumer of algae, so generally we like to see higher levels of zooplankton, hoping that will mean lower levels of algae. Unfortunately, cyanobacteria are the least favorite algae of zooplankton. A good diversity helps as some zooplankton are more efficient at algae predation than others.

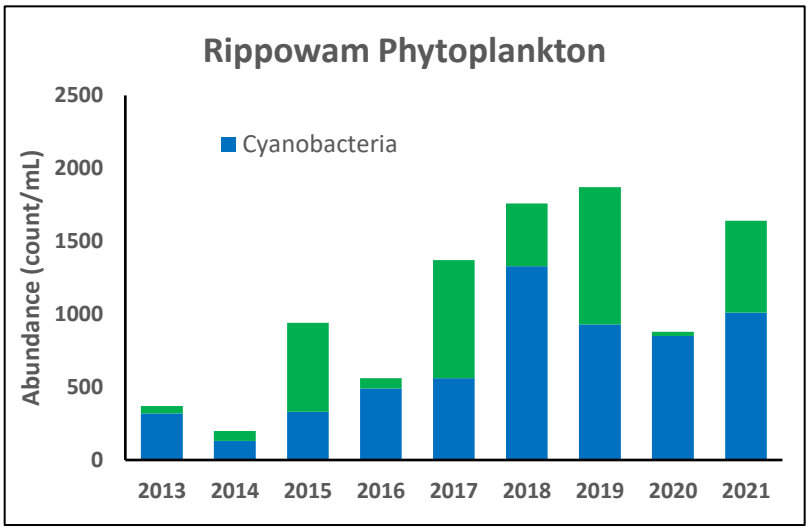




Algae (Phytoplankton)

As residents know, our lakes had higher than typical levels of algae, or phytoplankton, in 2021. It's a technicality, but cyanobacteria are not algae, although we generally call them that (blue-green algae), hence the term phytoplankton. Waccabuc algae levels were the highest we've sampled, and were dominated by cyanobacteria. Oscaleta also had higher than typical levels of algae, but a smaller proportion of cyanobacteria than typical. Rippowam's algae level was about that of a typical year. All three lakes appeared to have roughly the same levels of algae this year, which is quite unusual.

Beyond cyanobacteria, our lakes typically show some differences in the other algae composition. Specifically, Rippowam typically has more golden algae, giving the water a brown rather than green tint.



Zooplankton

Zooplankton are important for the food web, to support the fish and other critters that we have in our lakes, and they are also important as controls on the level of algae. The dynamics in the recent years are perplexing. After a banner year in 2020, the amount of zooplankton in all of our lakes fell dramatically in 2021 back to or below typical levels for our lakes.

Rotifers are the smallest class of zooplankton, and are often the most abundant on our lakes. Quite small, they aren't particularly good at controlling algae. Cladocera are the most efficient algae predators, so we like to see high levels and high proportions of them. Copepods are also good algae consumers too, but their larger size means they can be more easily seen (and eaten) by fish.

What's going on? Some studies have shown that shorter ice-on periods result in more zooplankton, but that doesn't seem to be happening here. Alewives consume a lot of zooplankton, and they have boom-and-bust population cycles, so perhaps the variation is a result of a change in the number of alewives. When there's a lot of algae on our lakes, we'd also expect to see more zooplankton, but we didn't. Do lower levels of zooplankton result in higher algae levels? Unfortunately, all we can say is: possibly. We will continue to collect data. Meanwhile, hope for a zooplankton rebound.