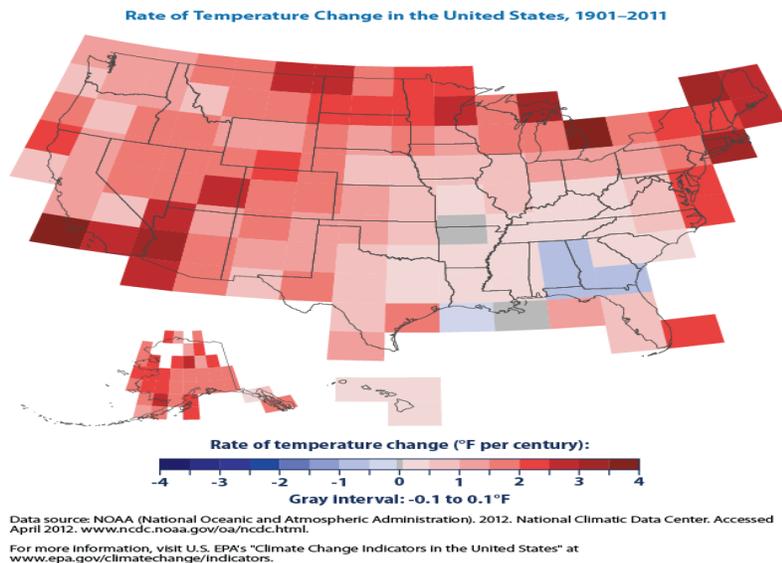




2012 Thompson Lake Water Quality Report

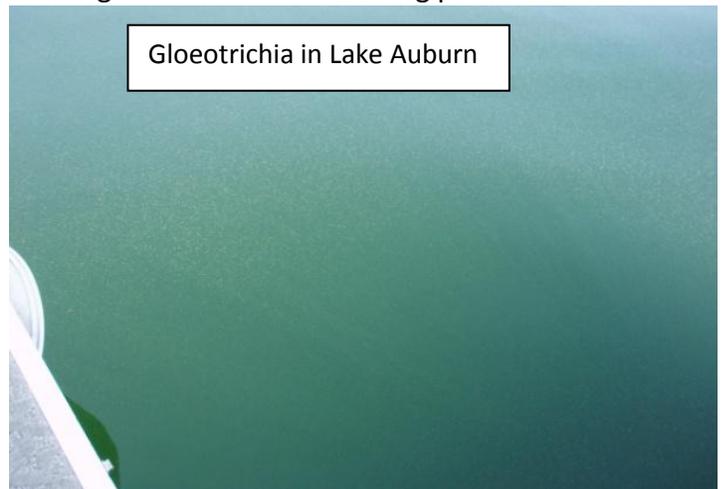
During the past decade, a great deal of discussion has taken place among lake scientists throughout the world concerning possible effects that climate change may have on lakes. Lake systems are highly sensitive to weather fluctuations, as we have observed in the long history of annual water quality data for Thompson Lake. Nearly all of the models for global climate change suggest that, in addition to warming trends we will likely experience increasingly extreme weather events in the future. Indeed, there have been a number of such events that have gained national attention. In fact, a number of examples of such weather occurred here in Maine last summer, including record-breaking early ice out for lakes throughout Maine in March, record high air temperatures in the spring and summer, a severe 48 hour storm in early June, in which nearly 8 inches of rain fell in southwestern Maine, and record breaking lake surface temperatures in June and July.



While we are just beginning to understand the impact that the 2012 weather had on Maine lakes, a few dramatic examples have been documented. Several lakes that did not have a history of water quality problems experienced severe algal blooms last summer, including nearby Lake Auburn. The Lake Auburn bloom caused what has historically been a clear, clean lake, with low concentrations of phosphorus and algae, and which has supported a highly valued cold water fishery (Lake Trout and Salmon), to turn green for several weeks. The algae bloom caused dissolved oxygen levels in the lake to plummet in August and September, which resulted in a highly-publicized "fish kill", in which the entire Lake Trout population may have

period of stratification, the more likely it is that oxygen will become depleted, as bacteria in the water decompose decaying algae and other organic matter. Coldwater fish (Trout and Salmon) depend on both cold water temperatures in the deep area of the lake, and abundant concentrations of oxygen. These sensitive species become stressed when oxygen levels drop below 5 ppm. While there was sufficient oxygen in the cool area of the water to provide refuge for coldwater species in September, it is likely that oxygen levels were even lower in October and early November, until the lake “mixed” later in the fall.

Phosphorus and algae concentrations in the lake during the 5 month monitoring period were closer to the historical average for Thompson. But one particular bluegreen alga, (*Gloeotrichia echinulata*) that is the current focus of research in New England Lakes, was observed in July, August and September at higher concentrations than have been observed in Thompson during the past few decades. There has been speculation that “Gleo” may have played a role in declining water quality of otherwise clear and healthy New England lakes. For the past several years, Gleo concentrations have increased substantially in Lake Auburn.



This photo was taken at the surface of Lake Auburn last summer during the peak of the Gleo bloom.

Even though the lake exhibited signs of stress in 2012, Thompson remained one of Maine’s clearest. Out of more than 350 lakes that were monitored throughout the State last summer, Thompson was in the top 7 %! However, even though the lake continues to experience water quality that is substantially higher than the average for Maine lakes, due in no small part to the longstanding, effective efforts of TLEA to protect this valuable resource, climate change poses new threats to our lakes that we are still in the early stages of recognizing and understanding. A comprehensive annual lake water quality monitoring plan is a fundamental component of the long term strategy to ensure that Thompson remains one of Maine’s clearest and cleanest.