2005 Kezar Lake Water Quality Report

By Scott Williams, Aquatic Biologist

For more than two decades, KLWA has monitored the water quality of Kezar Lake. The information gathered through this long-standing commitment has been used effectively to protect the outstanding quality of one of Maine's clearest and cleanest lakes.

Anyone who spent time on Kezar last year can attest to the fact that spring and early summer were very wet. Heavy rain is always a potential concern for all lakes, including Kezar, because stormwater runoff from the watershed is the primary means by which the nutrient phosphorus, and sediment from soil erosion find their way into the lake. Both of these pollutants have the effect of reducing the clarity of lake water. Lakes are very sensitive to phosphorus, which can overstimulate the growth of algae. Sediment from soil erosion can smother sensitive habitat for fish and other aquatic life, and there are often other pollutants associated with eroded soil, including pesticides.

With all of the rain and runoff last spring and summer, one might expect that Kezar Lake's water would have been less clear. However, such was not the case. In fact, the lake was *very* clear, continuing a five year period during which the water in Kezar has been clearer to varying degrees than the historical average for the lake. That historical average is 7.6 meters (about 25 feet) for the north basin of the lake (Upper Bay). That is the distance that one can see down into the water using a device for measuring lake clarity. The water clarity average in the north basin in 2005 was 8.19 meters (about 27 feet). Middle Bay was somewhat less clear (7.89 meters), but still clearer than the historical average for that area of the lake. The south basin (Lower Bay) was the least clear section of the lake, but water clarity readings alone cannot be used to characterize South Bay because the area is so shallow.

Phosphorus concentrations were also lower than the historical average for both Upper and Lower Bay. Because phosphorus is the nutrient that most directly influences the growth of algae in the lake, the concentration of algae was also lower than the historical average throughout the lake – somewhat more so in the Upper Bay area than in Lower Bay.

One of the strongest indications of Kezar's excellent water quality is the way in which oxygen levels in the water stay high throughout the warm summer months. Many lakes in the region experience substantial oxygen loss during the late summer and early fall. Kezar Lake has consistently maintained high concentrations of dissolved oxygen, even in the deepest area of Upper Bay, where the oxygen is most likely to decline. A relatively high concentration of oxygen in the deep, cold water of Kezar Lake is one of the primary reasons why this lake is able to support a healthy coldwater salmonid fishery. Some Maine lakes that were once able to make this claim can no longer do so as a result of excess algae growth and declining summer oxygen levels. Oxygen levels are checked several times throughout the summer and fall, from the surface to the bottom of the deepest points in Upper, Middle and Lower Bay.

In an effort to better understand the dynamics of energy cycles, the food web and the fishery of Kezar Lake, samples of zooplankton population (tiny animals that live in the water) were collected in 2005. The analysis of the samples is being undertaken by researchers at the University of Maine under the direction of Dr. Katherine Webster. The results from 2005 are not yet available. However, previous years zooplankton sampling results suggest that the zooplankton population in Kezar Lake is similar in some respects to other clear, low-phosphorus lakes in Maine, including Auburn and Thompson.

Kezar Lake continues to exhibit a number of indications of excellent water quality, compared to other Maine lakes and ponds. However, as development pressure continues to increase in the watershed, and in the watersheds of the surrounding ponds that drain into Kezar, the potential for a decline in water quality will also increase. Landowners and municipal officials in the watershed community must continue to support stewardship initiatives and water quality conservation practices if the exceptional quality of Kezar Lake is to be preserved for the future.

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