

Current Densities and Distribution of Aquatic Vegetation in Lake Hopatcong

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Some concern has been raised over the unusually high amount of aquatic vegetation distributed through Lake Hopatcong. In some areas of the lake, aquatic plant growth already reached the water's surface by the end of May. This year's spring / early summer observations are in sharp contrast to some past years, such as 2003 and 2004, when plant growth was relatively low. It must be emphasized that the conditions observed this year are the result of wide spread climatic fluctuations over the last two seasons.

The winter of 2005-06 was relatively mild. Many lakes throughout the Mid-Atlantic region of the United States were only iced over for a short period of time and some lakes did not ice over at all. More importantly, no snow pack accumulated over the iced lakes. During a more typical winter, the snow pack over the ice effectively eliminates the any light from entering the lake, thus preventing photosynthesis of the over wintering plants and algae. Such conditions also lead to a certain amount of natural mortality of the existing populations of plants and algae. However, with such a mild winter and light penetrated the ice and hit the lake bottom. Such conditions allow for some over wintering plants to initiate their growth early in the season. This is particularly the case for species such as Curly-leaved pondweed and the filamentous green alga *Spirogyra*, which tend to thrive in low temperature environments.

As stated at the last few Commission meetings, I have observed "sprigs" of Curly-leaved pondweed under the ice at Lake Mohawk as early as February. The mild winter combined with bouts of drought and unusually warm conditions in this spring, has produced large amounts of aquatic plants in Lake Hopatcong, as well as other waterbodies throughout the Mid-Atlantic States. Based on Princeton Hydro's existing lake database, high densities of submerged aquatic vegetation have been observed this spring in Lake Hopatcong, Lake Mohawk, Lake Musconetcong (New Jersey), Lake Carey and Stephen Foster Lake (Pennsylvania) and Lake Sagamore (New York). Thus, the high densities of aquatic plants this year in Lake Hopatcong is in response to the inter-annual climatic variability experienced in this part of the United States.

It should also be noted that while climatic does impact the relative growth rates of submerged vegetation, "controllable" factors such as in-filling of near shore areas due to high total suspended solid (TSS) loads entering the lake, as well as elevated total phosphorus (TP) stimulating algae and aquatic plant growth, also drive aquatic productivity. Thus, the mechanical weed harvesting program addresses the symptom of the problem, while reducing the watershed-based, non-point source pollutant loads, particularly TSS and TP, addresses the cause of the problem. Thus, the Lake Hopatcong Commission will continue to take this holistic approach toward addressing excessive plant and algae growth.