

Open Space and Recreational Restoration of Knops Pond/Lost Lake

Background

Groton is blessed with natural resources due to the effects glaciation had on its topography. Isolated wetland pockets, forests, glacial ponds provide unique niches for plants and animals. The largest of these features is Knops Pond and Lost Lake, over 200 acres of freshwater teeming with fish, inhabited by mammals, reptiles and birds of all kinds; from eagles to pileated woodpeckers, and from great blue herons to hummingbirds.

The waters were impounded twice over time to accommodate the needs of Man. The first dam raised the level of Knops Pond in the mid-19th century for ice harvesting. An icehouse and haul road can still be seen. The second impoundment around the beginning of the 20th century created Lost Lake from Cow Pond Meadows. The water being used for processing in a local industry.

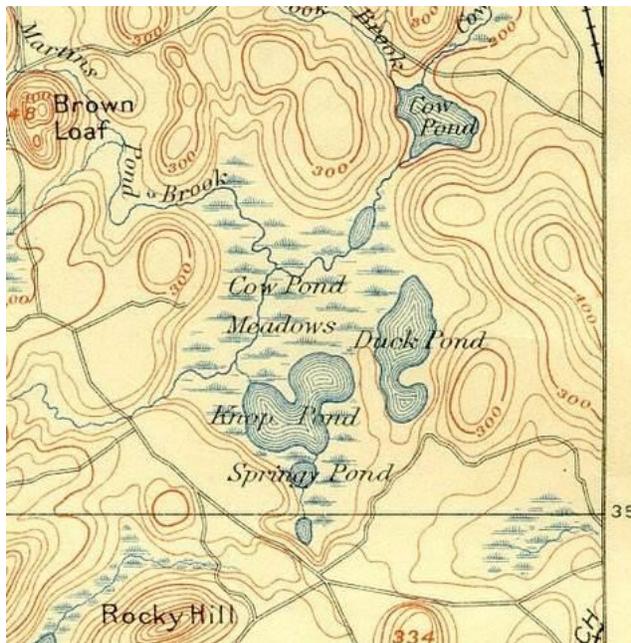


Figure 1 Before Impoundment

Over sixty years ago, The American Baptist Churches of America purchased a large parcel of land bordering Lost Lake from Dr. Peter Thompson and established Grotonwood. Grotonwood provides a wide variety of year-round camping opportunities for inner city youth, adults with special needs, family camps, conferences and retreats to name a few activities. Their beach is a large focal point for their many summer activities and water quality is an important element in making their mission a success. Grotonwood and the Groton Lakes Association have had a close, supportive relationship over the years.

In the 1970s, a private boat ramp became public when it was gifted to the

Commonwealth of Massachusetts. Finally, years later, an eighteen-acre parcel of land taken by the Groton Conservation Committee was turned into Sargisson Beach for the recreational use by the community.

Today, Knops Pond/Lost Lake, is the centerpiece in Groton for year-round outdoor recreation in the form of fishing, swimming, kayaking, canoeing sailing, powerboating, and skiing, and in the winter, fishing, snowmobiling, skating and cross-country skiing. Unfortunately, with increased use come other issues that can negatively impact water quality, aquatic plant life and recreation.

Many limnological studies have been conducted on the lake to provide guidance to the Town for best management principles to protect the lakes from degradation. The Groton Lakes Association (GLA) has usually taken the lead to fund these studies. The most recent study performed in 2016 gave greater clarity to the issues challenging the well-being of the lake.

Groton's thirty-two square miles is not isolated from the rest of the world, so, unfortunately, it is exposed to infestation from non-native plants and animals which can wreak havoc on our resources. The Invasive Weed Committee now studies the terrestrial pests. Similarly, the GLA, has monitored and treated non-native aquatic weed species. The biggest problems facing the lakes is *Cabomba caroliniana* (fanwort) and *Myrophyllum heterophyllum* (variable milfoil).



Figure 2 *Cabomba* in Bloom



Figure 4 *Cabomba caroliniana*

These invasives plague lakes throughout the indeed the world. They have no natural predators and our native aquatic plants very quickly.

country and can take over

Where do they come from? Seeds from these plants can be carried by the wind, piggyback on land animals, birds and Man. Man, inadvertently, increases weed infestation by transporting them on boat trailers, boats and motors. An un-infested lake can quickly become an infested one through these means. The whole ecosystem becomes stressed, native aquatic plants suffer, fish populations decrease, recreational activities are curtailed and swimming in weed clogged waters becomes dangerous.

Project Description

The main lesson we have learned from these infestations is that mechanical means (harvesting by hand or machine), benthic barriers, and/or winter drawdowns do not work effectively. What does work is attacking the plant with systemic herbicides; herbicides that break down and do no harm to animal life; herbicides that have been used safely in drinking water reservoirs for thirty years.

Cabomba growth in Knops Pond/Lost Lake has reached a tipping point. Our consultant has recommended a complete restoration through a whole lake treatment with the herbicide Fluoridone (Sonar). It is effective on *Cabomba* as it attacks the roots of the plant. It is impossible to kill 100% of these noxious weeds, but with annual spot treatments, the *Cabomba* growth can be retarded for years



The treatment will actually be a three-step process throughout the summer to maximize the plant eradication. Native plants will be affected as well, but not long term. They will rebound the following year providing the needed cover for the fish population.

Long Term Management

The most recent study of the lakes included its rather expansive watershed. The watershed is fourteen times larger than the lakes and contain some 800 residences, commercial property and some farmland.

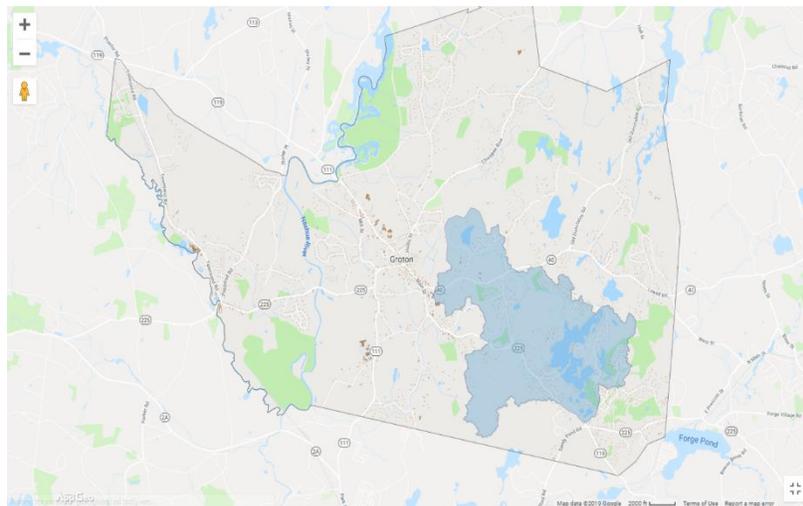


Figure 7 Knops Pond/Lost Lake Watershed

This watershed contributes about two-thirds of the Phosphorus, the nutrient fueling plant and algal growth, coming into the lake through its two inlets. Most of this infiltration is along Martin's Pond Brook. A large amount comes from non-point sources such as stormwater runoff.

In addition to weed infestation, we are seeing increases in algae and cyanobacteria due to an excess of phosphorus in the lakes. Cyanobacteria is toxic to animals and can cause illness in



humans. These worsening conditions reinforce the need to reduce the phosphorus budget coming into our lakes from the surrounding watershed. The GLA and GPAC plan to fund a water quality testing program to monitor the health of the lakes.

In order to sustain the success of a whole lake treatment, these sources must be identified and best managed practices

Figure 8 Blue-Green Algae

be used to reduce the Phosphorus entering the lakes. There are many such sites along roads and private properties as well. An educational brochure was produced from the last study and distributed to every residence in the watershed.

The GLA and the Great Ponds Advisory Committee (GPAC) are taking the lead in securing future funding to 1) identify the non-point sources; and 2) implement best management practices to curb or slowdown the Phosphorus pollution. Less Phosphorus will improve the lake quality; reduce the nutrients plants require and preserve the lake for future generations.

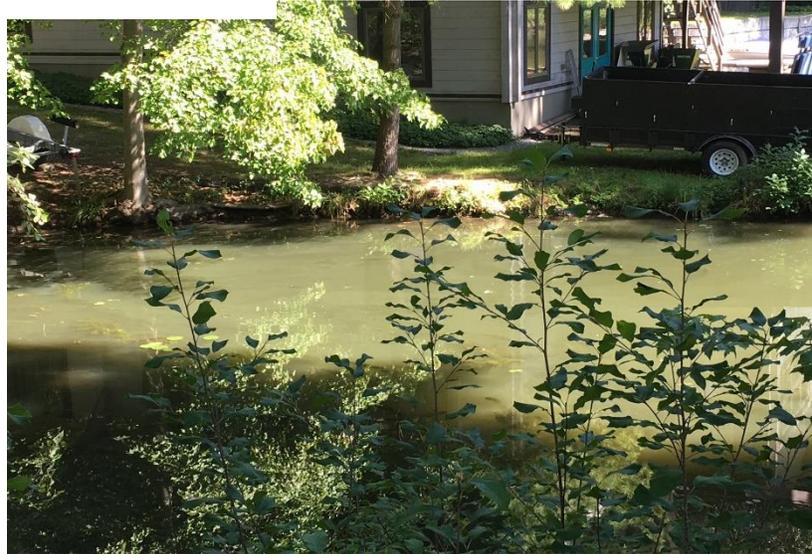


Figure 9 Late Summer Algal Bloom

In addition, the GLA will use its membership funds following the restoration for spot treatments in subsequent years as needed. GPAC is working with the Town to secure long-term financing for future treatments that will be needed to maintain this outstanding water resource for the whole community.

Attachments



Lost Lake & Knops
Pond Watershed Ma



Inlets & Outlets Map
from ESS Groton Los



Year End Report
LLKP_2013_compiled



LostLkKnopsPd18.YE
R_Final.pdf

<https://www.youtube.com/watch?v=yYGgHoGwlaU&feature=youtu.be>

<https://www.youtube.com/watch?v=XnXQb9Yahzo>