

Lake Agawam
An Ecological Aquatic Assessment

Andrea Schuettinger
October 12, 2011
Written for Harvard Extension:
Environmental Management

Lake Agawam became more than a definition or habitat piece. It became a living entity; a struggling life that wanted to become a biologically rich and harmonious landscape. Its fate intertwined with people. Along with the required information I have chosen to focus primarily on science and values because it is an important basic, missing element in the story of Lake Agawam. I wanted to contribute to its restoration by citing ecological facts and evidence to demonstrate its worth; this would also show how the values of people effect their environment.

The Comprehensive Management Plan for Lake Agawam by Nelson, Pope and Voorhis states that Lake Agawam is a 60 acre body water thought to have been created many years ago as a result of glacial meltwater. It is possible at one time in history it was connected to the Atlantic Ocean which is located approximately a quarter mile from the Lake but through time a land barrier was established. The lake has no connection to the ocean other than an outflow pipe used to regulate water levels by a manually operated valve. Lake Agawam has been given the aquatic category of freshwater wetland by the Department of Environmental Conservation. In 1991 the Department of Environmental Conservation, for the first time, gave the regulatory authority to the Village of Southampton, the Village is currently responsible to uphold the regulations pursuant to Article 24 of the Environmental Conservation Law (Nelson, Pope & Voorhis 1-5).

Historically Lake Agawam has been considered the *jewel* of Southampton since 1882 (Cummings 40-2). With its long history the role as an ecological habitat has shifted

and evolved with the development of the community. The human impact on the lake has degraded the waters into a state of pollution (Gobler et al. 1).

According to the United States Geological Service wetlands are frequently located between open water bodies and uplands and are considered transitional areas; they have hydric soils, support hydrophytes and have a particular hydrology which can vary with the type and function of the water body but they need to contain water for a few days during the year. Lake Agawam is considered a coastal freshwater wetland because it exits along the shoreline of the Atlantic Ocean. Due to the extensive development of coastal communities, coastal wetlands are considered imperiled habitats (USGS). The Environmental Protection Agency lists a broader definition for regulation purposes: under the Clean Water Act wetlands are “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.” Wetlands adjacent to either traditional navigable waters or interstate waters are protected by the Clean Water Protection Act. According to Botkin and Keller an estimated 90% of freshwater wetlands have disappeared in the United States (388).

Professor Christopher Gobler Ph. D. of Southampton College started monitoring water quality in Lake Agawam in 2003. He has conducted scientific surveys which demonstrated that nutrient loading due to pollution has contributed greatly to the toxic levels of microcystin in the water. Microcystin are a toxic subspecies of cyanobacteria that can have serious effects to both wildlife and humans, sickness or death can result from exposure or ingestion. He also monitors levels of chlorophyll and phycocyanin which are

indicators of algae levels; these levels can effect oxygen levels in the water making it hypereutrophic ; this is a water ecology issue for Lake Agawam. Algae blooms are largely responsible for the fish kills that have occurred (Nelson, Pope & Voorhis 18). In 1981 Lake Agawam made national headlines in the New York Times after 225,000 fish died and high levels of DDT – derived compounds were found in dead goldfish (Associated Press). Fish kills in Agawam have occurred since the 1950's; greatly disrupting the aquatic habitat. Examples of fish species that exist in the waters of Agawam are white perch, carp, largemouth bass, and brown bullhead (Nelson, Pope & Voorhis 6).

When I stood along the shore I heard the laughter of children and the passing of cars, I visually scanned the lakes surface hoping to find the mallard ducks which swim, play, stroll and live in the Lake. Strangely on that day there were none to be found, it is possible they had gathered in a remote section to enjoy the sunshine and food. Another common bird sighting at Agawam is the seagull and the Canadian goose. An extremely important issue that effects wildlife and vegetation at Lake Agawam is lawn. Nelson, Pope & Voorhis report that the zoning which surrounds the shoreline is 100% residential; lawn comprises 67.2% of the surrounding shoreline (14) including the 100 feet regulated buffer zone. A small public park is located on the north edge. From my perspective lawn appeared endless. The following photograph is an aerial view of Lake Agawam published in SouthamptonPatch.



July 2011, Credit/Cully EEFA. SouthamptonPatch August 3, 2011

The natural wetland habitat has been replaced by lawn, a home owner choice, and has significant ecological implications and greatly reduces biodiversity. Audubon states that in the United States 80% of endangered or threatened birds depend on wetlands; they are also important to numerous migrating birds as stopovers (Malbin). Also in the United States 45% of endangered animals and 26% of endangered plants either live in wetlands or depend on them for their survival (Botkin, Keller 388). The Environmental Protection Agency says that in America 31% of our plant species exist in wetlands and 95% of our commercially harvested fish and shellfish are wetland dependent. Wetland habitats are essential for wildlife and plants. The Environmental Protection agency further say that in 1991 wetland related ecotourism activities added \$59 billion dollars to the economy;

wetlands also comprised 71% of the total commercial and recreational fishing industry revenue, \$79 billion. Wetlands could contribute economically to communities through sustainable ecotourism activities such as bird watching and fishing. In Southampton, Lake Agawam as a wetland habitat resource could also provide environmental education to schools and the community.

. In 2008 an environmental company, Nelson, Pope and Voorhis LLC, was hired by the Village of Southampton to formulate a plan for the restoration of Lake Agawam. The finished written material is a very comprehensive management plan which outlines extensively the causes of pollution problems and has in depth analysis of solutions which contains descriptions, breakdowns, and very clear action protocol that would restore the lake. The cost would be \$6 million dollars. Does the Village and Town of Southampton think that Lake Agawam is worth \$6 million dollars? The flood protection freely given by the lake has an economic value. An acre of wetland can store 1-1.5 million gallons of flood water (Environmental Protection Agency). The Federal Emergency Management Agency pursuant to Executive Order 11990, Protection of Wetlands, 1977; protects wetlands because of the wetlands vital role in reducing flood destruction. How much are the homes surrounding Lake Agawam worth? An analysis of coastal flood water protection by Lake Agawam should be done; climate change issues need to be included in the report .

In 2007 a group of concerned citizens and local officials formed The Lake Agawam Conservation Society. They have been the key to present restorative actions implemented for the benefit of Lake Agawam. In my short time working on this project I have been amazed at how important support from the community is to the environment. A person

could say that it is the government officials that really have the ability to impact ecosystems through the implementation of laws and granting of money. But political decision making is swayed by scientific evidence and public concerns.

A community of people committed to stewardship and resolution of environmental problems has tremendous power to transform both laws and values. The Lake Agawam Conservation Society has demonstrated this. Some examples of their efforts have been the Lake Agawam website which is an invaluable resource and water quality research conducted by Christopher Gobler Ph.D. .

Environmental management is comprised of both science and values. We choose the fate of our environments (Botkin, Keller 13). Is lawn more important than ecological habitat? Do we need to apply chemicals to create the perfect lawn? Can we create a place where birds, wildlife, and plants can safely live, where water is not polluted, and children can learn about nature? Aquatic ecosystems and water management have become major global resource issues; we are running out of freshwater. (Bokin, Keller 370-96). We all need to realize how our individual actions or non-actions impact the world we live. When we open a bottle of water or gaze upon a lake we need to recognize the connections; we exist within an ecosystem. The future of Lake Agawam is a frontier whose fate depends on people.

Citations

- Associated Press. "2 Long Island Fishing Spots Closed After DDT Discovery." *New York Times* 12 July 1981. Web. 3 Oct. 2011.
- Botkin, Dan, and Keller, Ed. *Environmental Science Earth as a Living Planet*. 8th ed. Hoboken: John Wiley & Sons., 2010. 13+. Print.
- DiNapoli, Jessica. Photograph. "Village Scores \$140,000 Grant for Lake Agawam". *SouthamptonPatch* 3 August 2001. Web. 9 Oct. 2011. <<http://southampton.patch.com/articles/village-scores-140000-grant-for-lake-agawam>>.
- Cummings, Mary. *Images of America Southampton*. Chicago: Arcadia Publishing, 1996. 40-2. Print.
- Environmental Protection Agency. "Functions and Values of Wetlands." September 2001. Web. 1 Oct. 2011. <http://www.epa.gov/owow/wetlands/pdf/fun_val.pdf>.
- . "Wetlands: Protecting Life and Property from Flooding". May 2006. Web. 1 Oct. 2011. <<http://www.epa.gov/owow/wetlands/pdf/flooding.pdf>>.
- . "Wetland Regulatory Authority". Web. 3 Oct. 2011. <http://www.epa.gov/owow/wetlands/pdf/reg_authority_pr.pdf>.
- Federal Emergency Management Agency. "Executive Order 11990, Protection of Wetlands." Web. 4 Oct. 2011. <http://www.fema.gov/plan/prevent/floodplain/eo_11990.shtm>.
- Gobler, Christopher et al. "Interactive Influence of Nutrient Loading, Zooplankton grazing, and Microcystin Synthetase Gene Expression on Cyanobacterial Bloom Dynamics in a Eutropic New York Lake." 8 July 2006. Web. 9 Oct. 2011. <<http://www.sciencedirect.com/>>.
- Malbin, Joushua."An Audubon Wish List." *The National Audubon Society*. Web. 5 Oct 2011. <<http://archive.audubonmagazine.org/auduboninaction//action9911.html>>.

Nelson, Pope & Voorhis, LLC. "A Comprehensive Management Plan for Lake Agawam".
June 2008. Web. 5 Oct. 2011. <[http://southamptonvillage.org/gallery/lake
Agawam.pdf](http://southamptonvillage.org/gallery/lake
Agawam.pdf)>.

United States Geological Survey. "Coastal Wetlands." Web. 5 Oct. 2011.
<<http://www.nwrc.usgs.gov/wetlandsCoastal.htm>>.

---."Wetlands." Web. 5 Oct. 2011. <[http://www.nwrc.usgs.gov/wetlands/wetlandsinfo.
htm](http://www.nwrc.usgs.gov/wetlands/wetlandsinfo.
htm)>.