

1) Can you briefly describe your professional career working for the NY State Department of Environmental Conservation? Your long term work on Lake George?

I received my Doctor of Philosophy degree from the State University of New York at Albany during 1978 and then accepted a post-doctoral fellowship at the New York State Department of Health in Albany, New York. During June, 1980, I began my 25 year career as a Research Scientist with the Northern Watersheds Section, Division of Water, New York State Department of Environmental Conservation (NYSDEC). I was stationed in Lake George, New York, with 2 other Research Scientists, conducting the Lake George Urban Runoff Study which was part of a 32-site Nationwide Urban Runoff Program managed under the auspices of the US Environmental Protection Agency.

I never really left Lake George during my 25-year career with the Department. My primary areas of research and investigation included (1) nonpoint source runoff and its impacts on Lake George, NY, (2) the long-term effects of acid rain on biotic communities of Adirondack lakes and ponds, (3) the management of Eurasian watermilfoil in New York State recreational lakes, and (4) the restoration of impoverished littoral habitat in Onondaga Lake, Syracuse, New York, one of the most polluted lakes in the world.

A summary of some major accomplishments during my 25-year tenure at the NYSDEC includes the following:

- Project manager and one of 3 scientists who conducted the Lake George Urban Runoff Study (1980-1983) funded by U.S. EPA (\$560,000) and part of the Nationwide Urban Runoff Program, to determine the effect of storm-water runoff from developed areas on the water quality of a 28,000-acre recreational lake.
- Developed original New York State lake association database and organized workshop for lake property owners leading to the formation of the New York State Federation of Lake Associations (NYS FOLA), a statewide coalition of organizations dedicated to the preservation of lakes, ponds, rivers in New York State.
- Prepared, submitted grant proposal to US EPA/NCSU Acid Deposition Program (NAPAP); received funding (\$78,000) to conduct and complete the Adirondack Biota Project during mid-1980's.
- Designed and implemented the New York State Citizens' Statewide Lake Assessment Program that trains volunteers to monitor lake water quality, and supervised the Program Coordinator during first year effort.
- Prepared and submitted proposal to US EPA Clean Lakes Program (Section 314 CWA) and secured funding (\$367,000 Federal) to conduct Lake George Phase II Restoration Project.
- Prepared a major (100+ page) technical report on water resources and water quality in the 6.5 million acre Adirondack Park for Governor Mario Cuomo's 1990 Commission on the Adirondacks in the Twenty-First Century and proposed recommendations for future resource management.
- Designed and implemented a nuisance aquatic plant management program at Lake George to control the growth and spread of Eurasian watermilfoil using physical techniques (benthic barrier, suction harvesting and hand harvesting).
- Conducted storm-water management studies in Lake George, New York with funds (totaling \$600,000) awarded under Section 319 of the Clean Water Act, *Nonpoint Source Pollution*. Several storm sewers and tributary outflows were instrumented to collect data prior to implementation of storm-water management.
- A principal co-investigator with scientists from the U.S. Army Engineer Waterways Experiment Station on restoration research at Onondaga Lake, New York, to demonstrate in-Lake re-vegetation techniques in a severely polluted body of water with an impoverished littoral zone plant community.

- Designed and completed a Section 314 (CWA) Clean Lakes Phase I Diagnostic-Feasibility Study on Upper Saranac Lake which was related to investigation and subsequent over-turn of legal action involving the NYSDEC Fish Hatchery at Lake Clear, NY.
- Field Project Officer, Program Data Coordinator and Co-Principal Investigator for the Adirondack Effects Assessment Program which was funded (\$6 million) and initiated (1994) by US EPA to evaluate the response of water chemistry and biological populations in 35 lakes and ponds to the 1990 Clean Air Act Amendments. The project continued until the end of 2012 and was funded during the last 3 years by the New York State Energy Research and Development Authority.

2) What brought you to Nantucket?

2005 was a year of major changes in my life. I was going through a divorce after 17 years of marriage, my daughter was moving out of the house in anticipation of starting college, I was preparing to sell a small 4-acre horse farm in northern Saratoga County (NY) and I was retiring from my job with New York State. What a perfect time to pick up and totally re-locate to begin a new life. I had met my current wife, Anne, earlier in 2004 and she had spent many summers on Nantucket during the late 1990s and early 2000s and had nothing but praise for the people and life-style on the Island. My last day working for New York State was Veterans Day, 2005, and the following day I was residing on Nantucket where I lived for the next 8 years.

3) How did you get involved with the Nantucket Land Council and Why?

After moving to Nantucket in 2005, I took a break from science and started a small caretaking job to supplement my retirement income. During 2008, however, I realized that I missed science and created an opportunity to enter into a cooperative relationship with Sarah Oktay at the UMass Field Station on Nantucket. We conducted a study of Hummock and Miacomet Ponds, which was funded by the UMass Field Station and the Nantucket Land Council (NLC). That was the beginning of my involvement with the NLC, and it was a perfect match with my background in water quality research and the NLC Mission of *Planning ~ Preserving ~ Protecting*. In 2010, I contracted with the NLC to conduct a study on Head of Hummock Pond and the next 10 years are documented and summarized in a series of water quality reports that are available on the Nantucket Land Council website.

I became involved with the NLC because of the strong commitment of the organization toward preserving and protecting the fragile water quality resources on the Island and the exemplary leadership and staff support provided by Cormac Collier and Emily Molden. The work that was accomplished during the past 10 years would not have been possible without the support and encouragement of these two individuals.

4) How do you view the last 10 years of water quality work that the NLC has conducted under your guidance?

The past 10 years of water quality work conducted by the NLC have been nothing short of critical as far as gathering important information related to the health of Nantucket Island estuarine and fresh water ponds, which are a very fragile part of the Island ecosystem. Just as individuals visit their health care provider on a regular basis to keep in touch with physical and mental issues, Nantucket ponds need to be protected by having regular monitoring conducted to tell us the rate and direction of water quality trends. As a scientist who has spent 4 decades working in Lake George and other areas around the northeast, the primary complaint that I recall hearing repeatedly was..... “why do we have to spend money on water quality monitoring?” To me, the answer is pretty clear. Good decisions need to be based on good science and data collection. Without that solid foundation, we have no idea whether the money we invest in remediation is well spent and will solve the issues that will only become more prevalent and more time passes.

5) What should Nantucket be focusing on regarding the health of its freshwater ecosystems and can you comment on the future of these resources in the face of increased human pressure and a changing climate?

Nantucket should continue to focus on regular water quality monitoring and the maintenance of a solid data-base that allows good decisions and policy making. Otherwise, we have no idea what is happening with the Island water resources and how we can help maintain the health and viability of these systems.

Increased human development always has been of interest to me, particularly with regard to the effect of development on water resources. That impact always should be a concern on Nantucket, especially in areas where individual septic systems are installed near important water resources to deal with human waste.

I also see harmful algal blooms (HABs) as a real concern for the water quality of Nantucket Island ponds. Rising water temperatures and increased length of growing seasons are only two of the effects of climate change on Nantucket estuarine and fresh water ponds. The cyanobacteria that comprise HABs are fully capable of out-competing other forms of algae and dominating the particular system that they inhabit. We now know that some of these HABs release airborne toxins that can travel down-wind and effect animals and humans through inhalation. We need to be attentive to the potential for these HABs to occur on Nantucket and also understand how we can control the occurrence of HABs to minimize the impact on Island residents.

There is so much that we don't understand and don't know about the effects of climate change on water quality, and that is exactly the reason that we must remain vigilant about continuing to monitor the water quality of Nantucket Island ponds to keep track of the health of these systems.