

# MACROPHYTE RAKE SURVEYS IN CANANDAIGUA LAKE, 2016-2017, WITH MAPPED SPATIAL PATTERNS FOR AQUATIC INVASIVE SPECIES.

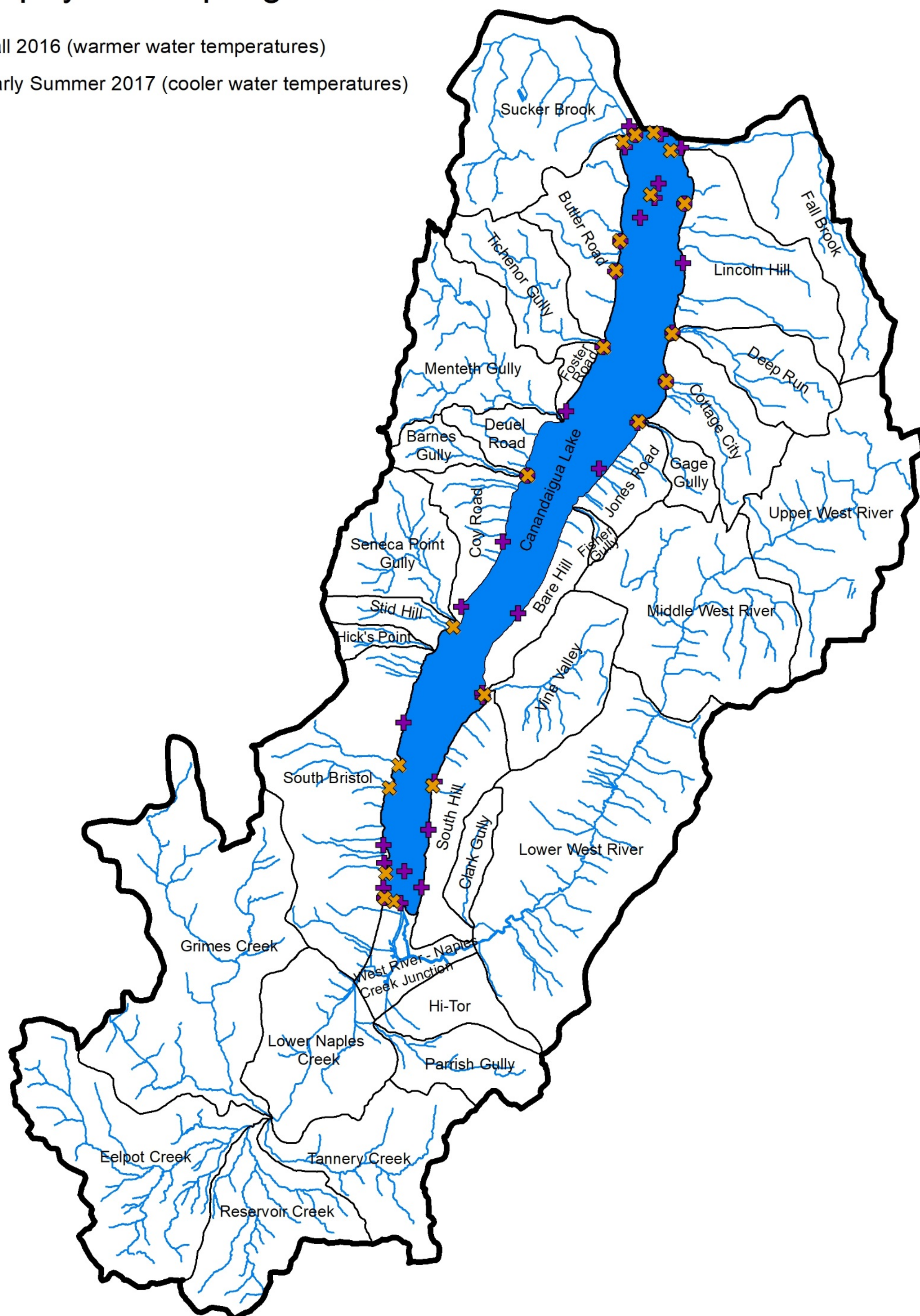
Kim McGarry  
Canandaigua Lake Watershed Council  
205 Saltonstall Street, Canandaigua, New York 14424

Bruce Gilman  
Department of Environmental Conservation and Horticulture  
Finger Lakes Community College  
3325 Marvin Sands Drive, Canandaigua, New York 14424

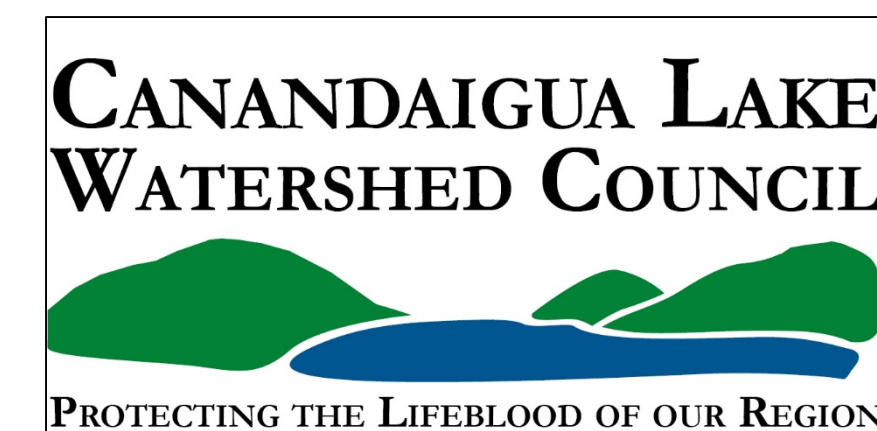
Objectives: to determine aquatic macrophyte richness, calculate relative abundances, map species phytogeography, document depth distribution patterns, and discover the extent of aquatic invasive species establishment.

## Macrophyte Sampling Locations

- ✚ Fall 2016 (warmer water temperatures)
- ✚ Early Summer 2017 (cooler water temperatures)



Methods: Replicate sampling (369 total rake tosses) occurred at 55 locations representative of all shoreline habitats. Overall abundance and individual species abundances were estimated using a semi-quantitative scale developed by the New York State Department of Environmental Conservation Citizens Statewide Lake Assessment Program (CSLAP). Water depth and GPS coordinates were recorded at each location.



Results: Twenty seven aquatic macrophytes were detected, including three invasive species: Eurasian watermilfoil (*Myriophyllum spicatum*), curly-leaf pondweed (*Potamogeton crispus*) and starry stonewort (*Nitellopsis obtusa*). Macrophyte growth form included submersed, floating and emergent species, and the number of macrophytes detected here included the most common of the historically known 39 species based on herbarium records and previous field studies.

Vegetation grew in depths of 0.5 to 6.8 m.

Rake toss richness ranged from 1 to 11 species with a mean of 3.5 species. Location richness ranged from 1 to 13 species with a mean of 8.0 species summarized from variable replicate samples per location.

Macrophyte frequency by location:

Common stonewort	– 61.3%
Southern naiad	– 58.0%
Elodea	– 44.5%
<b>Eurasian watermilfoil</b>	– 34.2%
Coontail	– 30.5%
Water stargrass	– 26.1%
<b>Starry stonewort</b>	– 18.5%
White water buttercup	– 8.7%
<b>Curly-leaf pondweed</b>	– 7.6%
Northern watermilfoil	– 7.6%
Small-leaf pondweed	– 5.9%
Slender naiad	– 5.9%

Future plans:

Conduct annual rake toss surveys to improve early detection of new invaders to the lake, allowing for a rapid management response and possible eradication.

Acknowledgments: Ontario County Water Resources Council, Canandaigua Lake Watershed Council, Canandaigua Lake Watershed Association, Finger Lakes Community College and volunteer citizen scientists.

