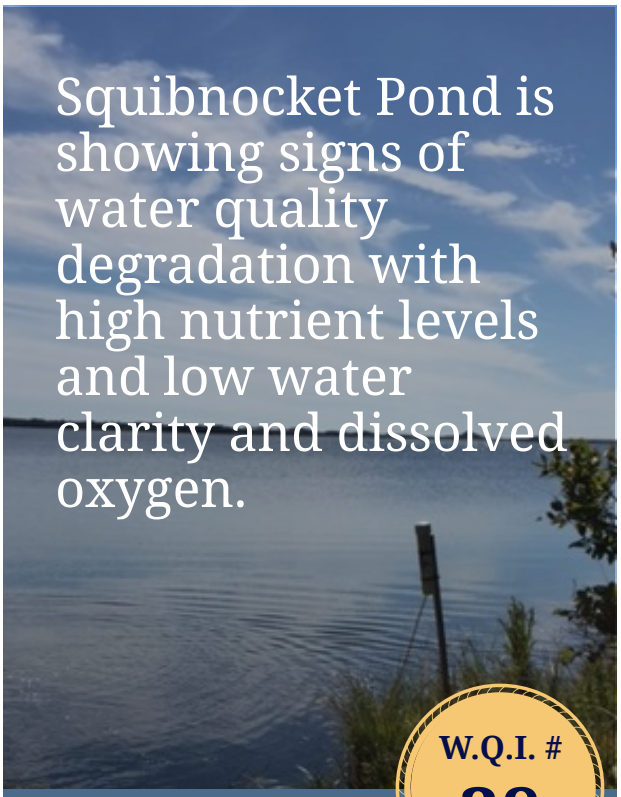
Squibnocket Pond
2019

M.V.C. SAMPLING SUMMARY



Nature of the Pond

Squibnocket Pond is a large basin with a total depth of over 5 meters (approx. 17 ft) located within the Towns of Aquinnah and Chilmark. Squibnocket is connected to Menemsha Pond via a herring run that passes through a culvert located under State Road. This pond does not directly connect to the Atlantic Ocean, is maintained as an estuary by the periodic overwash of the barrier beach as well as limited tidal exchange with Menemsha Pond. Land use around Squibnocket Pond is primarily residential, with some undeveloped and public use lands present.

Summary for 2019

This summer, nutrients and water clarity were poor throughout the entire pond. In 2019, nitrogen levels and total pigment significantly increased at SQB-3. Dissolved Oxygen levels fluctuated greatly during sampling throughout the summer, with some of the samples collected below the stress-threshold of 4 mg/L. Low oxygen combined with high total nitrogen and pigment concentrations could indicate eutrophication, or increased algal growth and activity, within the pond.

Water Quality Index

W.Q.I. # 38

The water quality index score can range from 0 to 100 (low to high), and is based on parameters that are consistently monitored on Squibnocket. This final score is an average of the scores from each station on the pond and suggests that water quality on the pond is poor to moderate. Nutrient concentrations and water clarity indicate a system that is stressed. It is important to continue to consistently monitor to track further water quality trends and changes.

2019 Sampling Dates

June 24

July 10, 17, 24

August 1, 7, 15, 21

Fun Fact

Field measurements were taken weekly throughout the summer!

Why Sampling is Important

Field measurements and water samples are collected during the summer months in order to determine water quality of the pond. MVC staff collects water samples as well as a number of indicators of pond health including temperature, oxygen levels, salinity, conductivity, pH, and the time, depth and weather conditions of our sampling. Our sampling protocol is consistent with the Massachusetts Estuaries Project (MEP) which was used to develop the nitrogen threshold. Water samples are tested for several nutrients that in excess can be detrimental to the quality of the water and the systems it supports. Water samples are sent for analysis to the University of Massachusetts at Dartmouth, School of Marine Science and Technology.

MARTHA'S VINEYARD COMMISSION

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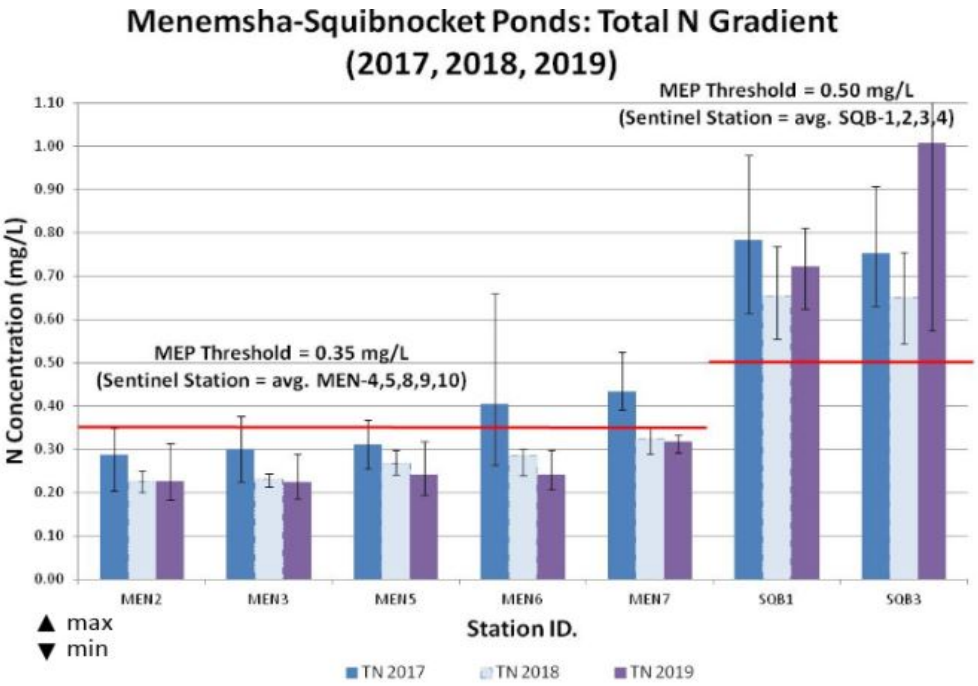
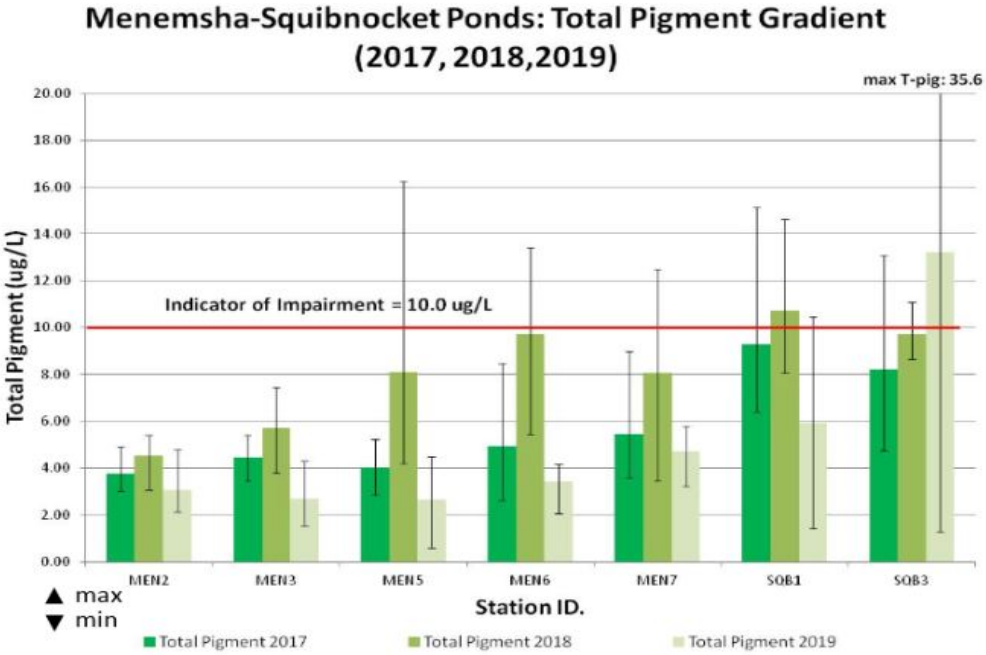
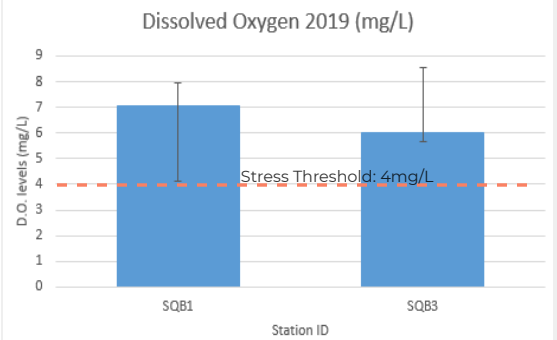


Nitrogen is a limiting nutrient and is necessary for plant, phytoplankton, and algae growth, but in excess can be harmful to the system. Total nitrogen in Squibnocket pond is high at both monitoring stations. In 2019, we saw substantial increases in nitrogen levels from 2018.



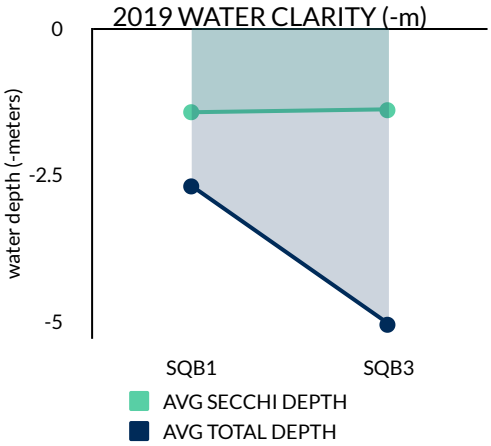
Dissolved Oxygen



Dissolved Oxygen (DO) average levels are above the stress threshold of 4 mg/L. DO levels can widely fluctuate with photosynthesis and respiration of plants throughout the day and night. DO may fall below the recommended stress threshold at night which makes the habitat stressful for benthic communities.

Total Pigment

Total Pigment indicates the level of microscopic plant life in the water, which can be influenced by nitrogen levels. The pigment concentrations seem relatively high for this pond, and when combined with low dissolved oxygen and low water clarity may suggest eutrophication or overgrowth of algae within the pond.



Water Clarity

Both stations have low water clarity, which may be due to high amounts of algal growth in the pond as indicated by high nutrient and pigment concentrations. The visibility at SQB-3 is low even considering the depth at that sample station.

This research was made possible via grants from District Local Technical Assistance Program. The Martha's Vineyard Commission is a regulatory agency tasked with monitoring the environmental health of all towns on Martha's Vineyard. We'd like to extend a special thanks to the Wampanoag Natural Resources Department for all of their help and knowledge. For more information on water quality on The Vineyard please visit http://www.mvcommission.org/.