

Tisbury Great Pond

2019

M.V.C. SAMPLING SUMMARY

Nature of the Pond

Tisbury Great Pond is an estuarine system that lies between the towns of West Tisbury and Chilmark and is comprised of several tributary coves. When open, a single cut in the beach connects the pond to the ocean. While eelgrass has not been reported in the pond in several decades, there is historical reference that eelgrass beds were once established in the pond. Current restoration efforts are focused on improving benthic habitat. This pond is used primarily for recreational boating, swimming, fin fishing and shellfishing and commercial shellfishing. The land use around Tisbury Great Pond is primarily residential and agricultural.

Summary for 2019

Water quality in Tisbury Great Pond is currently poor to moderate, but can be improved with decreased nitrogen pollution. The majority of nitrogen loading comes from agricultural sources around the pond, with significant contribution from residential septic systems. This summer, although we saw lower nutrient levels, total pigment was high and water clarity was notably low, even at the most shallow monitoring stations. This is most likely due to algal growth within the water column which is encouraged by high total nitrogen levels. Dissolved oxygen was also particularly low during the hotter months of the summer, which can be common, but can also be concerning.

2019 Sampling Dates

June 26
July 30
August 14
September 5
October 24
November 26

Fun Fact

We collected 144 bottles of water from Tisbury Great Pond to analyze this summer!



Please forward questions to:
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Although water quality is improved with regular openings, the tributaries still need to reduce nutrient input.



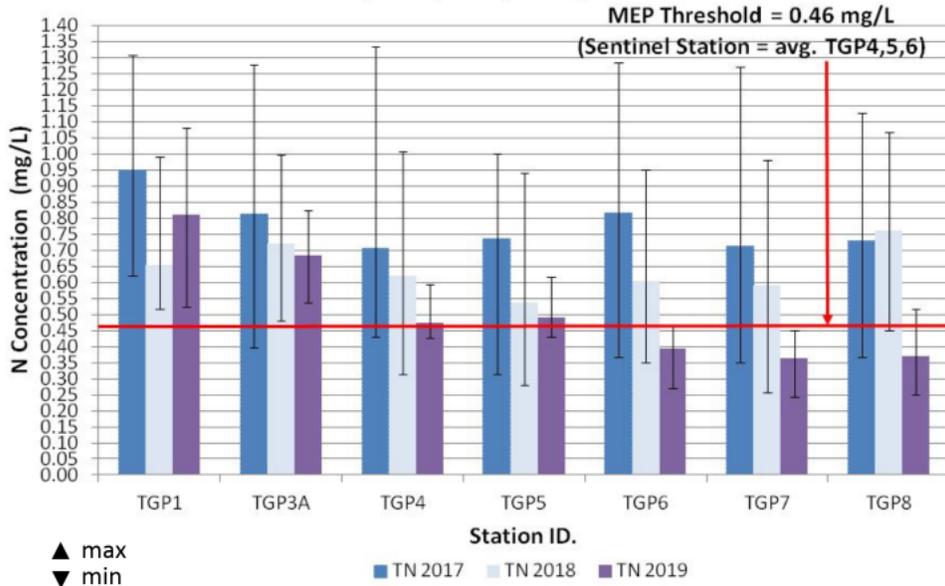
Water Quality Index

The water quality index score can range from 0 to 100 (low to high), and is based on parameters that are consistently monitored in this pond. Water quality for Tisbury Great Pond is poor to moderate quality. While still above or near the threshold at most stations, nitrogen and pigment have been decreasing in the main basin but are still high in the tributaries. All stations will continue to be monitored and nutrient management should be implemented.

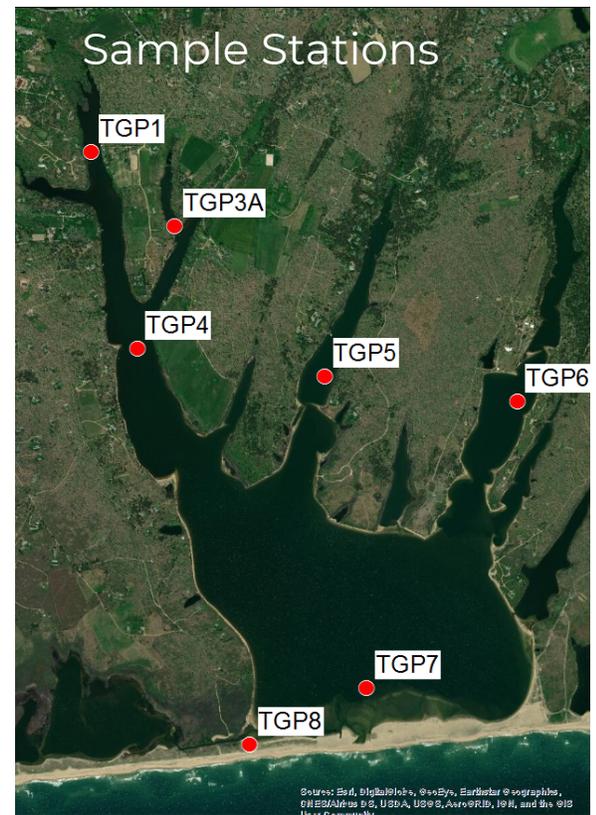
Why Sampling is Important

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.

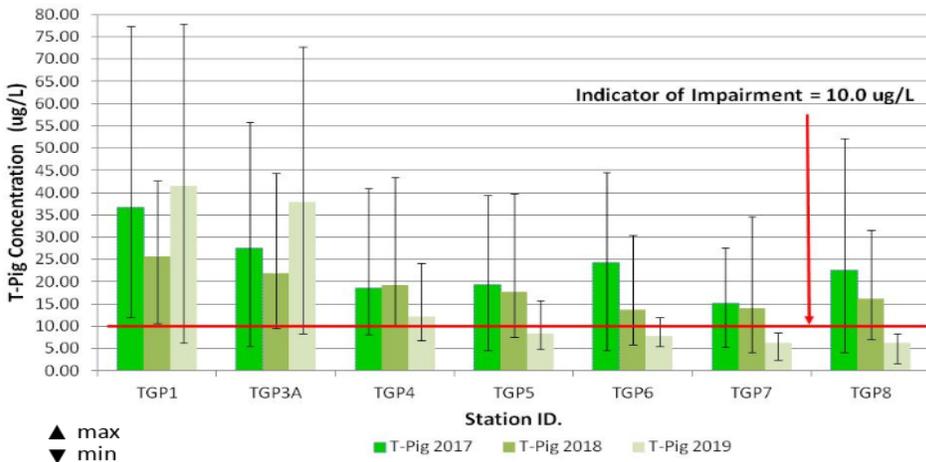
Tisbury Great Pond : Total Nitrogen Gradient (2017, 2018, 2019)



Nitrogen is a limiting nutrient and is necessary for plant, phytoplankton, and algae growth, but in excess can be harmful to the system. More effective openings may have led to decreased nitrogen levels in recent years. Nutrient levels at all stations, especially TGP-1, 3-A and 4 should continue to be monitored to determine trends in nitrogen spikes.



Tisbury Great Pond : Total Pigment Gradient (2017, 2018, 2019)



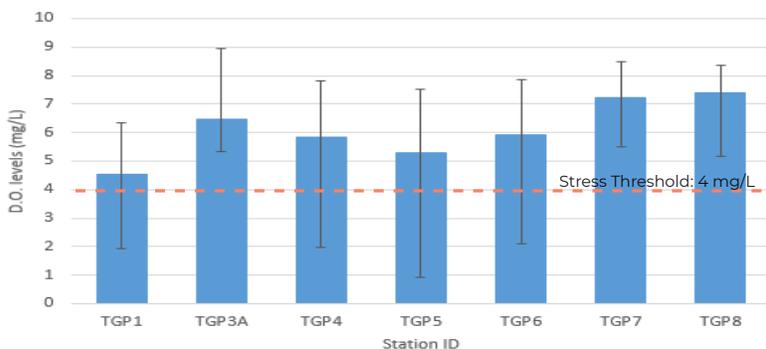
Total pigment indicates the level of microscopic plant life in the water, which can be influenced by nitrogen levels. High pigment concentrations combined with high total nitrogen levels on the pond may indicate some eutrophication and should be closely monitored, especially at TGP-1 and TGP-3A which are furthest from the opening point.

Water Clarity



Water clarity indicates good tidal flushing at all stations. Water clarity is low throughout the pond, regardless of station depth, and may be explained by the high pigment found at all stations.

Dissolved Oxygen 2019 (mg/L)



Dissolved Oxygen

Dissolved Oxygen (DO) levels are above or close to the extreme stress threshold of 4 mg/L. DO concentrations shown here are a snapshot of conditions at the time the sample was taken. DO levels can widely fluctuate with photosynthesis and respiration of plants throughout the day and night. DO probably falls below the recommended stress threshold at night, especially at TGP-1 and other sites where the DO is close to the threshold throughout the day which makes the habitat stressful for benthic communities.