

# Tisbury Great Pond

## 2020

### 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, the system includes several tributary coves. When periodically opened a single cut in the beach connects the pond to the ocean. Although eelgrass has not been reported in the pond for decades, there are historical references that indicate that eelgrass beds were once established in the pond. Current restoration efforts are primarily focused on improving benthic habitats. This pond supports recreational boating, swimming, fin fishing and recreational and commercial shellfishing. The land around Tisbury Great Pond is primarily used for residential and agricultural purposes.

#### Summary for 2020

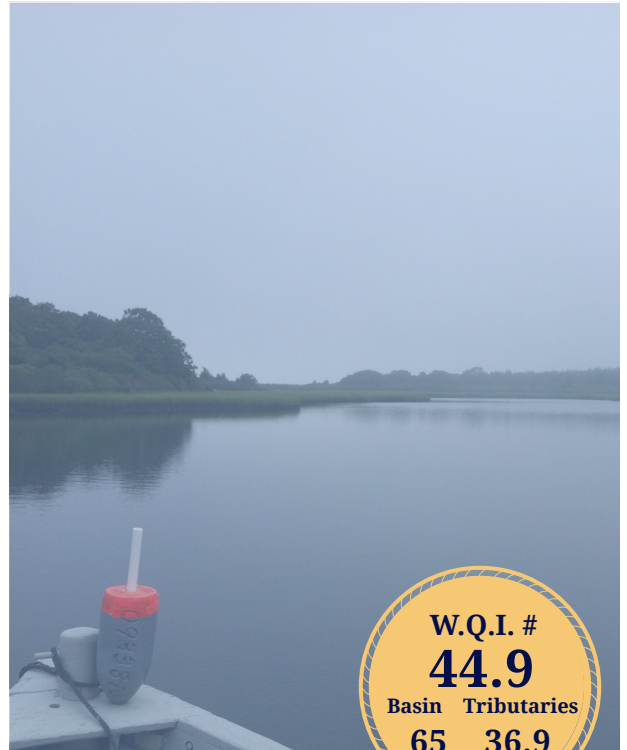
Tisbury Great Pond is currently considered poor to moderate according to our Water Quality Index measure. Although higher nitrogen levels were found in 2020, relative to 2019, other indicators improved when compared to the previous year. We recorded lower total pigment concentrations for all but one site (TGP1), and notably better water clarity across all sampling stations. Dissolved oxygen was also above the impairment threshold for all sites. Nitrogen inputs are attributed to agricultural sources around the pond, with significant contributions from residential septic systems. In our opinion, water quality can be improved with decreases in nitrogen pollution for the watershed.

#### Why Sampling is Important

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

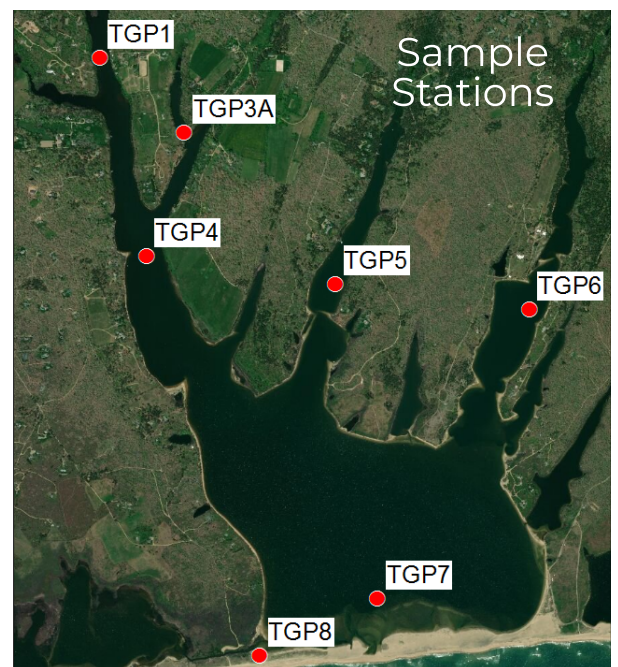


Please forward questions to:  
Sheri Caseau, Water Resource Planner, Martha's Vineyard Commission  
(508) 693-3453

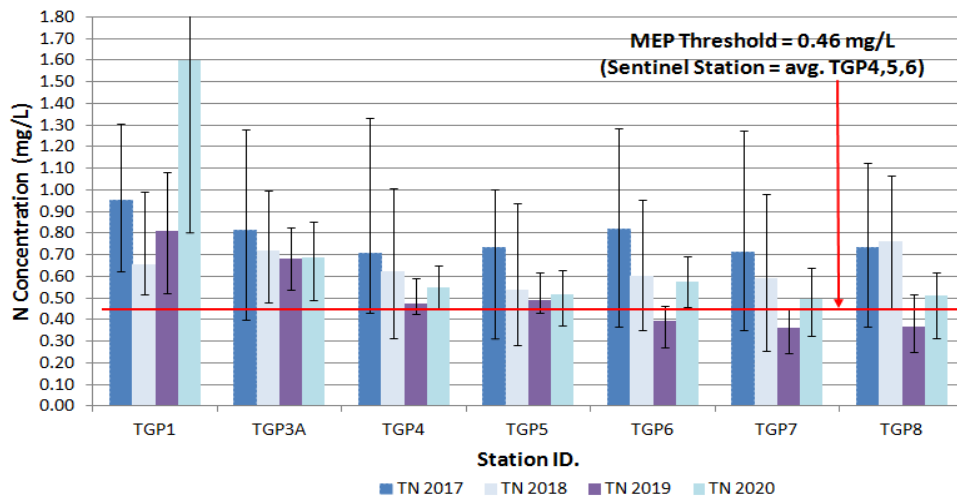


#### Water Quality Index

The water quality index score is a tool used to assess the well-being of a pond. It is composed of several parameters on the pond including water clarity, Oxygen levels, and nutrient levels. The score can range from 0 (low) to 100 (high) and is developed from data collected as part of a rigorous sampling schedule. Water quality for Tisbury Great Pond is fair to moderate quality. It should be noted the vast difference between the water quality of the waters of the coves (36.9) as compared to the main basin (65.0).



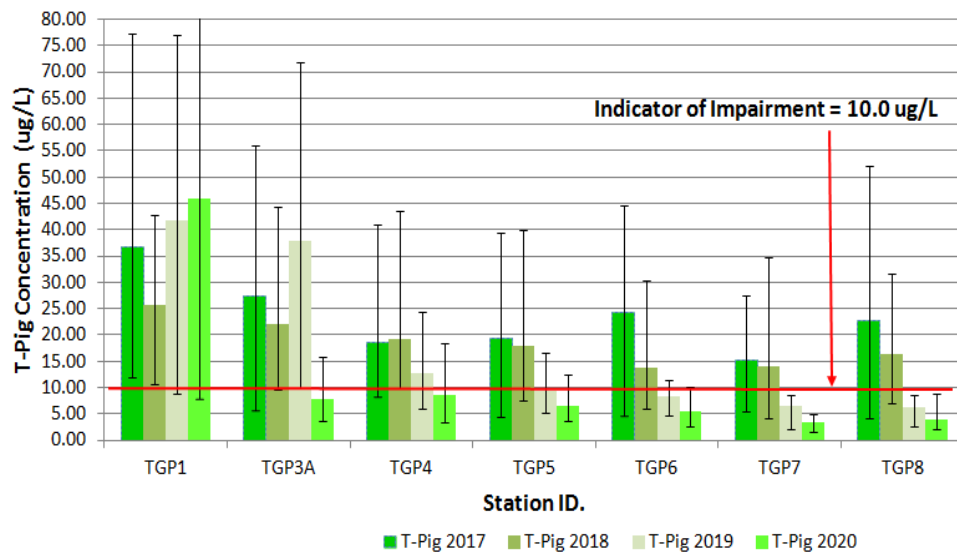
### Tisbury Great Pond : Total Nitrogen Gradient (2017, 2018, 2019, 2020)



### Total Nitrogen

Nitrogen is a nutrient necessary for plant, phytoplankton, and algae growth, but in excess can be harmful to a pond ecosystem. Nitrogen concentrations in Tisbury Great Pond were higher in 2020 than in 2019. All sampling sites exceed the Total Maximum Daily Load (TMDL) nitrogen threshold in 2020, with TGP-1 having an alarmingly high value. Please note, indicator values at TGP-1 also show significant standard deviation which suggests a wide range of nitrogen concentrations levels during the 2020 sampling season.

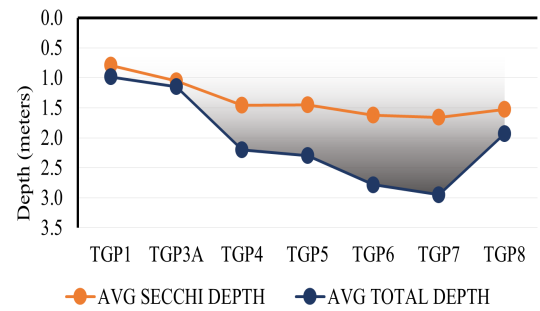
### Tisbury Great Pond : Total Pigment Gradient (2017, 2018, 2019, 2020)



### Total Pigment

Total pigment indicates the level of microscopic plant matter in the water, plant matter that is often influenced by nitrogen levels. In 2020, lower total pigment concentrations were recorded when compared to 2017, 2018 and 2019. This was true for all sites, except for TGP-1. Total pigment levels at TGP-1, like nitrogen levels, exceeded 2019 values with a wide standard deviation range. Again, this finding suggests a wide range of total pigment concentrations during the 2020 sampling season. All other sites were reported to be below the threshold of impairment.

### Water Clarity

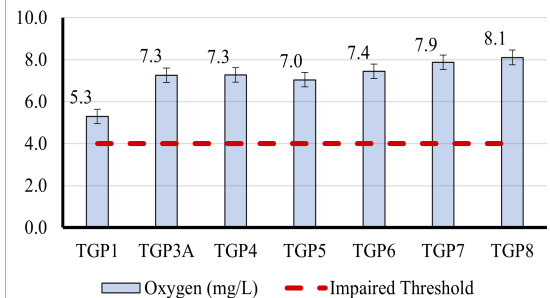


Water clarity measures improved in 2020. The average Secchi depth across the pond was 1.54 meters. When compared to last year, this is slightly better when compared to the 1.24 meters average Secchi depth recorded in 2019. This improvement could be due to the slight reduction of total pigment in the water.

### 2020 Sampling Dates

- June 25th
- July 15th
- August 13th
- September 2nd
- October 15th
- November 11th

### Dissolved Oxygen



Dissolved Oxygen (DO) concentrations in 2020 were above 6 mg/L at all sites, except for TGP-1. Dissolved oxygen indicates excellent water quality when values exceed 6 mg/L, in these conditions a thriving benthic community in the pond can be expected. When compared to previous years, TGP1 and TGP5 DO levels are no longer approaching the impairment threshold. Disclaimer: Dissolved Oxygen (DO) concentrations shown here are snapshots of conditions at the time samples were taken. DO levels can fluctuate widely throughout the day and night due to photosynthesis and respiration of plants.