

Katama Bay

2020

M.V.C. SAMPLING SUMMARY

Nature of the Bay

Katama Bay is a coastal pond in which the pond and its watershed both lie entirely within the Town of Edgartown. This body of water separates the main island from Chappaquiddick Island. Katama Bay has been productive for many shellfish species, including oysters, quahogs, soft-shelled clams, and some bay scallops. There are also many large commercial oyster aquaculture projects on the pond. Katama Bay currently has one outlet, and the southern barrier beach remains closed.

Summary for 2020

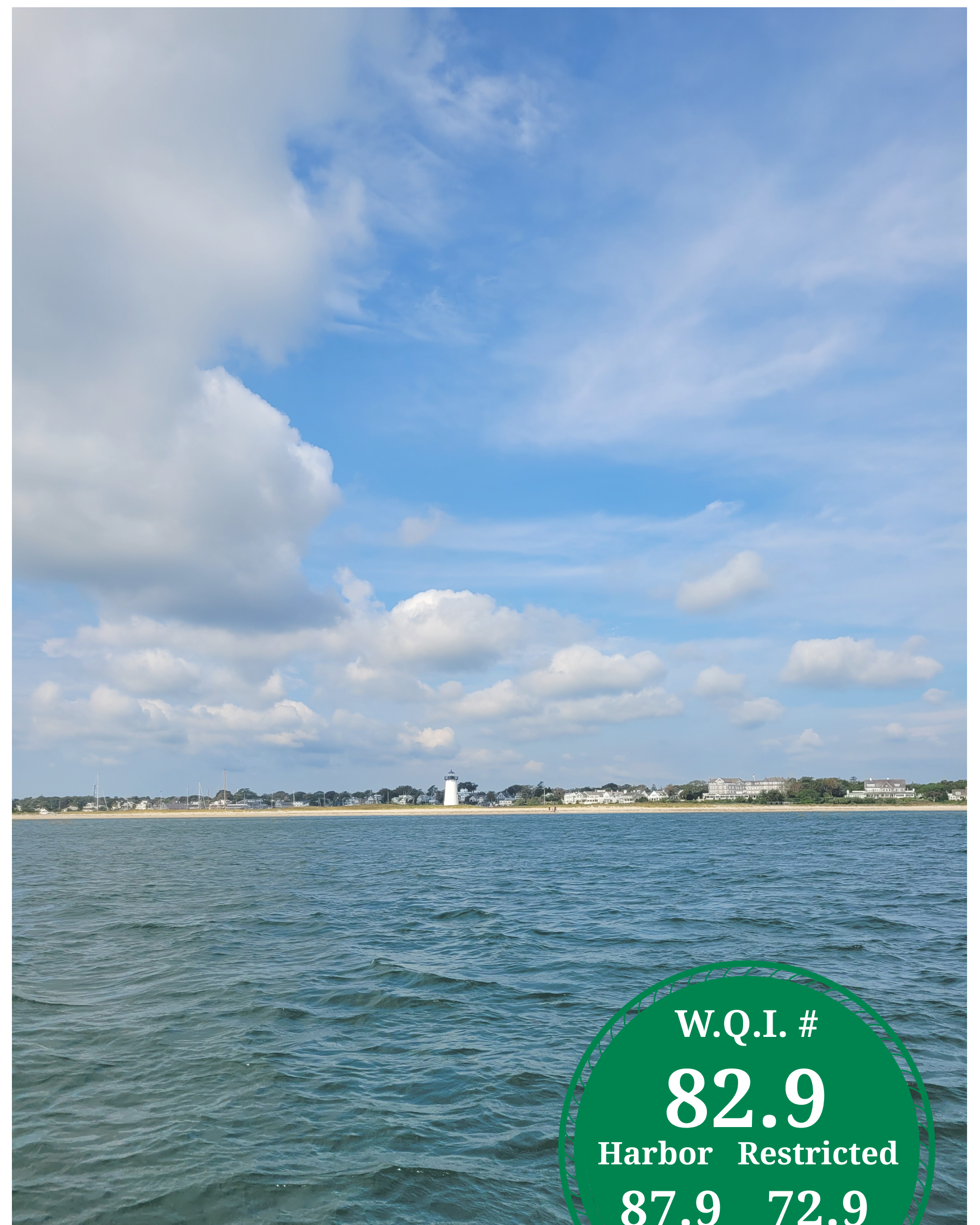
In 2020, Katama Bay had some notable changes. Total nitrogen levels have increased compared to 2019. However, a total nitrogen threshold or target has not been established by the Massachusetts Estuaries Project. Total pigment concentrations decreased and are not an area of concern, and dissolved oxygen levels indicate good water quality. Over the last few years we've seen a decrease in flushing and depth in the pond especially at site KAT-7. Monitoring should continue to ensure conditions remain at a sustainable level in the pond. The commercial oyster farms may be helping to keep the nutrients under control.

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.



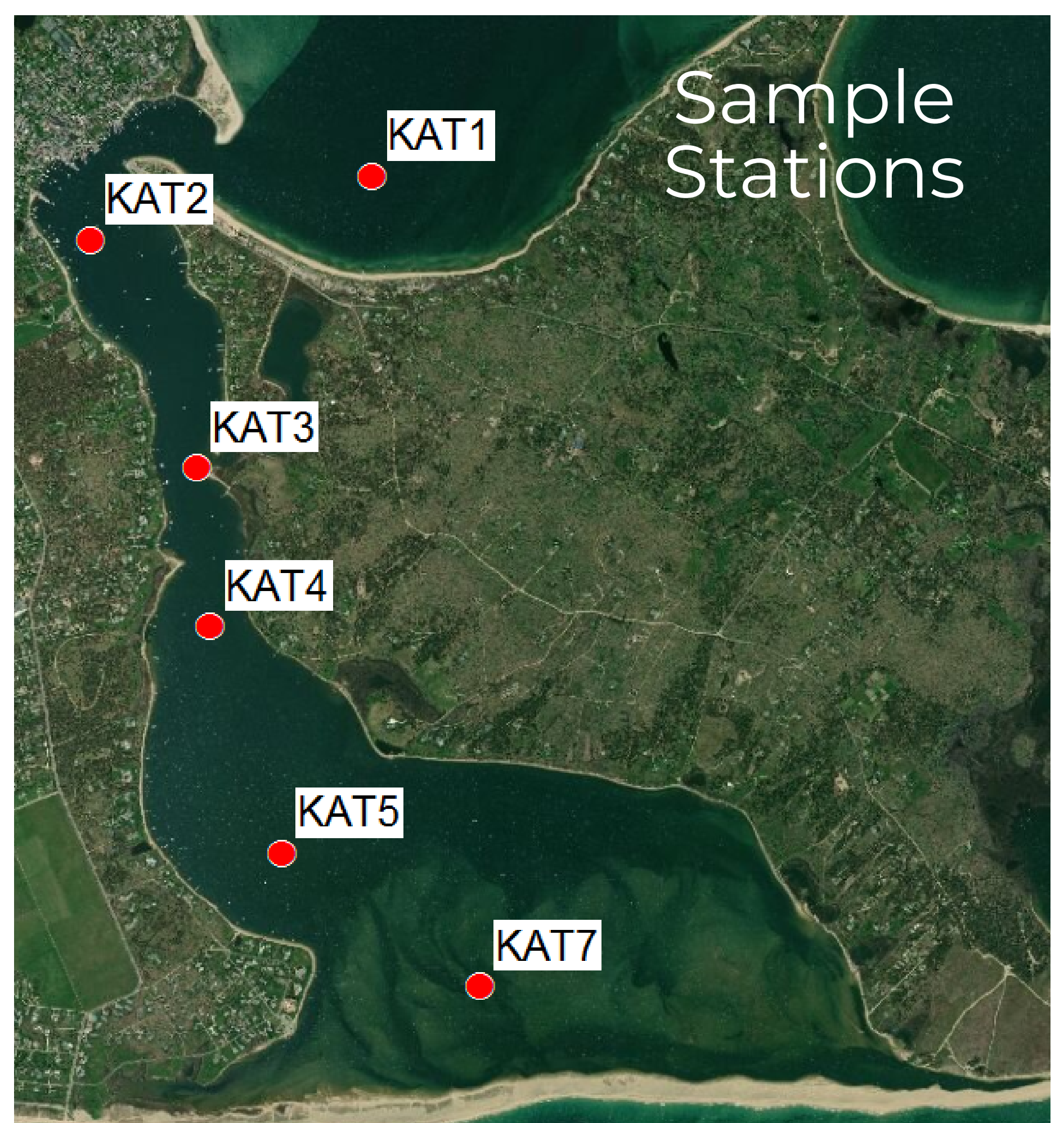
Please forward questions to:
Sheri Caseau, Water Resource Planner
Martha's Vineyard Commission (508) 693-3453



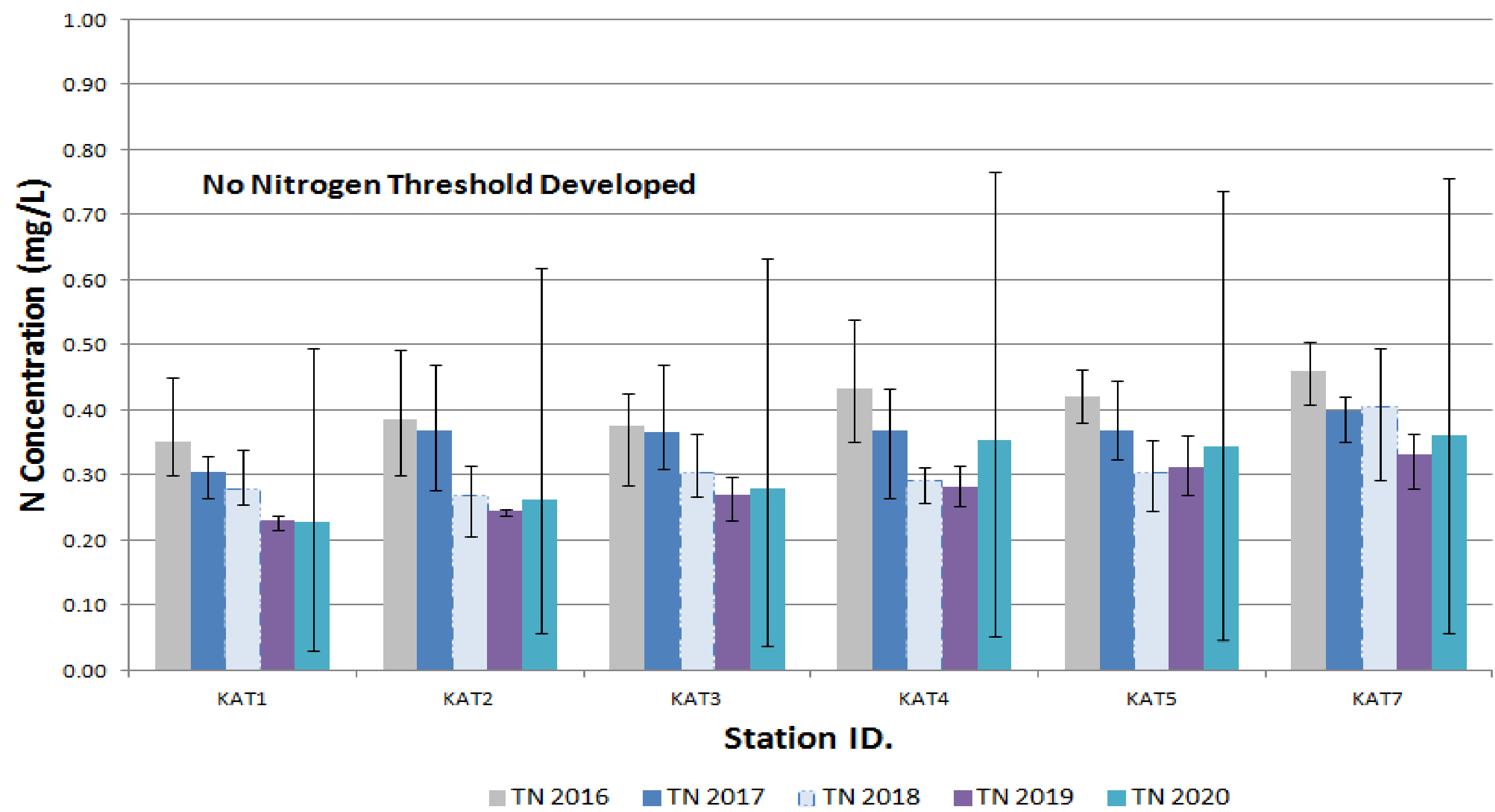
Water Quality Index

The water quality index score is a tool used to assess the well-being of a pond. It is composed of several parameters including water clarity, oxygen 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 in Katama Bay is high and flushes well with the ocean waters reducing nutrient loads and keeping water clarity and oxygen levels high.



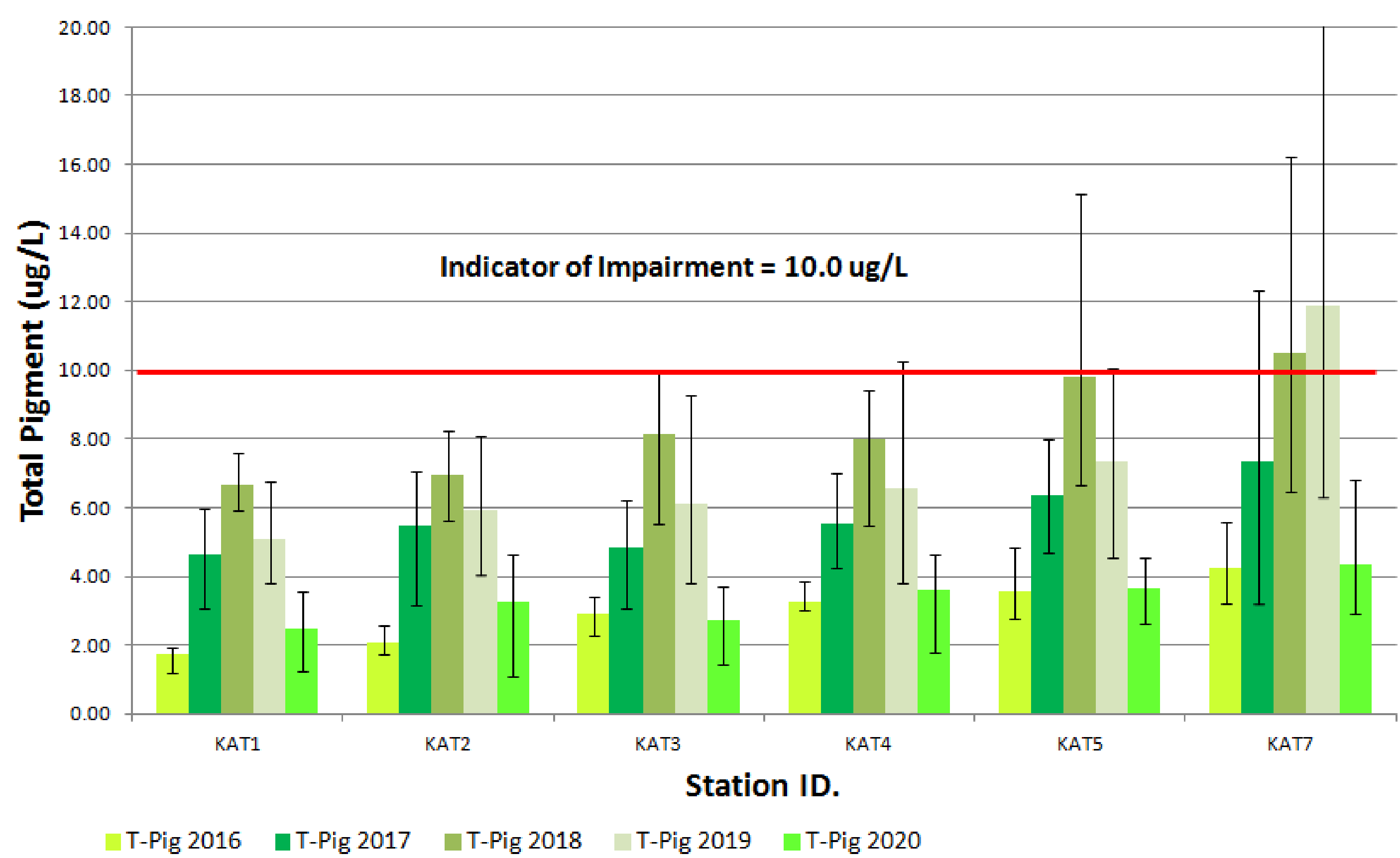
Katama Bay: Total N Gradient (2016, 2017, 2018, 2019, 2020)



Total Nitrogen

Nitrogen is a limiting nutrient and is necessary for plant, phytoplankton, and algae growth. Excess nitrogen can be harmful and disrupt the ecosystem. In 2020, nitrogen levels seemed to increase slightly compared to the previous year but not significantly. One thing to note is that the standard error is relatively large during this sampling season. The standard error indicates that there may have been a wide range of nitrogen concentrations during the sampling season.

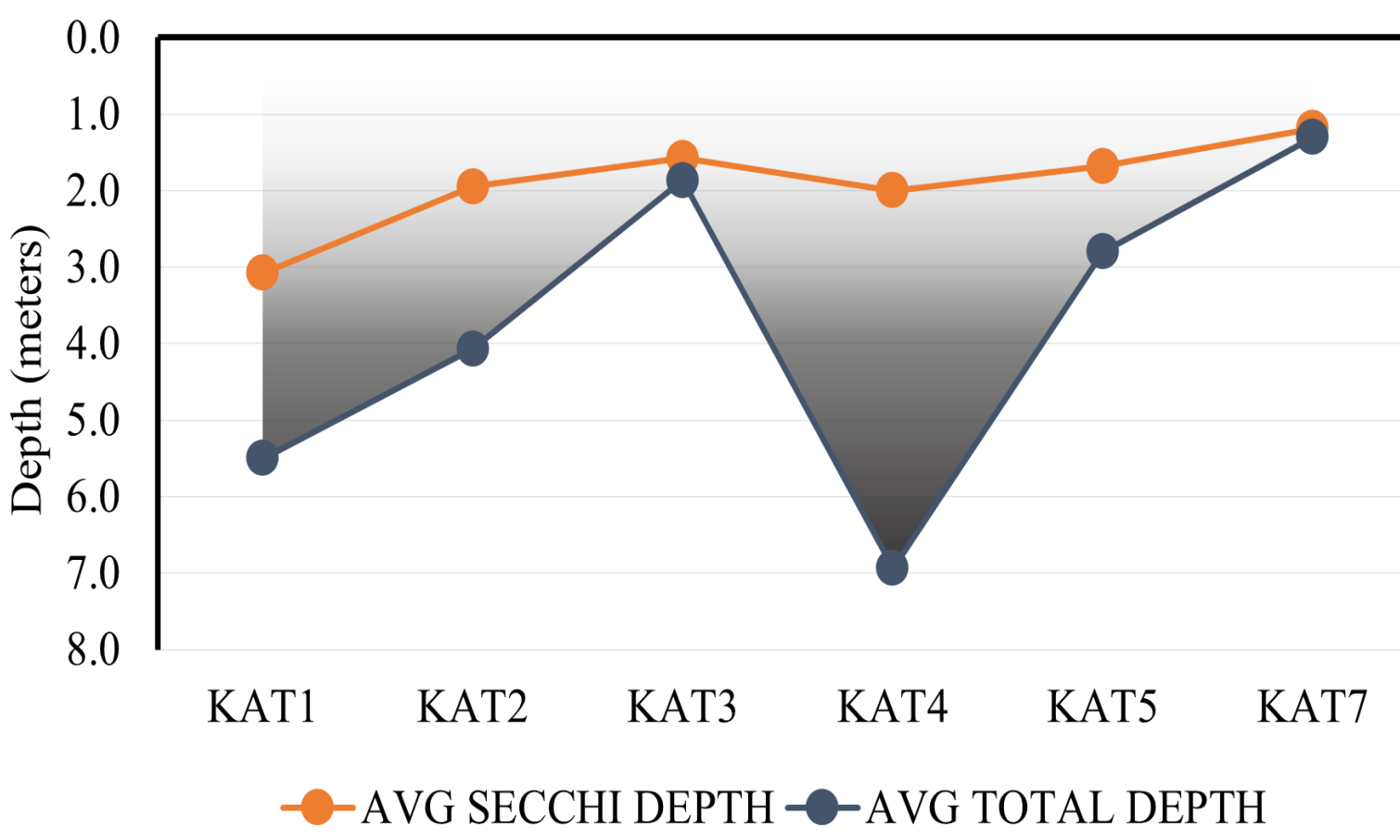
Katama Bay: Total Pigment Gradient (2016, 2017, 2018, 2019, 2020)



Total Pigment

Total Pigment indicates the level of microscopic plant matter in the water, which is often influenced by nitrogen levels. In 2020, total pigment levels were significantly lower than the indicator of impairment. A subtle trend can be noticed within the last three years in which total pigment concentrations increase with the distance from the inlet.

Water Clarity

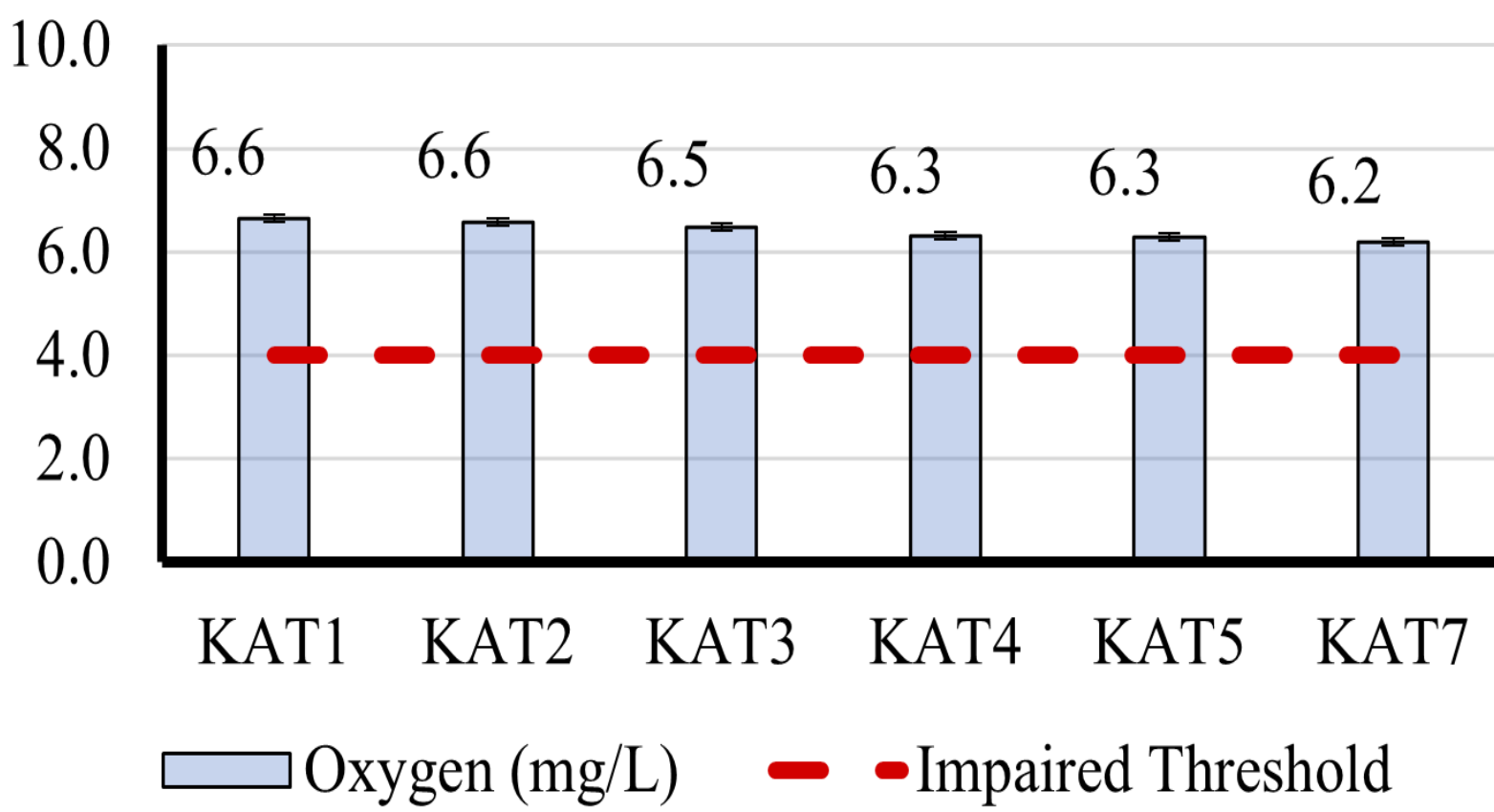


Water Clarity in 2020 was good across Katama Bay, with an average Secchi depth of 1.91 meters. 2020's average was observed to be less than the 2019 average, but this could be caused by algal growth or external sources increasing turbidity within the water column. The 2020 data follows a similar trend to that of 2019.

2020 Sampling Dates

- July 9th
- August 10th
- August 26th

Dissolved Oxygen



In 2020, Dissolved Oxygen (DO) levels are above the impairment threshold, and no noticeable change was observed compared to previous years. DO concentrations that are above 6 mg/L indicate excellent water quality and can support a thriving benthic community in the pond. Disclaimer: Dissolved Oxygen (DO) concentrations shown here are a snapshot of conditions at the time samples were taken. DO levels can widely fluctuate throughout the day and night due to photosynthesis and respiration of plants.