

Katama Bay

2019

M.V.C. SAMPLING SUMMARY

Nature of the Bay

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

Summary for 2019

Water quality in Katama Bay was high in the summer of 2019. Total nitrogen was relatively low at all stations except KAT-7, however, a total nitrogen threshold or target has not been established by the Massachusetts Estuaries Project. Total pigment does not seem problematic, and dissolved oxygen levels indicate good water quality. KAT-7 does not seem to fully flush or become as salty as the other stations because of its distance from the bay's opening. Although nutrient levels and pigment are low they are slowly creeping up year after year since the southern inlet has closed. 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.

2019 Sampling Dates

August 6
September 4
September 18

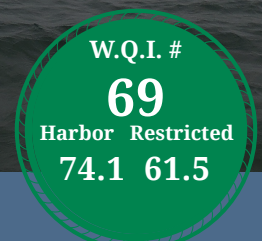


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Fun Fact

The water quality in Katama supports 12 commercial shell-fishing operations!

Water quality in Katama Bay remains high, but is slowly diminishing in areas that are farthest from the inlet.



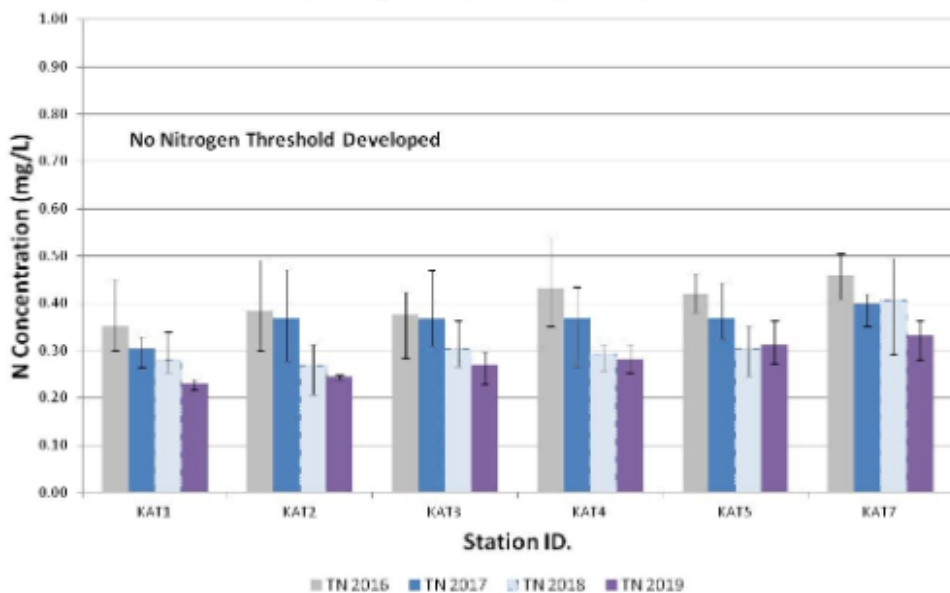
Water Quality Index

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. Overall Katama Bay has moderate to high water quality as indicated by relatively steady nutrient and pigment levels. Dissolved oxygen remains above the threshold for quality habitat. In future years it may be possible to sample less frequently as the water quality in Katama Bay remains high. Biannual monitoring will be needed to follow trends in water quality and observe changes.

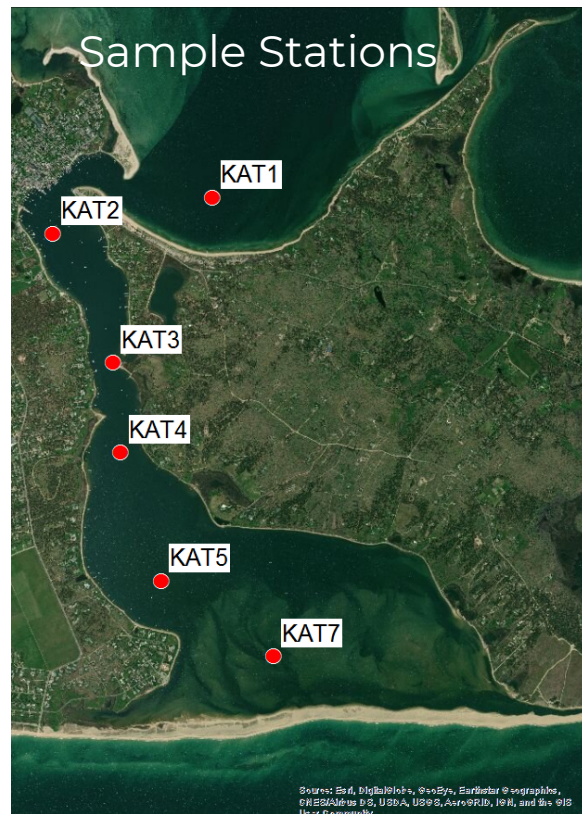
Why Sampling is Important

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.

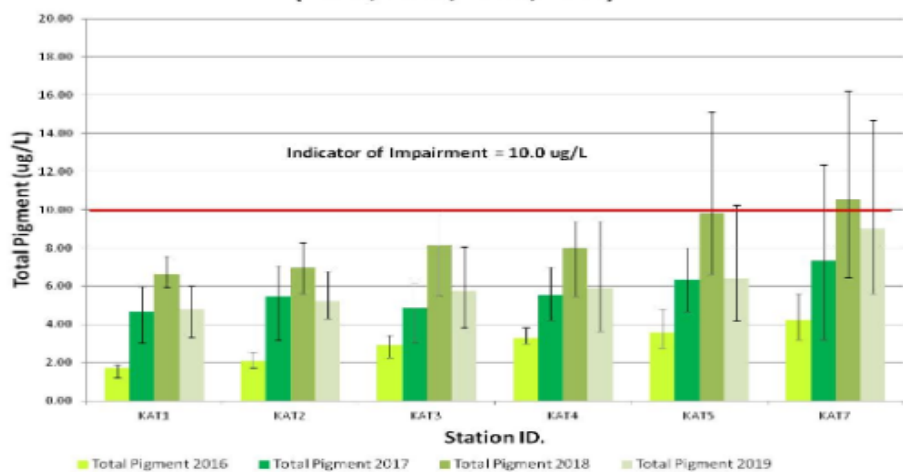
Katama Bay: Total N Gradient (2016, 2017, 2018, 2019)



Nitrogen is a limiting nutrient and is necessary for plant, phytoplankton, and algae growth. Excess nitrogen can cause decreased water quality. There is not a recommended nitrogen threshold for Katama Bay, but levels are below the EPA's goal measurements.

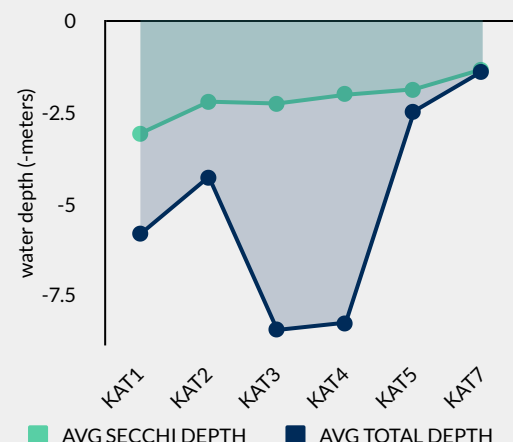


Katama Bay: Total Pigment Gradient (2016, 2017, 2018, 2019)



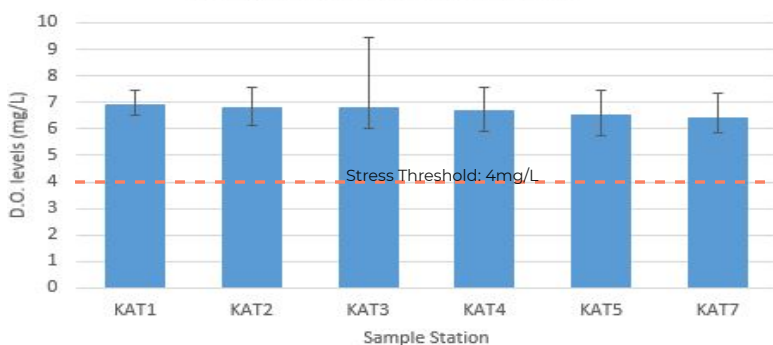
Pigment indicates the level of microscopic plant life in the water, which can be influenced by nitrogen levels. Pigment levels are not problematic, but could become an issue if total nitrogen increases or if temperature increases with changing climates. Farthest from the inlet, we're seeing a rise in pigment levels that should continue to be monitored.

Water Clarity



Water clarity alone is not an indicator of pond quality in this pond as some stations are deep which reduces visibility. KAT-7 is less than 2 m deep which explains the high water clarity seen there.

Dissolved Oxygen 2019 (mg/L)



Dissolved Oxygen

Dissolved Oxygen (DO) levels are well above the extreme stress threshold of 4 mg/L. Levels above 6 mg/L indicate excellent water quality and a thriving benthic community in the pond. 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.