

## Friends of Casco Bay's Water Quality Monitoring Programs

**Background:** Friends of Casco Bay monitors Casco Bay at [three continuous stations year-round](#) and [many other sites across the Bay seasonally](#), from May through October. Our seasonal monitoring revisits certain sites every year to provide long term data sets. We often augment these efforts to address emerging concerns by collecting episodic data, such as microplastics sampling, PFAS sampling, and excessive algal bloom tracking. The three continuous stations provide temporal or round the clock data. At those sites, we now collect data every 15 minutes on many aspects of water quality. An [overview and data](#) from both programs are available on our website. Raw data are available upon request. Both programs have a QAPP, which means our methods and data accuracy are of very high quality and can be used for regulatory purposes.

### Continuous Monitoring

**Goals:** 1) collect frequent data to track changes over time; 2) deepen our understanding of existing conditions including ocean acidification and other aspects of climate change

**Where:** Yarmouth, Harpswell, and Portland.

**How:** the stations are in modified lobster traps that hold a YSI EXO2 data sonde and Turner pCO2 C-Sense sensor. We measure depth, temperature, salinity, dissolved oxygen, pH, chlorophyll, phycoerythrin (pigments found in cyanobacteria), turbidity, and the partial pressure of carbon dioxide. Water samples are collected and analyzed for total nitrogen, pH and total alkalinity. We calculate other parameters such as Omega aragonite saturation.

### Seasonal Monitoring

**Goals:** 1) to understand the health of the Bay during critical months; 2) to work with and talk with other Bay users and researchers

**Where:** 22-23 sites around Casco Bay

**How:** From May through October, we travel by truck and boat to sites on and around the Bay. At shallow water sites we sample at the surface only, at deeper sites we collect data throughout the water column. We use a YSI EXO2 data sonde, a Secchi disc, and collect water samples to analyze for total nitrogen. We also record ancillary conditions on a data sheet.

### Episodic Monitoring

**Goals:** Each year we work with other scientists to identify emerging threats to Casco Bay and its watershed. We enhance our on-going monitoring with other data collection. Our current focuses include (1) collecting data to better understand the distribution and composition of PFAS in Casco Bay and (2) testing new equipment to better monitor ocean acidification.

**Acknowledgement:** We thank the Casco Bay Estuary Partnership for its support of our water quality monitoring and for analyzing our data in the context of its State of the Bay report. In 2023, we look forward to working with partners including Bigelow Laboratories, Wells Reserve and the UNH Ocean Acidification Lab.