

Controls on Phytoplankton Abundances in Wequetequock Cove

Ryan DeMaio, M'Lynn Gonzalez, Laurel Radzysinski

Motivation

Wequetequock Cove is a highly impacted system due to excess nutrient inputs from the watershed. The overgrowth of algae, including **phytoplankton**, results in low oxygen conditions in summer, which are deleterious to aquatic life.

Objectives

- Understand controls on the growth of **phytoplankton** in **Wequetequock Cove** by surveying water quality data collected by **CUSH** in summertime from **2008 to 2024**.
- Compare to observations at **Sandy Point** as a reference point to better resolve influences on phytoplankton growth.

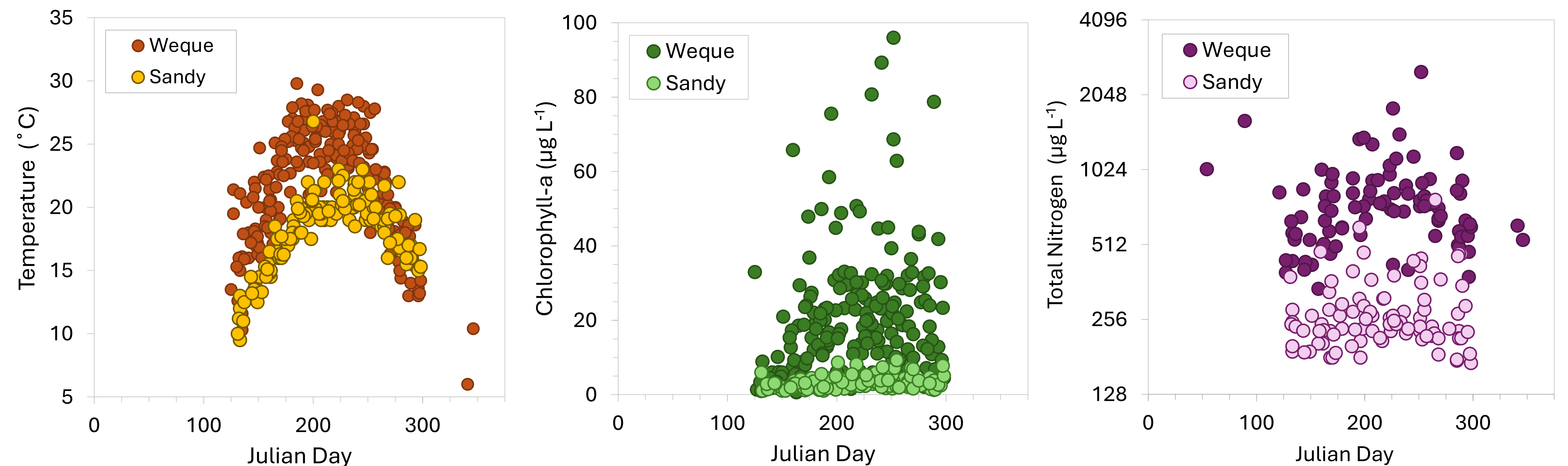
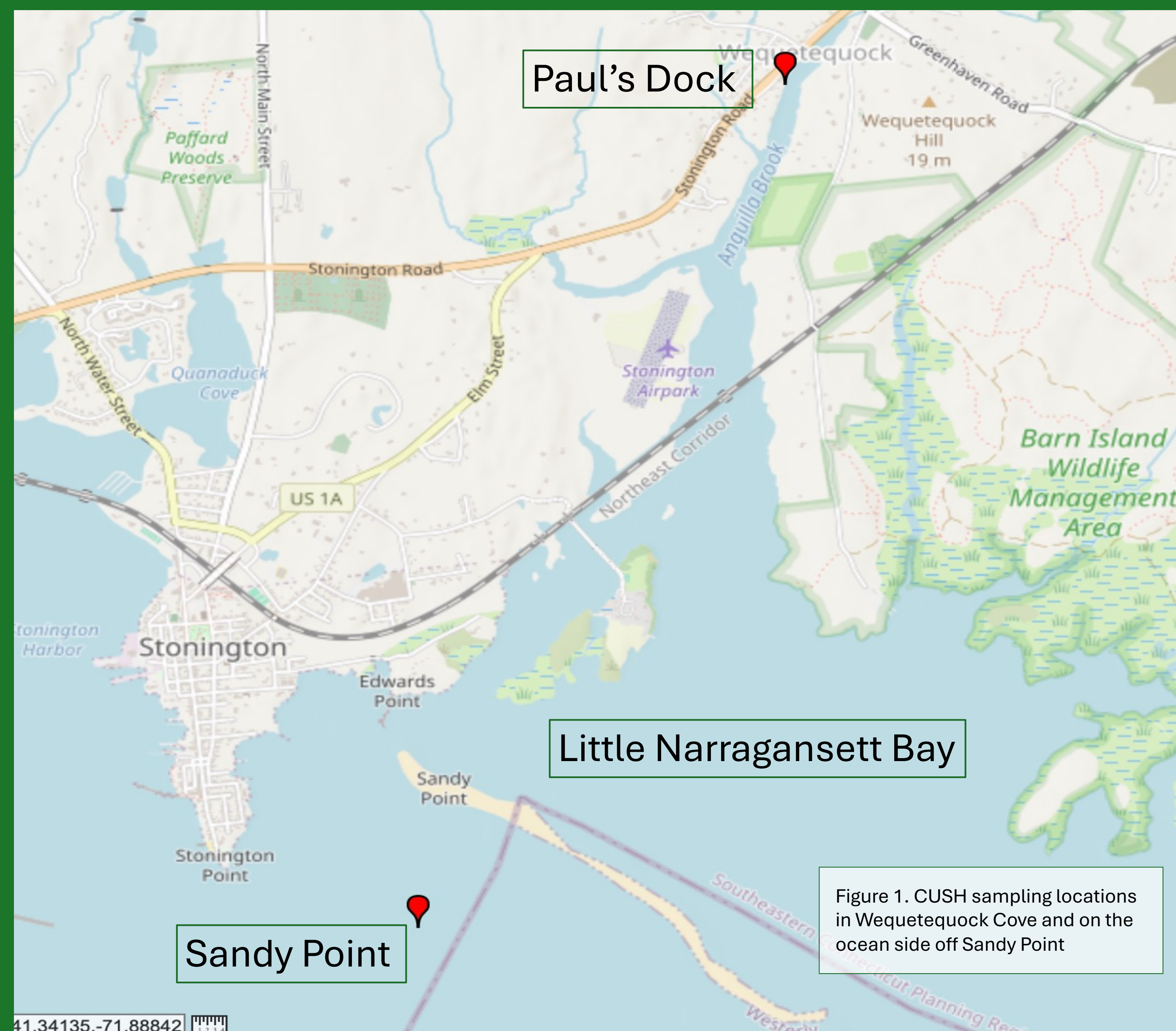


Figure 2. Water temperature, chlorophyll-a and total nitrogen concentrations at Paul's dock in Wequetequock Cove and at Sandy Point per Julian day for samples collected between 2008 and 2024.

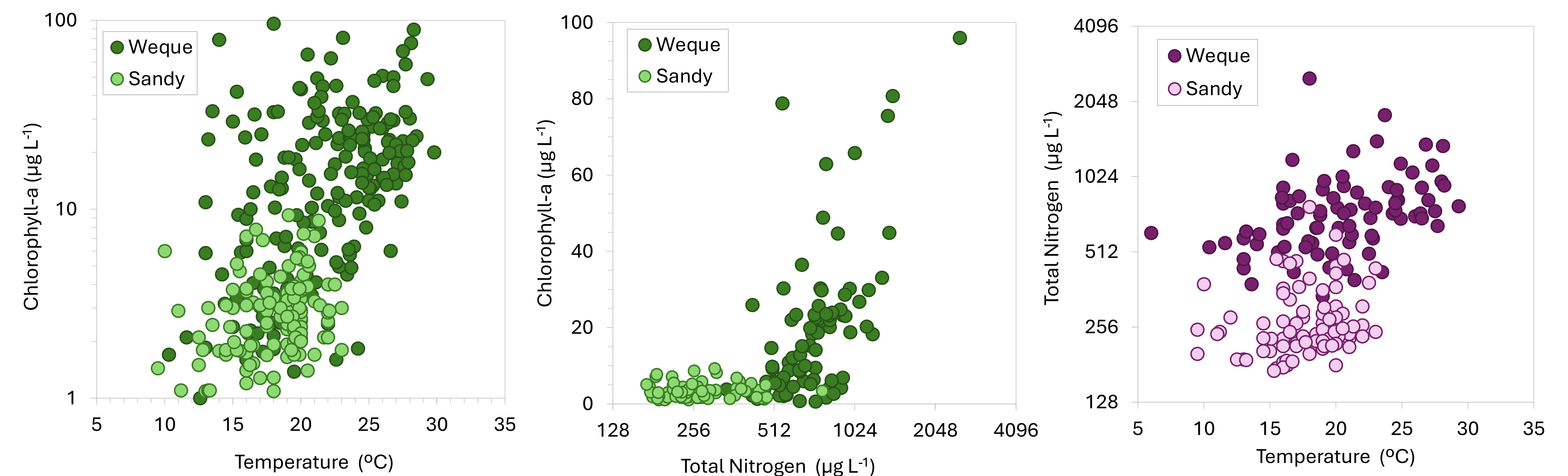


Figure 3. Chlorophyll-a concentrations relative to water temperature and total nitrogen; total nitrogen relative to water temperature – in Wequetequock Cove and at Sandy Point from samples collected biweekly between May and October from 2008 to 2024.

Results

- Phytoplankton abundance (chlorophyll-a) in **Wequetequock Cove** is correlated to **temperature** and to **total nitrogen**.
- At **Sandy Point**, chlorophyll-a correlates only to **temperature**.
- Total nitrogen** in **Wequetequock Cove** **increases** with water **temperature**.

Conclusions

- Total nitrogen in summer **increases** with temperature in Wequetequock Cove, resulting in higher phytoplankton abundances.
- The seasonal increase in total nitrogen may result from
 - lower flushing** of the cove in summer, and/or
 - faster decomposition and nutrient release** from sediments at higher temperature

Acknowledgements

We would like to thank Dr. Julia Granger, Dr. Claudia Koerting, Lisa Piastuch and the UConn Department of Marine Sciences.