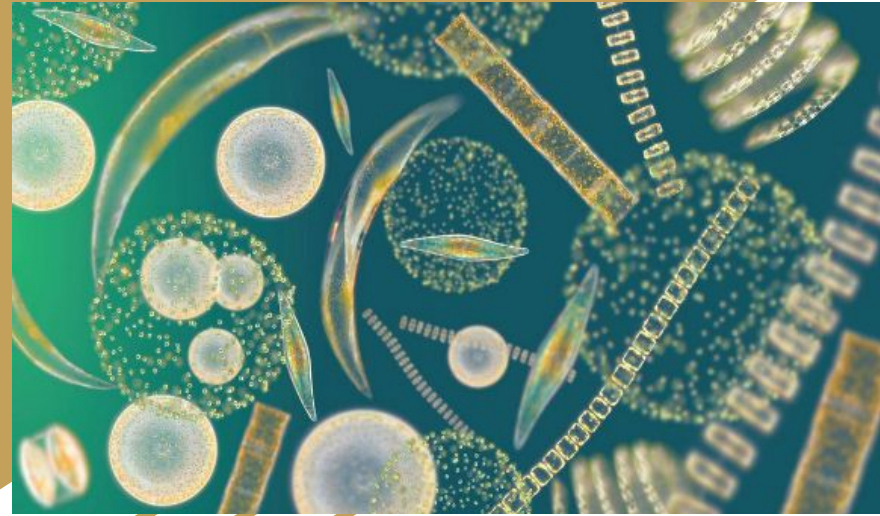# PHYTOPLANKTON POPULATIONS IN ST. LEONARD CREEK AND ADJACENT WATER

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**PEARL MORGAN STATE UNIVERSITY**

BACKGROUND

- Phytoplankton are microscopic aquatic plants which require sunlight to live and grow
- Base of a aquactic food chain
- They produce half of the oxygen we breathe in
- Some factors that influence their growth include:
    - Water temperature
    - Salinity
    - Water depth
    - Predators feeding on them
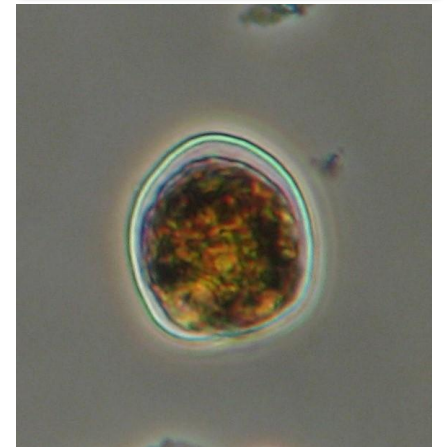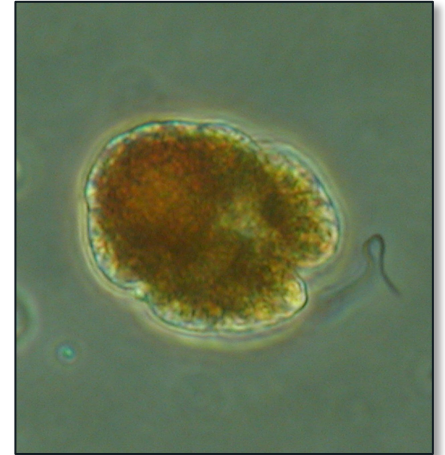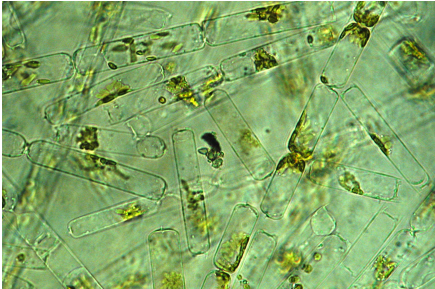   - Nutrient—Nitrogen, phosphorous
    - Light
    The common groups of phytoplankton in local waters are:
- Phytoflagellates
- Dinoflagellates
- Diatoms
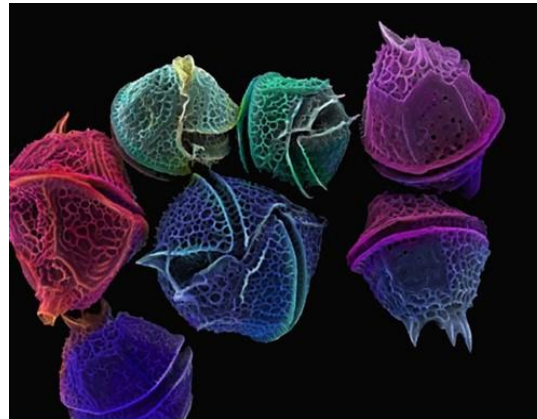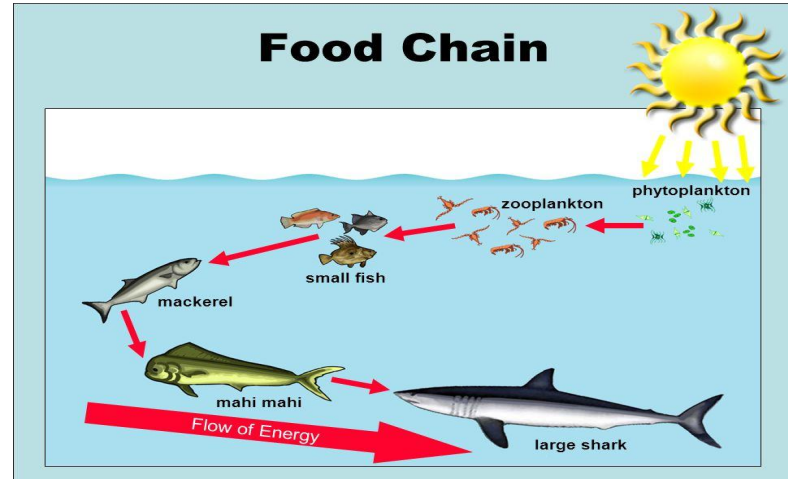
GOAL

To characterize the local phytoplankton populations during the period of the internship

Methods: Field Sampling

Site1: Mackall Cove
Site2: St. Leonard Creek
Site3: Patuxent River

Pumping apparatus

YSI: Temperature, DO, Salinity

Secchi disk

FIELD METHODS

- **Phytoplankton samples are taken from 3 different stations.**
- **The composite sample is collected from three different depths (surface, mid-depth and bottom) with a pump.**
- **The samples are preserved with Lugol's solution.**
- **Samples are sealed in bottles and taken to the laboratory for microscopic analysis.**
- **The temperature, salinity and dissolved oxygen are measured at the three depths.**

LAB METHODS

- A subsample of 2.5 mL was examined at 312.5 magnification on an inverted microscope using a settling technique called the Utermohl technique.
- Phytoplankton cells were identified to the lowest taxonomic level.
- A minimum of ten random fields and 100 individual cells were identified and counted.
- Raw cell counts were converted into normalized counts (#/liter).
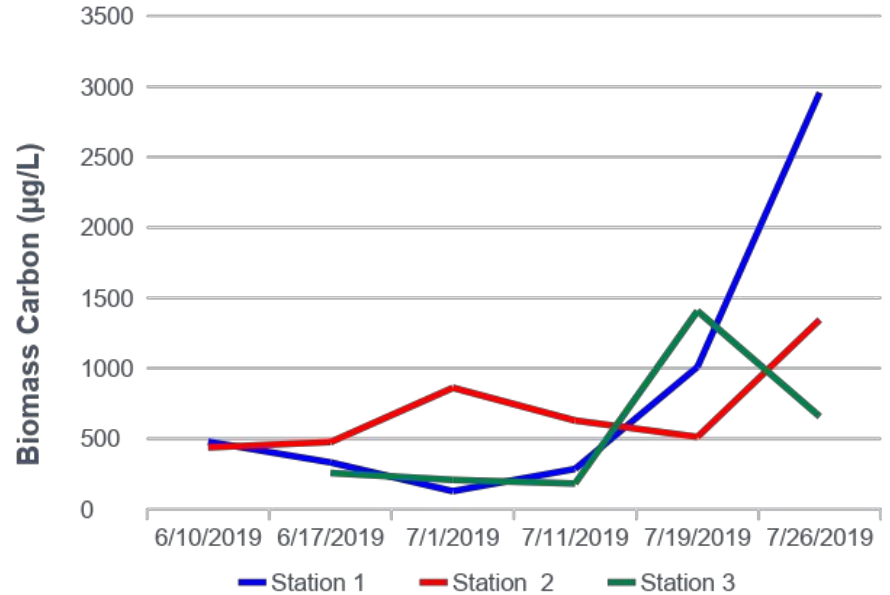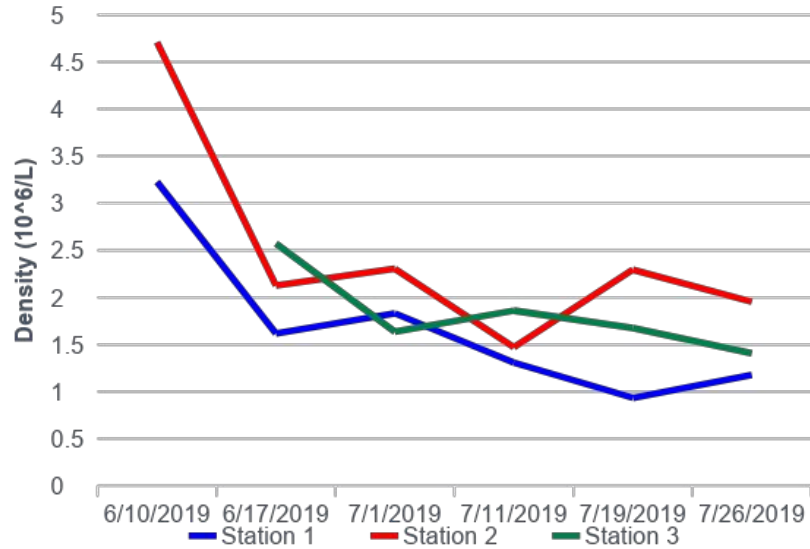- Data was entered into Excel for graphing and analysis.
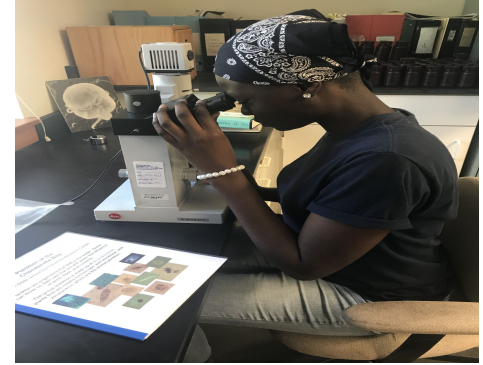
Results:
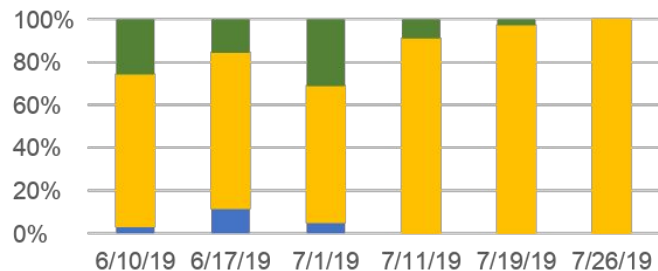## Environmental Factors: Temperature, Salinity & Dissolved Oxygen
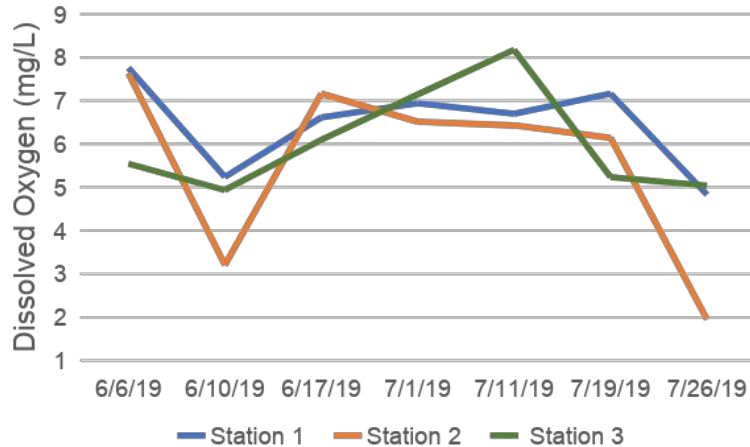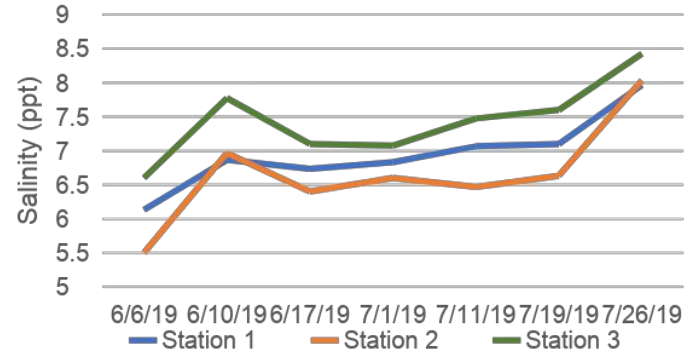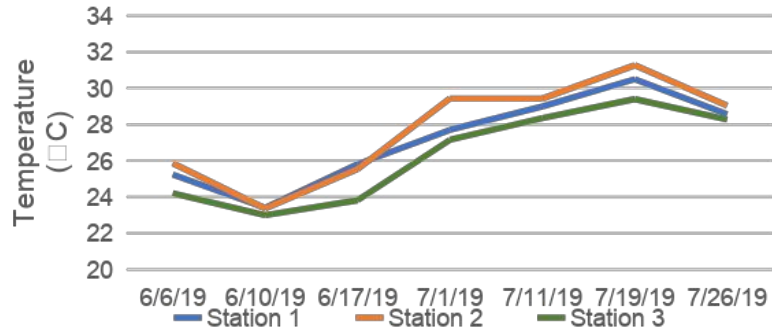
Total Phytoplankton Density and Biomass

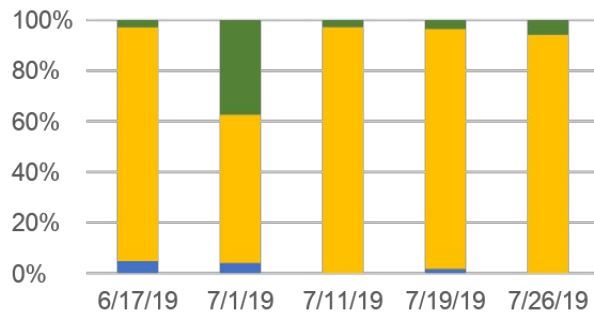# Population Composition – Relative Phylogenetic Cell Density
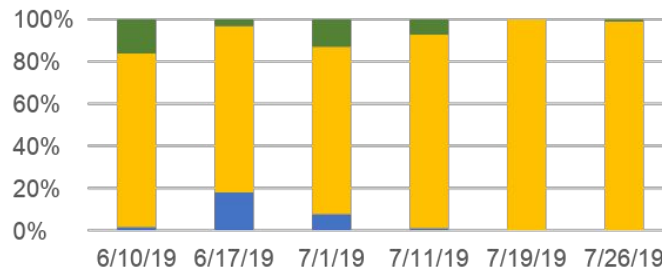
Relative Phylogenetic Biomass
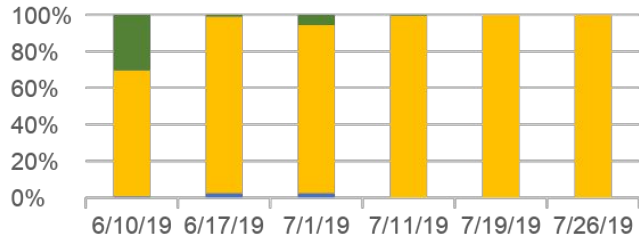
Dominant Taxa

Prorocentrum minimum Biomass - 2019

Gymnodinium splendens Biomass - 2019
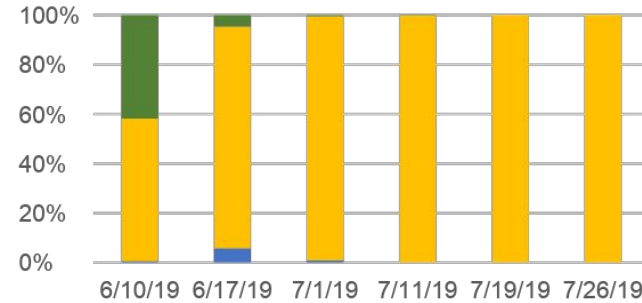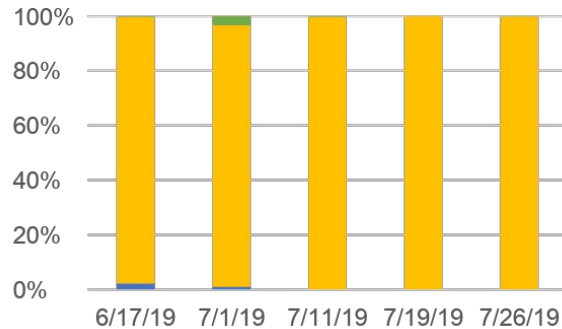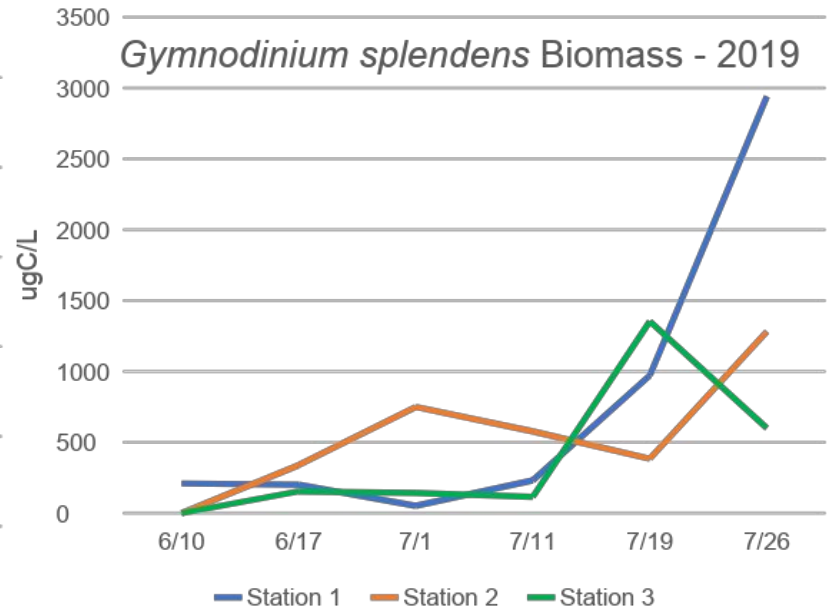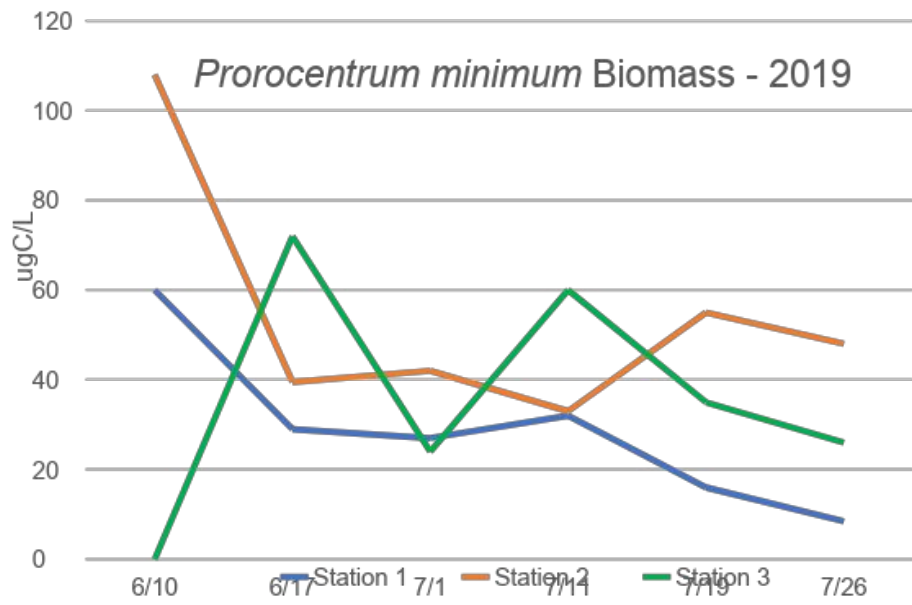
ACKNOWLEDGEMENTS

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and
everyone at PEARL!!