



# Coral Communities in Captivity and in the Wild

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# Introduction

- Decline of coral communities over the past decades

## Major Factors:

- Disease
- Habitat Loss
- Overfishing
- Water Quality Degradation
- Bleaching



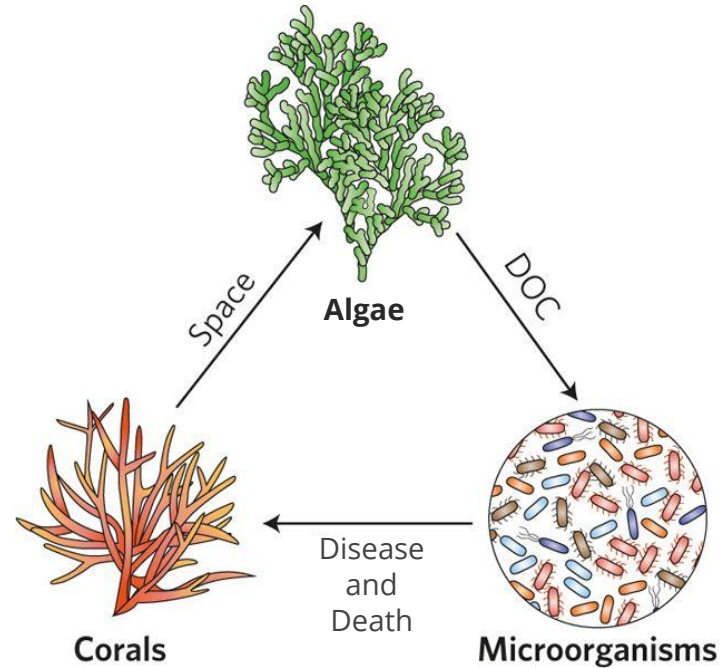
# Algae

- Algae has become a big factor in the decline of coral communities
- Reefs that were once dominated by corals have been overtaken by algae



# D.D.A.M. Cycle

- D.D.A.M. (Dissolved Organic Carbon (DOC), Disease and Death, Algae, and Microbes)
- Positive feedback loop that promotes the growth of algae



# Human Impacts

- Nutrient runoff; directly increases nutrients available allowing for algal growth
- Overfishing has dramatically decreased the amount of grazers allowing for uncontrolled algal blooms



# Marine Tanks

- Various components that must be taken care of, depending on target organisms
- Marine tanks emulate natural environments using the help of technology
- The purpose of the marine tank is to be able to closely study coral and processes such as the D.D.A.M. cycle



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# Water Quality

- The quality of water is essential for coral growth
- Careful balancing of nutrients in the water is necessary in order to maintain a stable environment



# Water Quality

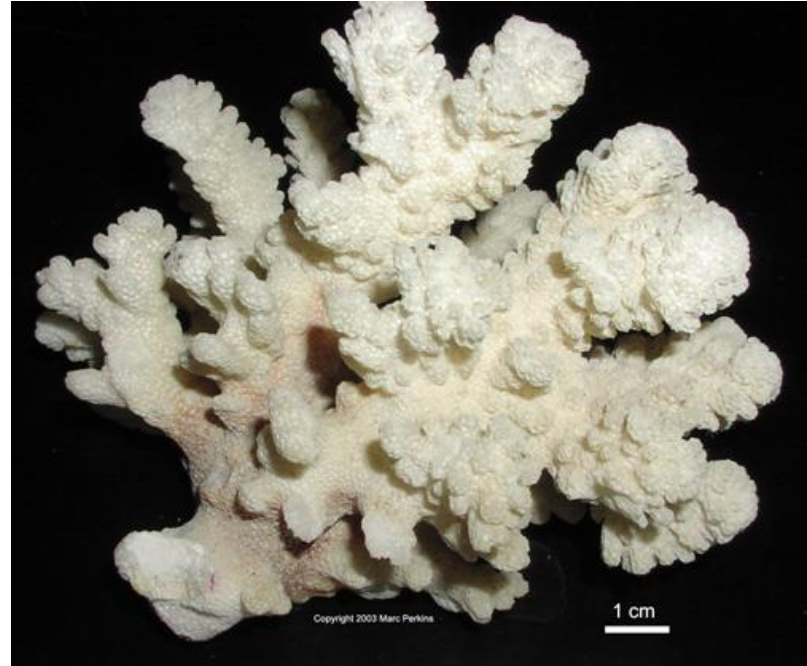
## Nutrients:

- Calcium
  - Magnesium
  - Phosphate
  - Nitrogenous Compounds
- Coral has developed to live off of low nutrient levels, but excessive amounts begin to wreak havoc in their communities



# Calcium and Magnesium

- Both play a big part in the accretion of corals
- Calcium is essential for corals to be able to build their skeletons
- Magnesium is incorporated in the structure of the skeleton



# Phosphate

- Phosphates promote algal growth
- Usually removed using a phosphate reactor or refugium
- Both are capable individually, but filtration systems are better when both are present



Central Valley Reefers

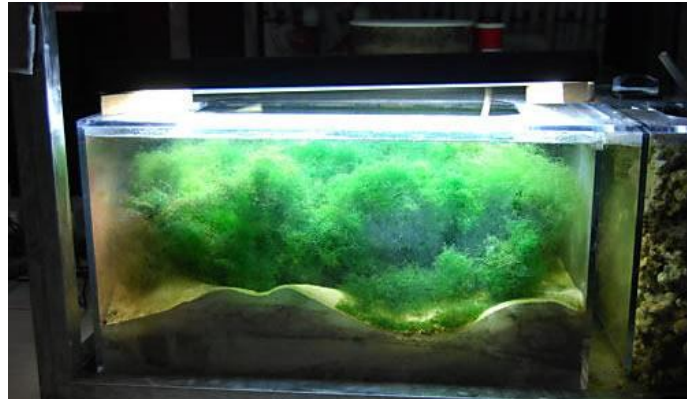


# Nitrogenous Compounds

- Play a big role in the health of coral
- More or less toxic depending on its form (Ammonia, Nitrite, Nitrate)
- Usually removed using a refugium, denitrifying bacteria or live rock/sand



Saltwater Fish



Reef Central

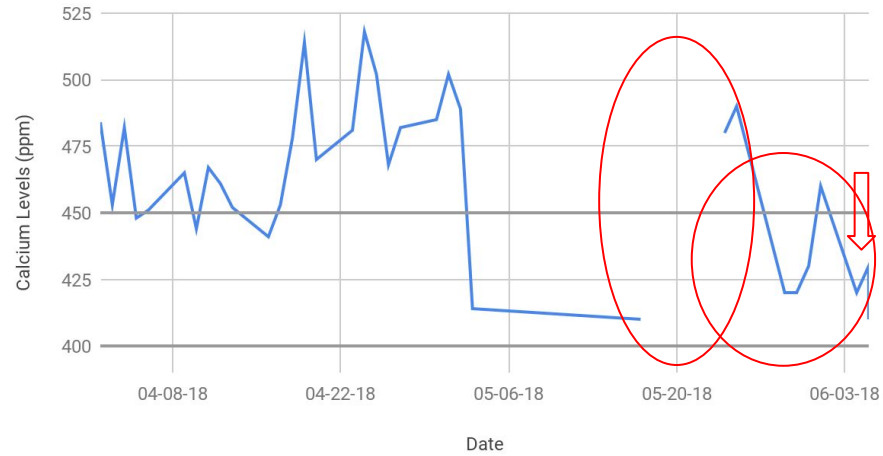
# Project

Data collection of marine tank through sampling

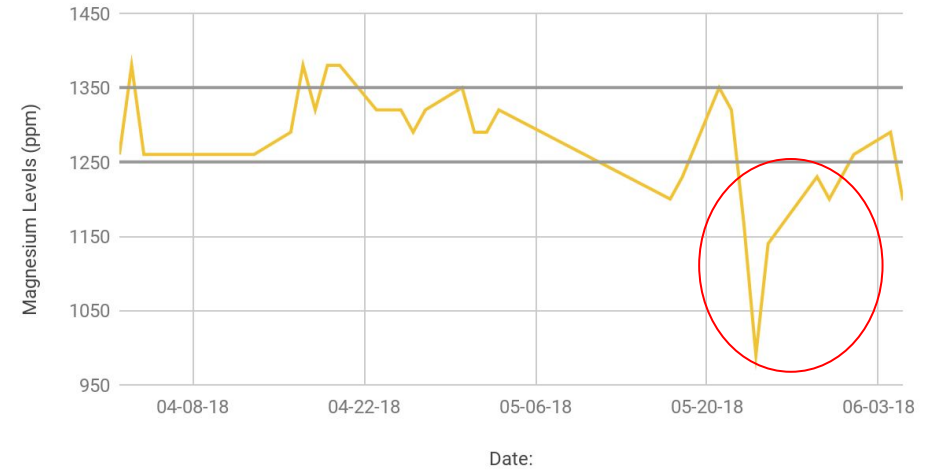
- Testing once a day
- Logging the results onto a spreadsheet
- Compiled data gathered by Aubre
- Created figures from the results

# Data

Coral Tank: Calcium

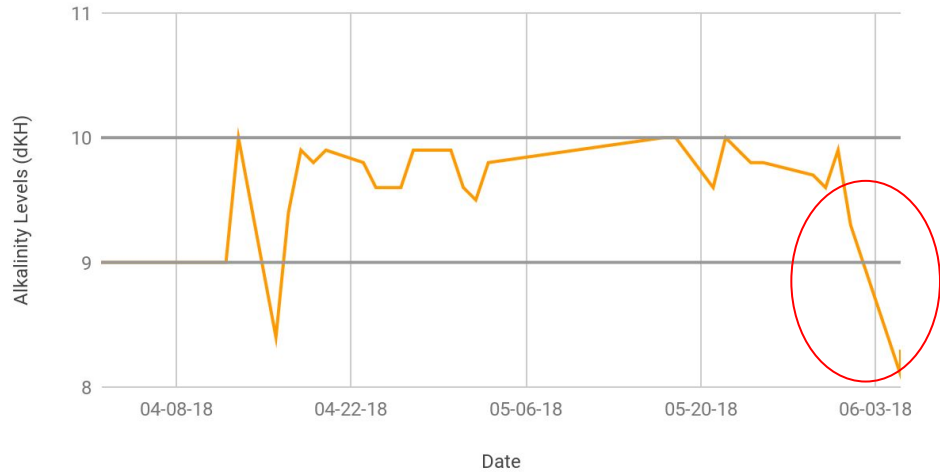


Coral Tank: Magnesium

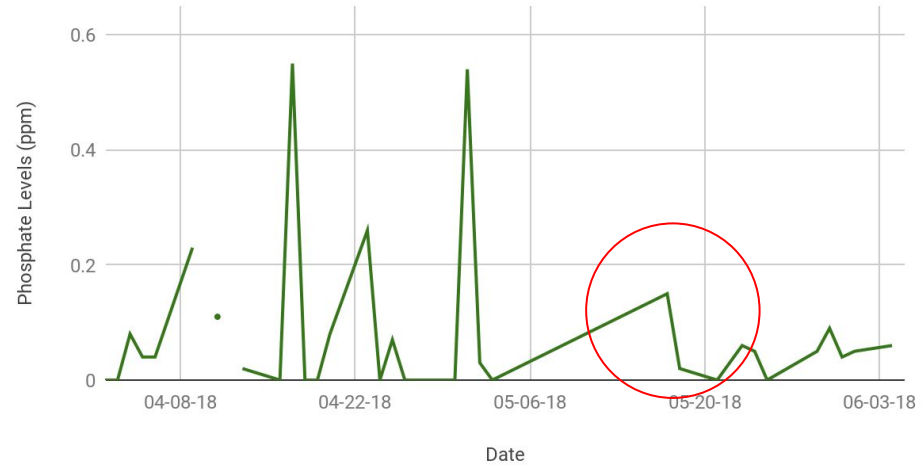


# Data

Coral Tank: Alkalinity

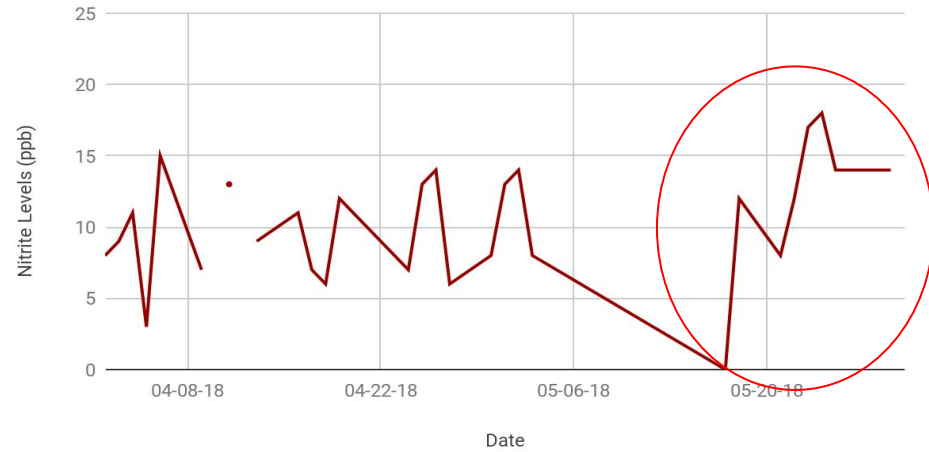


Coral Tank: Phosphate



# Data

Coral Tank: Nitrite



Coral Tank: Nitrate

