

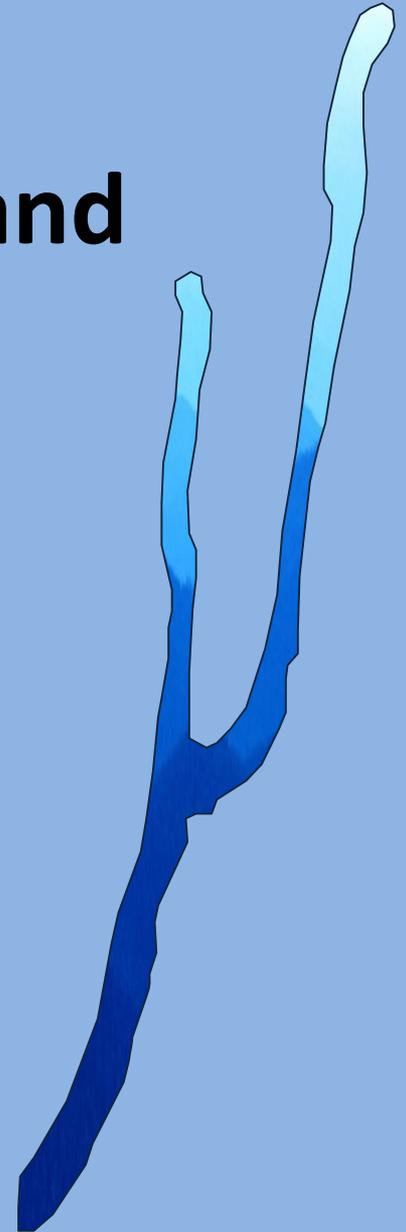
# Keuka Lake Looking Back and Looking Ahead

## State of the Lake **2018**

Tim Sellers, PhD



July 13, 2019



# Tim Sellers, PhD

## KLA Science/Water Quality Advisor

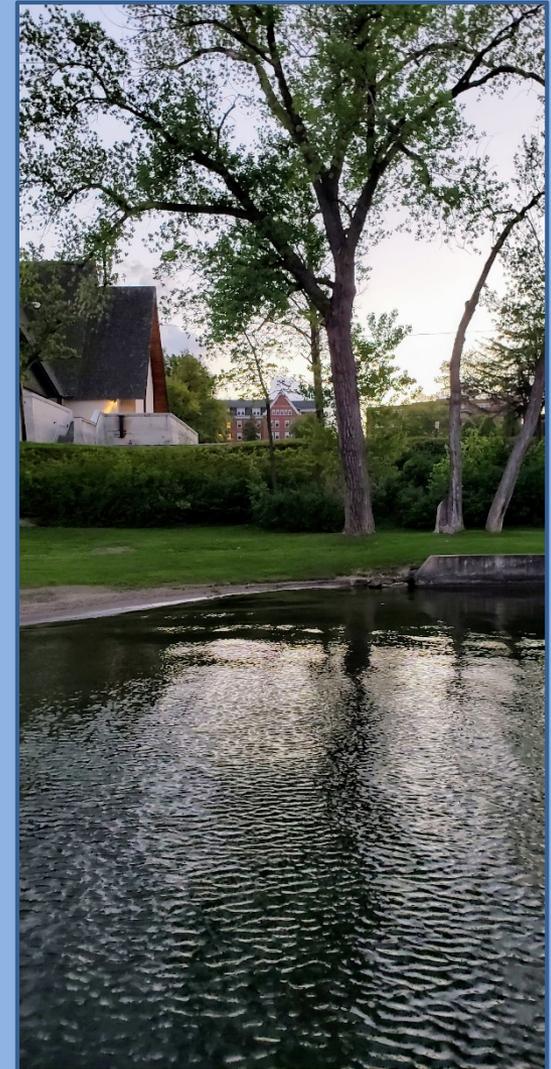
### Training

Limnologist / Aquatic Biologist  
Research lakes, rivers, oceans

### Keuka College

Director, Center for Aquatic Research  
Professor of Biology and Env. Sci.

Associate Provost

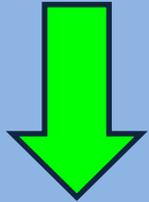


# Talk Outline

- **State of the lake 2018**
  - Updates with long term history
- **HABs / “Blue-green algae” of 2017, 2018**
- **Pathway to the 9 Element Plan**
  - ... a lot of great people working and expanding our research

# 2018 State of Keuka Lake

## Nutrient levels (**Phosphorus**)



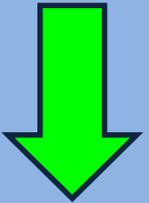
- Averaged 6.0 ppb, **down** 1.0 ppb from 2017,
- Still below long-term average of 7.3 ppb

## Water clarity



- Averaged 9.3 m, higher than 2017 levels
- Well above the long-term average of 6.1 meters

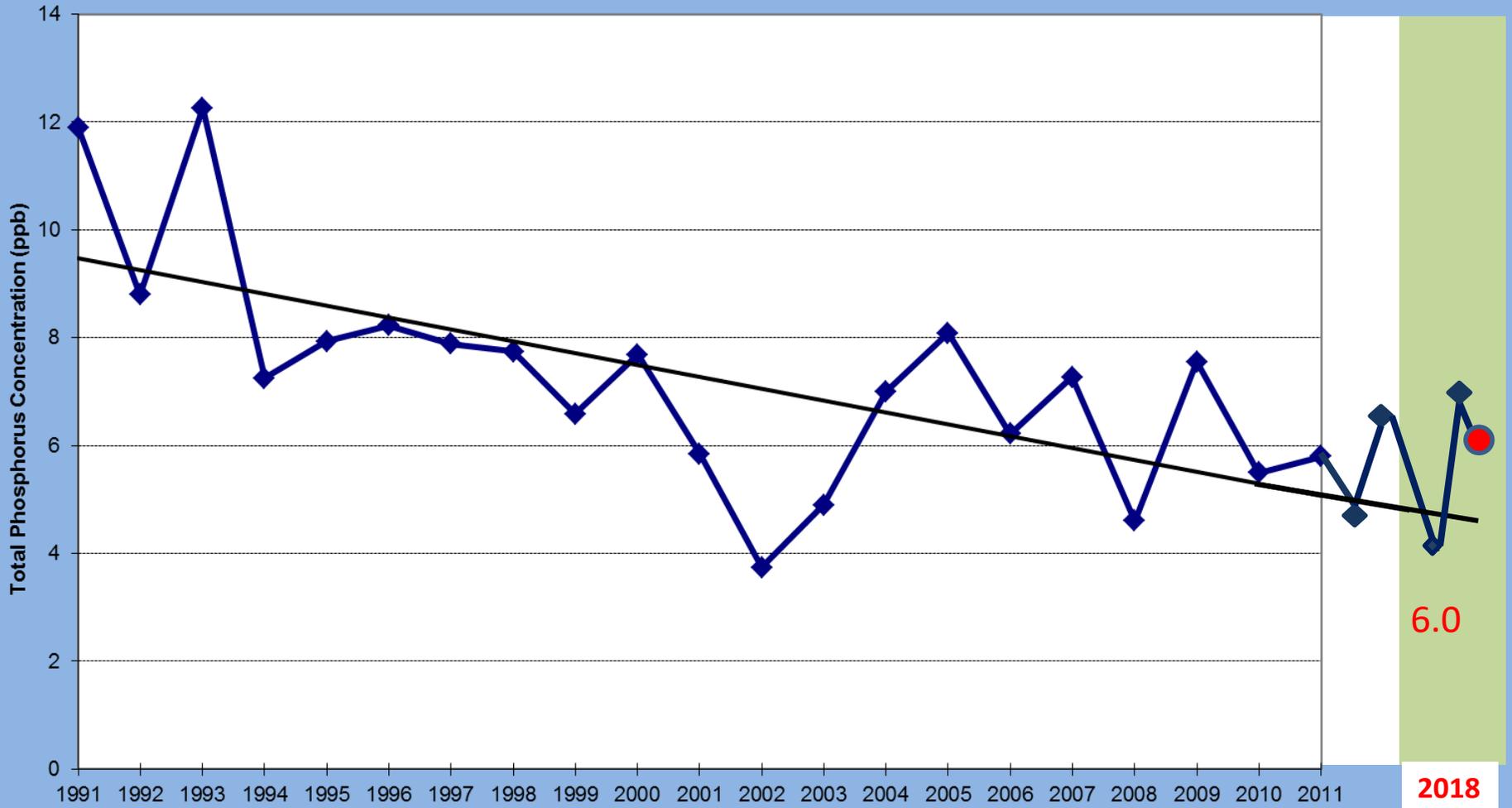
## Algae levels (**Chl a**)



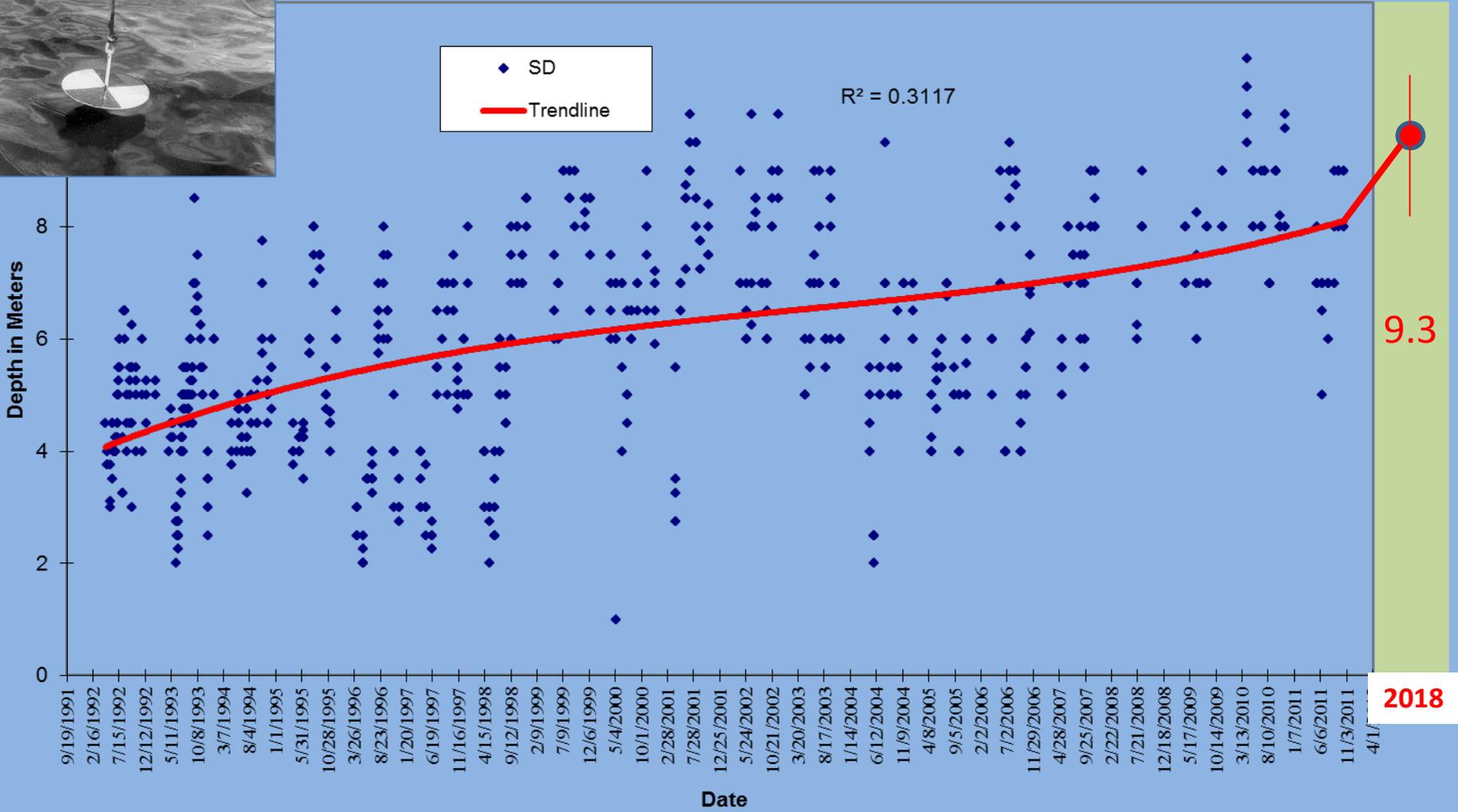
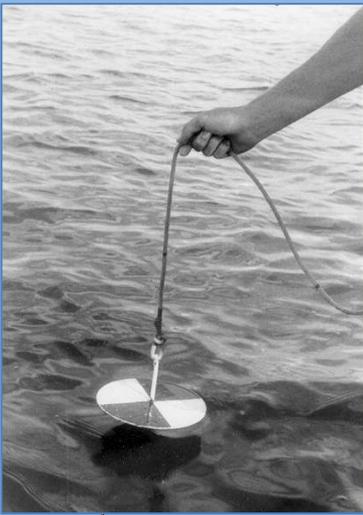
- Averaged **1.7** ppb, **down** 0.6 from 2017
- Still below the long-term average of 2.6 ppb



# Keuka Lake Phosphorus Trends



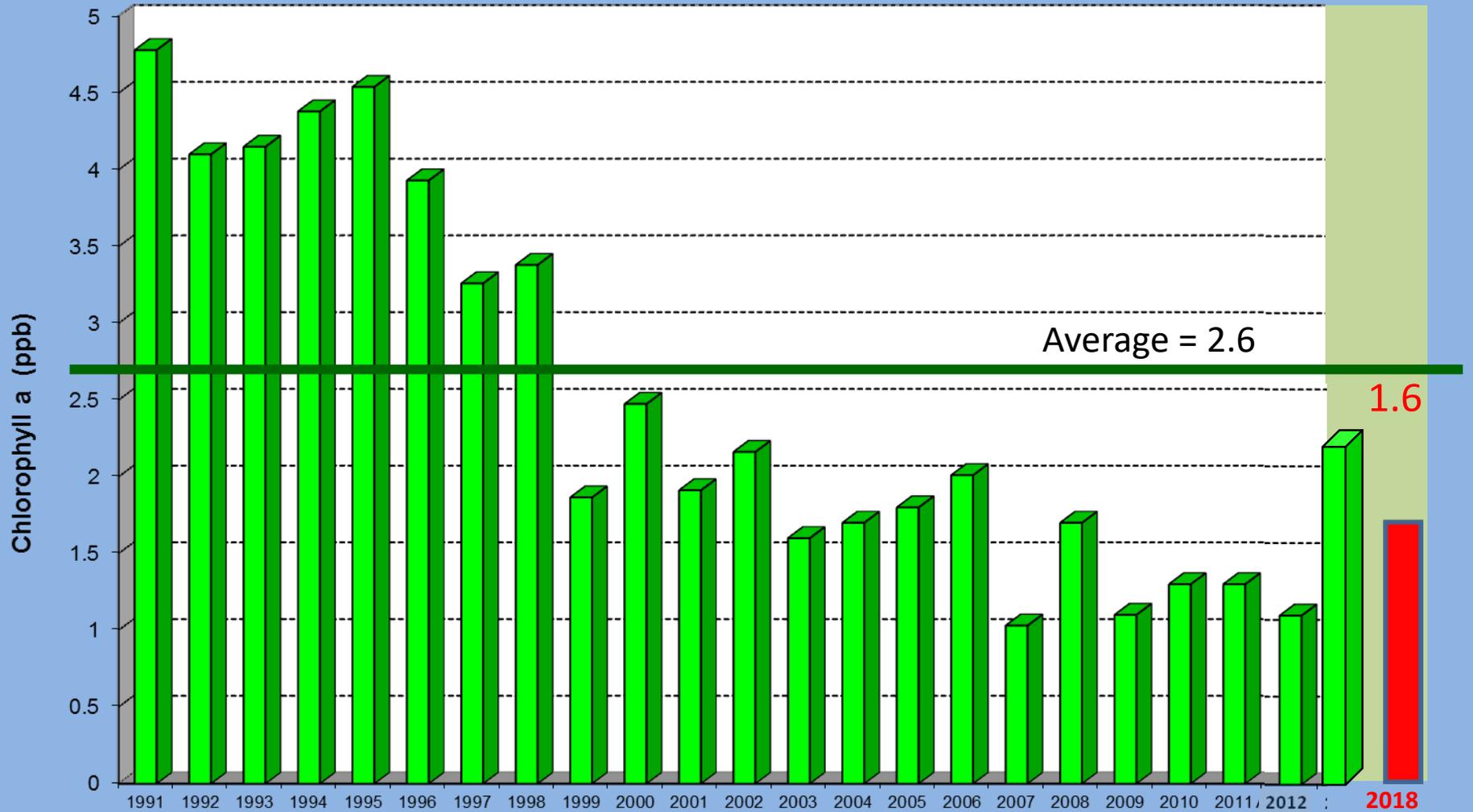
# Keuka Lake Secchi Disk Data



9.3

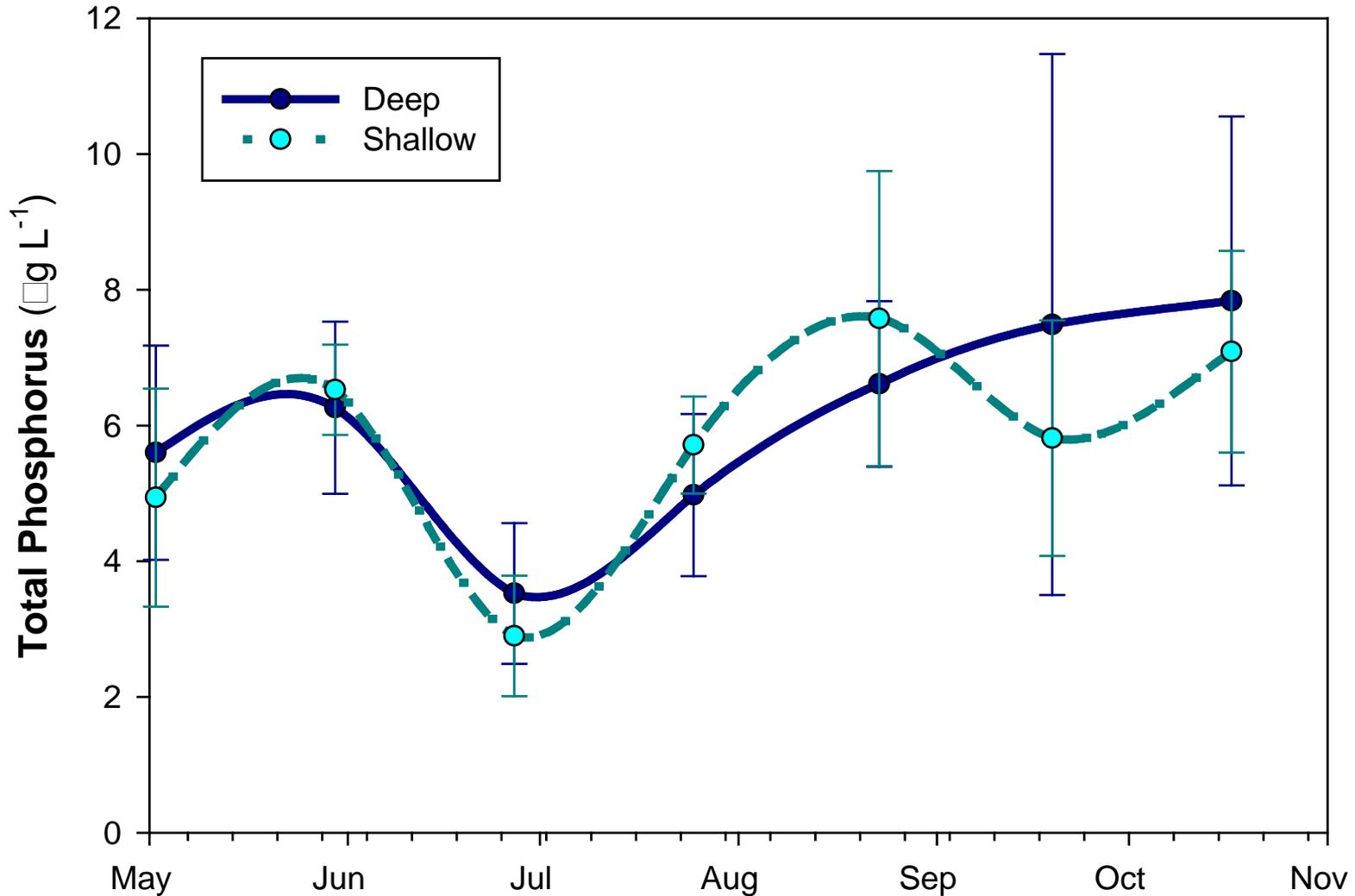
2018

# Keuka Lake Chlorophyll a (= algae)



# Total Phosphorus

“Fertilizes” algae – good *and* bad

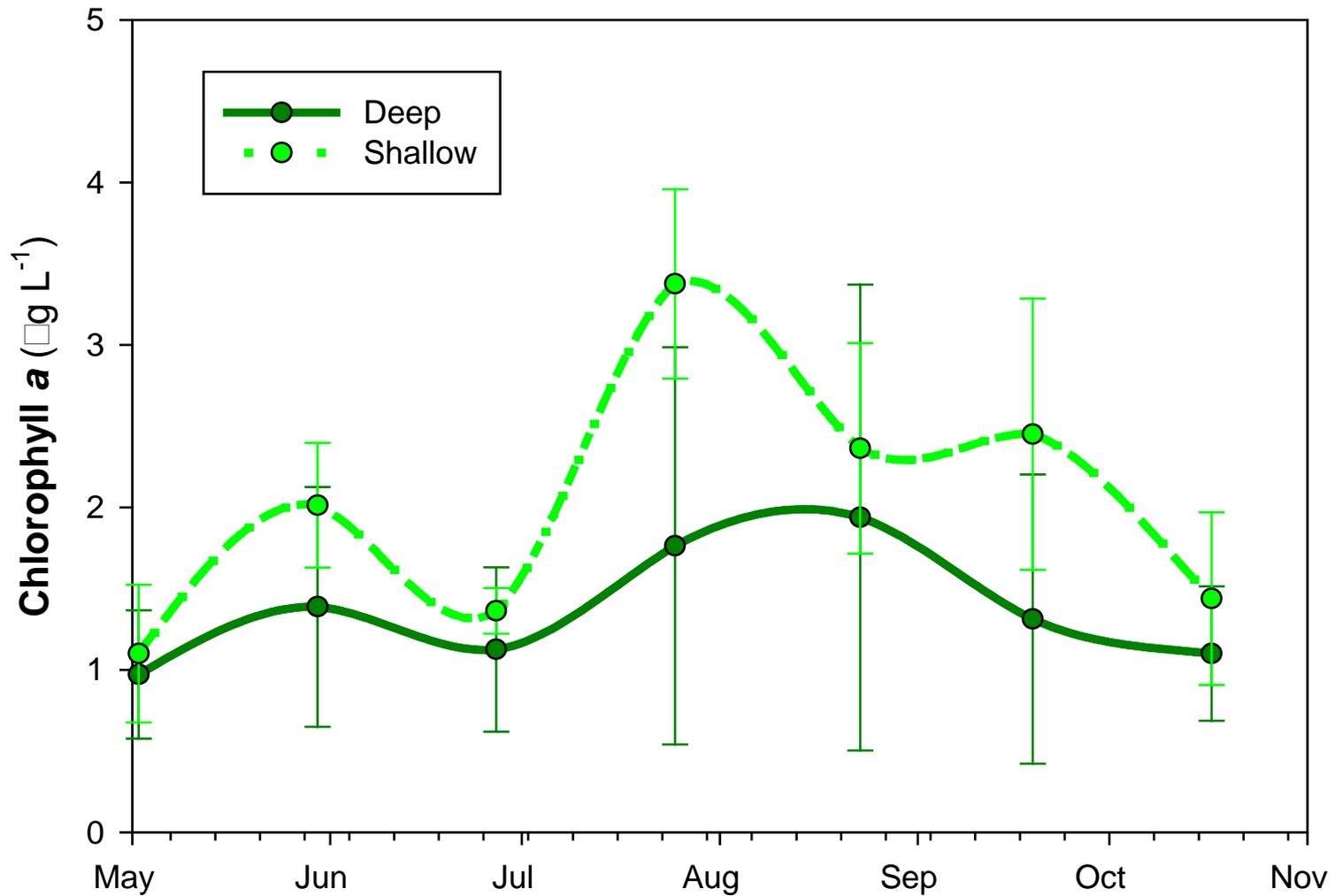


2018

16 sites within lake

# Chlorophyll *a*

All algae – both good *and* bad

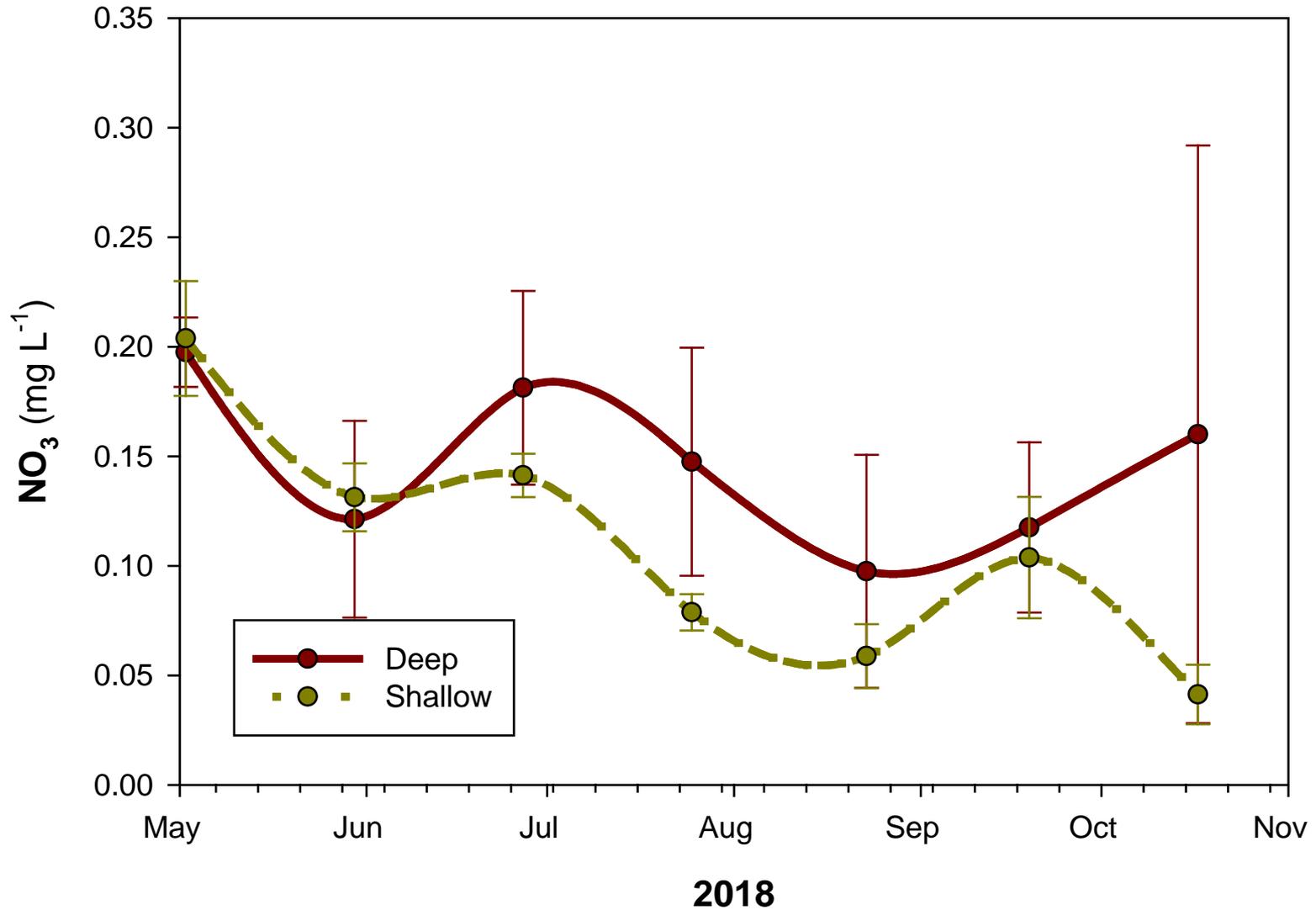


2018

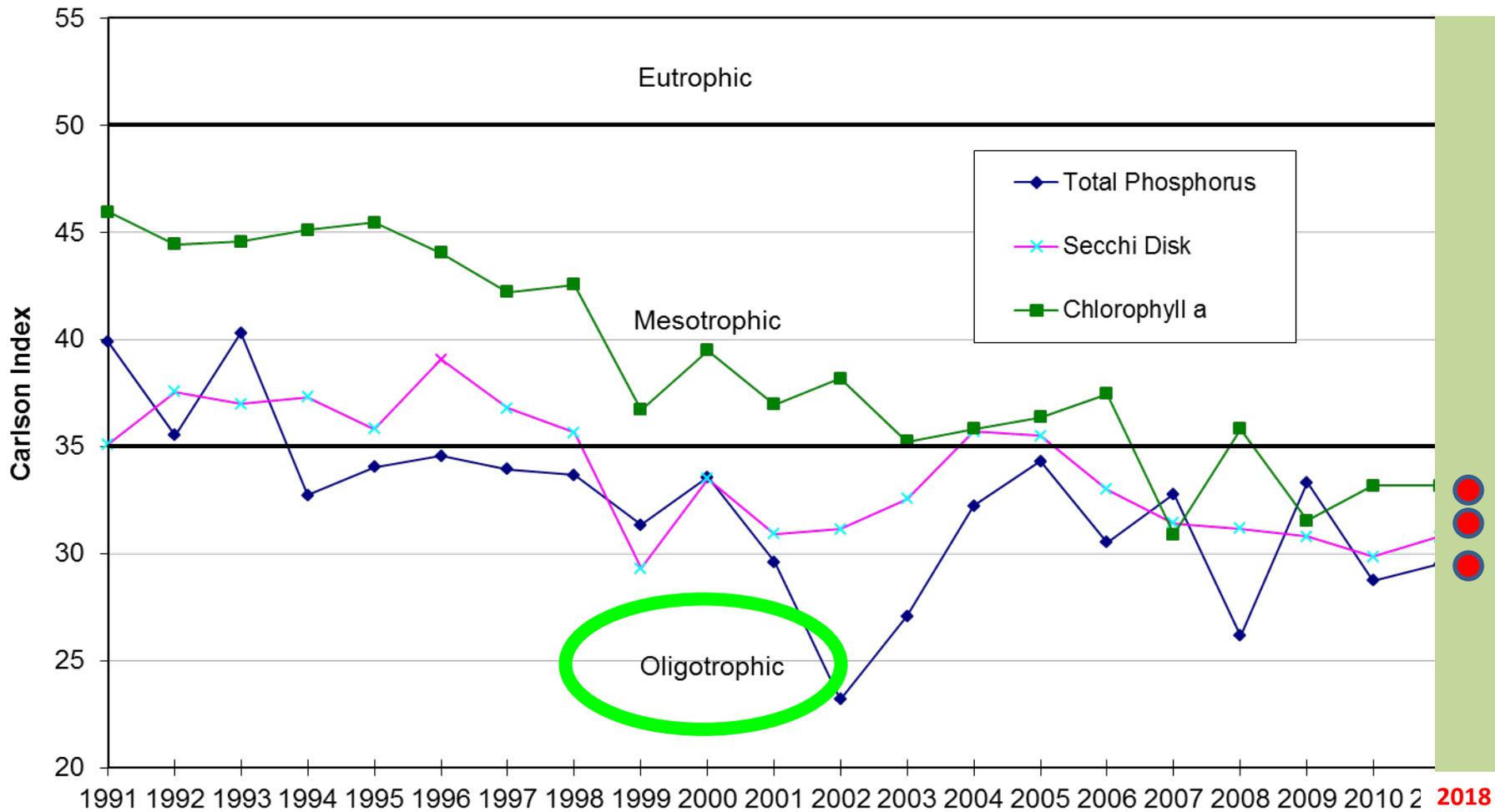
16 sites within lake

# Nitrate

“Fertilizes” algae – good *and* bad



# Keuka Lake Trophic Status



# HAB - Blue green algae - Cyanobacteria

## **AVOID ALGAE BLOOMS at RED JACKET PARK in the VILLAGE OF PENN YAN**

The Department of Health has issued a Blue-green Algae Advisory for Red Jacket Park. This Advisory was issued because a blue-green algae bloom has been identified in the swim area. People and animals should avoid contact with any algae blooms, scums and colored water.

Blue-green algal blooms can turn the water green and can form thick scums on the water surface. Blue-green algae can cause skin or eye irritation, or diarrhea and vomiting if ingested. People and animals should keep out of the water where blooms are present.

The Department of Health recommends taking the following precautions:

- Don't swim, wade or fish near blooms or scums
- Don't drink the water
- Keep children and animals away from any blooms or scums
- Rinse with clean water if exposed

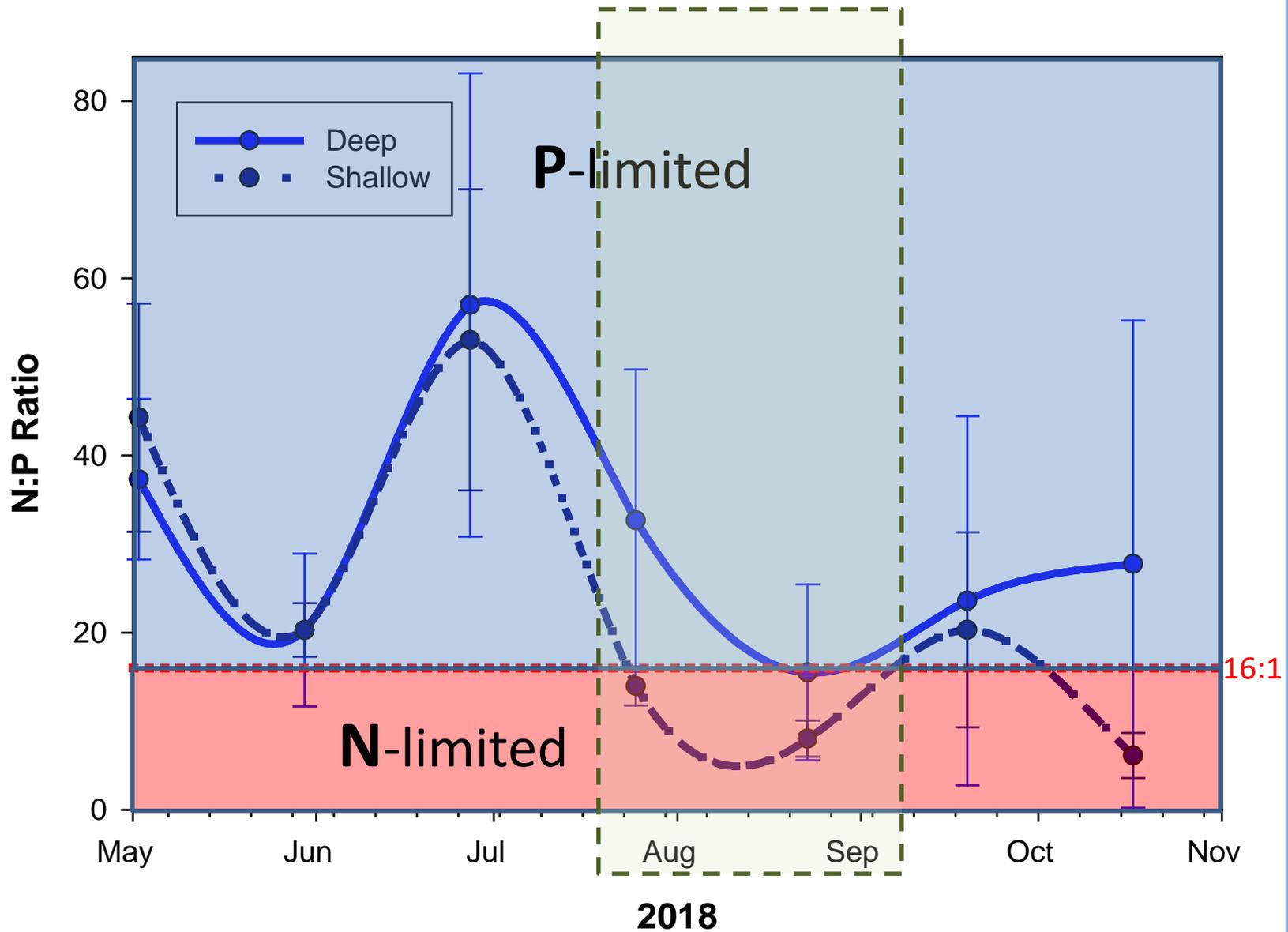
Red Jacket Park's swim area will remain closed to bathers until the Department of Health has issued a safe to re-open order. The Red Jacket Park (playground, pavilion, and picnic areas) remain open to the public. At this time, Indian Pines Park is open for all activities including swimming.

Please report symptoms that may be associated with exposure to blue-green algae blooms, such as skin or eye irritation, or diarrhea and vomiting to the Department of Health at (315) 789-3030.

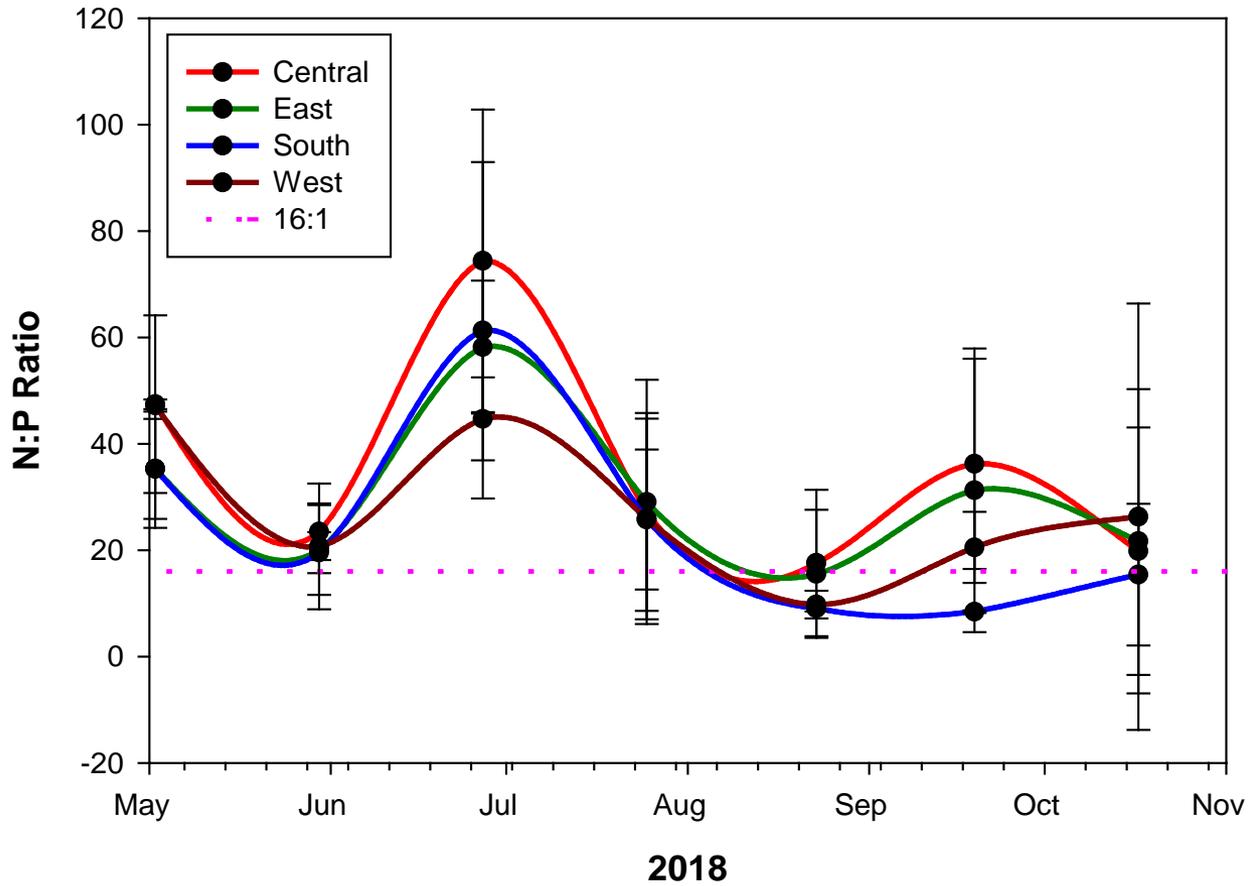
For more information, please visit <https://www.health.ny.gov/publications/6563.pdf>.



# Nitrogen to Phosphorus Ratios



# Nitrogen to Phosphorus Ratios



# Pathway to the 9 Element Plan

- What are the histories, sources, and levers for HABs?
- **2017, 2018: All 11 Finger Lakes** had confirmed **HABs**, most with confirmed **toxins**
  - *Again: Keuka, Skaneateles...*
- KLA Data
  - Great dataset of what is already in the lake
  - Now! Real data of what is coming in to the lake (streams)
  - Citizen scientists and expanding our knowledge

# State of the Lake

- 2018 nutrient data show the lake is in generally **good health**
- **Trends improving** (*phosphorus, water clarity, algae*)
- HABs (*again!*) showed their ugly faces
  - *Why?* P. N:P. Zebra/Quagga mussels. ?
- Aquatic invasive species (AIS) concerns
- KLA is closing the knowledge gaps going forward..

Thank you for your dedication to  
protecting Keuka Lake

