Keuka Lake Looking Back and Looking Ahead

State of the Lake 2014
Mid-season update for 2015

Tim Sellers, PhD
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KLA Science/Water Quality Advisor

Training
Limnologist / Aquatic Biologist
Research lakes, rivers, oceans

Keuka College
Director, Center for Aquatic Research
Professor of Biology and Environmental Science

Associate Provost for Academic Innovation

Keuka Lake Association
protecting the quality of the lake
Talk Outline

• State of the lake 2014
  – Updates with long term history

• It’s not all fun and games

• Submersible Probe
  – Variation under the waves
  – Blue-green algae (new data!)

• Conclusions
2014 State of Keuka Lake

**Nutrient levels (Phosphorus)**
- Averaged 3.9 ppb, **down** 2.6 ppb from 2013,
- Well below long-term average of 7.3 ppb

**Water clarity**
- Averaged 7.8 m, similar to 2013 levels
- **1.7 m** above the long-term average of 6.1 meters

**Algae levels (Chl a)**
- Averaged **1.62 ppb**, **up** 0.9 from 2013
- Below the long-term average of 2.6 ppb
Keuka Lake Phosphorus Trends

Total Phosphorus Concentration (ppb)

Year: 1991 to 2011

Initial Concentration: 12
Final Concentration: 3.9

Trend: Decreasing
Keuka Lake Secchi Disk Data

- Depth in Meters
- Date

R² = 0.3117

2014

7.8
Keuka Lake Chlorophyll a  (= algae)

Average = 2.6
Total Phosphorus

16 sites within lake

Phosphorus (µg L⁻¹)

2014

Apr  May  Jun  Jul  Aug  Sep  Oct  Nov
Chlorophyll a

Chlorophyll a (\(\mu g \text{ L}^{-1}\))

2014

April  May  June  July  August  September  October  November
Submersible Water Quality Probe

Depth
Temperature
Chlorophyll $a$ (= algae)
Cyanobacteria (= blue green algae)
$\text{pH}$
Conductivity (= salts)
Cyanobacteria (= Blue green algae)

- Type of phytoplankton / algae
- Generally inhabits surface (not deep)
  - Reduces light in lake: bad for good algae
- Many species
  - Most harmless
  - Some produce toxic chemicals
- Very LOW levels in Keuka!
- Probe allows instant sample
Cyanobacteria Levels ("Bluegreen algae")

![Cyanobacteria Levels Graph]

- Cyanobacteria levels are measured in g L$^{-1}$.
- Levels show a peak in August and a deep trough in September.
- April and May show relatively low levels compared to other months.
"Good" versus "Bad" Algae

Levels (µg L⁻¹)

- Chlorophyll a
- Cyanobacteria

2014

Apr  May  Jun  Jul  Aug  Sep  Oct  Nov

Levels (µg L⁻¹)
State of the Lake

• 2014 data show the lake is in generally **good health**
• **Improving trends** in many important parameters (*water clarity, phosphorus*)
• Cyanobacteria levels continue to be **low** (but present!)
• May 2014 storm dumped a lot of phosphorus in lake but we saw **little algae** growth resulting in 2014
  – Some increased macrophytes (seaweed)
  – Very little cyanobacteria (*Microcystis*)
  – Still waiting for blooms (“aftershocks”)
Thank you for your dedication to protecting Keuka Lake!

• Continue to the “Listen to the Lake”
• “If not now, *when*? If not us, *who*?”

• Contact me:
  Tim Sellers
  tsellers@keuka.edu
  (315) 279-5685