NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

# CSLAP in the Finger Lakes: Lessons Learned from Year One


## Aimee Clinkhammer

Finger Lakes Water Hub


NYSFOLA Conference
May 4, 2018

# Presentation Outline

Background

2017 CSLAP

Data/Results

Long-term Data Sets

Lessons Learned

CSLAP 2018

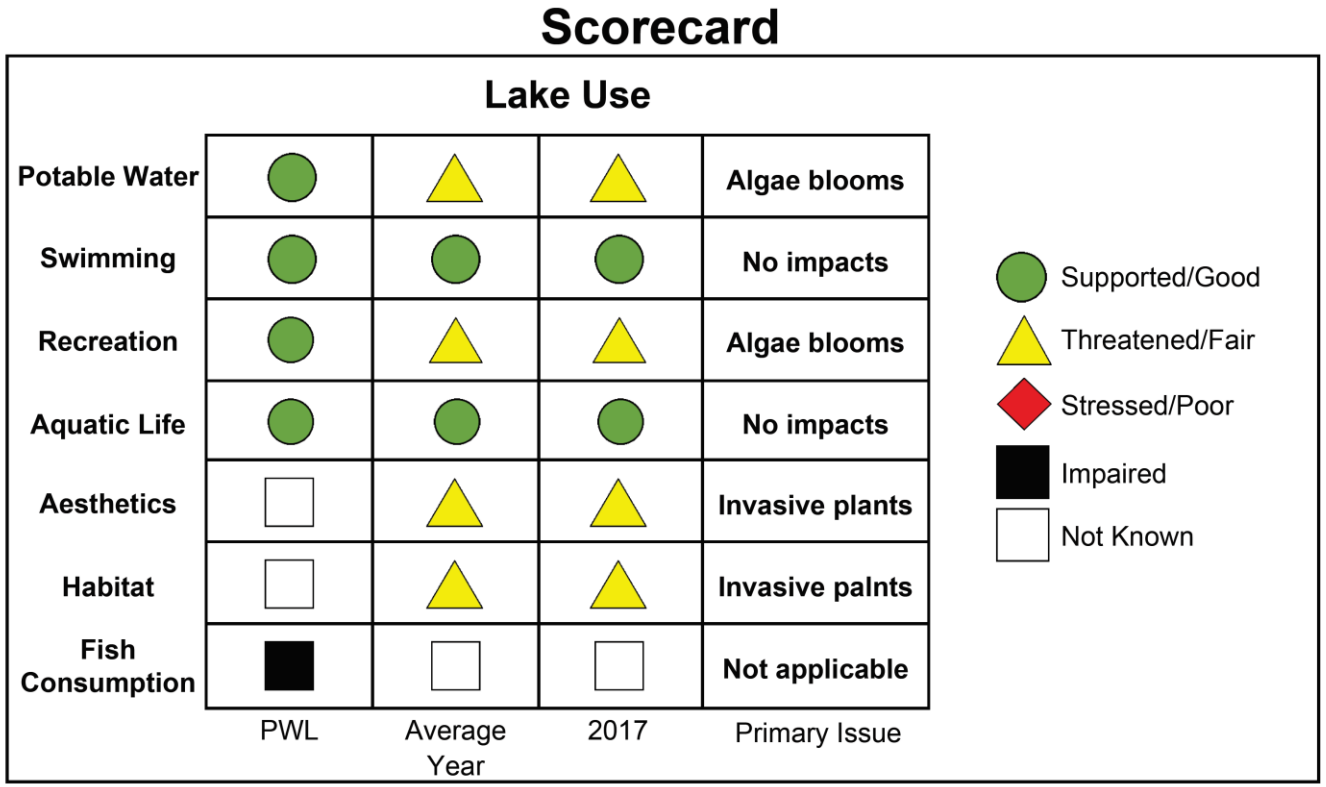
# Citizens Statewide Lake Assessment Program

- CSLAP
  - a volunteer lake monitoring/education program
  - managed by NYSDEC & NYSFOLA
  - initiated 1986 and mandated by ECL (17-0305)
- Consistent monitoring approach
  - volunteers are trained, use approved methods (standard operating procedures)
  - certified labs analyze the water samples (NYS ELAP certified)
  - lake data are interpreted by professionals

Volunteers on Canandaigua Lake

# CSLAP Objectives

1. Education and outreach
2. Data collection
   - water quality assessments and reporting
3. Baseline and trends in lake health
4. Special studies (HABs, AIS)

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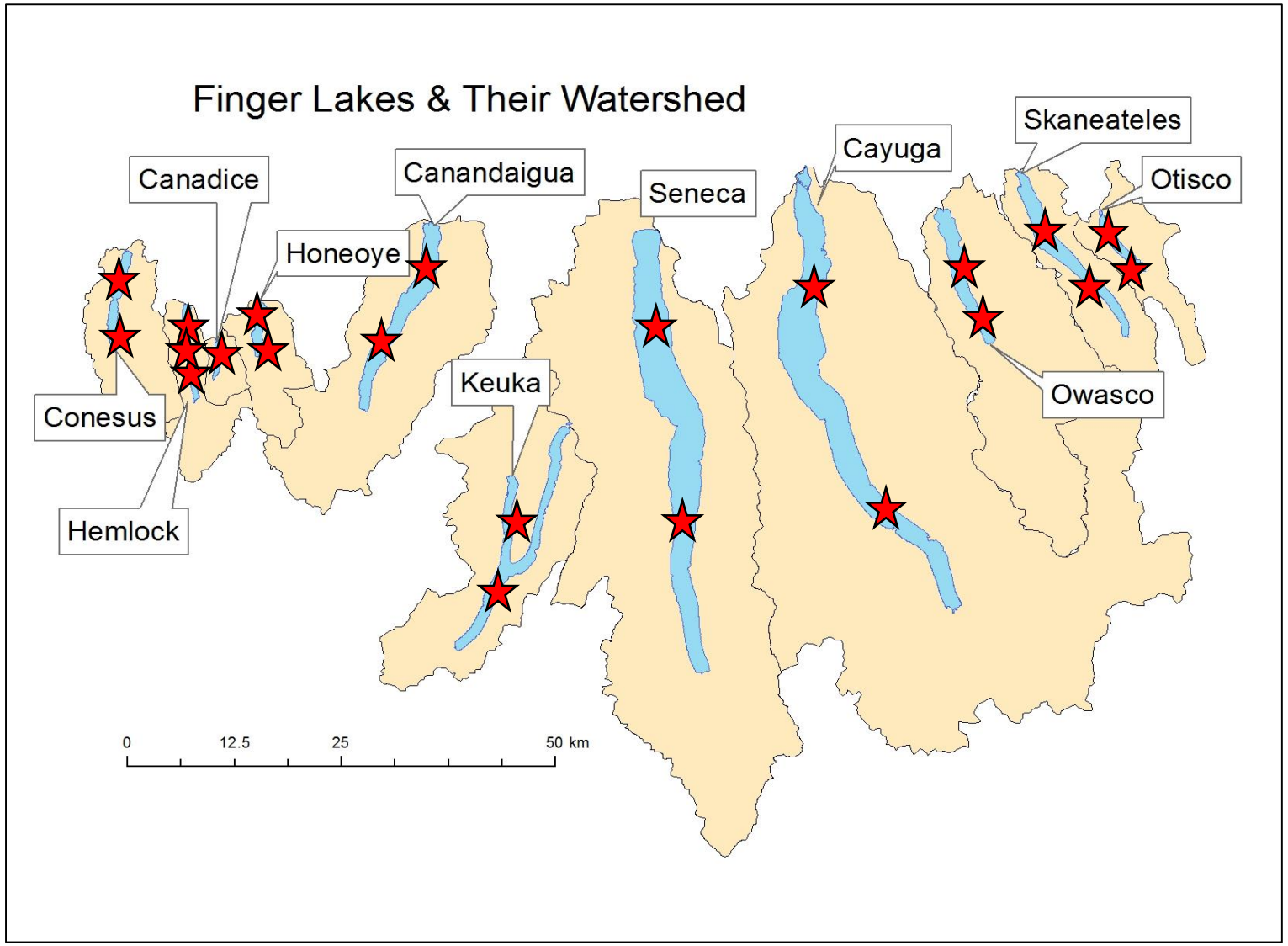
# 2017: CSLAP in the Finger Lakes

22 Locations on 11 lakes

Twice per month, June – September

Analyses:

- Nutrients/forms (phosphorus and nitrogen)
- Chlorophyll-a, algae indicators and toxins
- Clarity (Secchi disk)
- Calcium, pH, conductivity
- Dissolved carbon



# CSLAP Timeline

## AKA: What happens when we actually get what we ask for

**January**: Develop ask for CSLAP in Finger Lakes

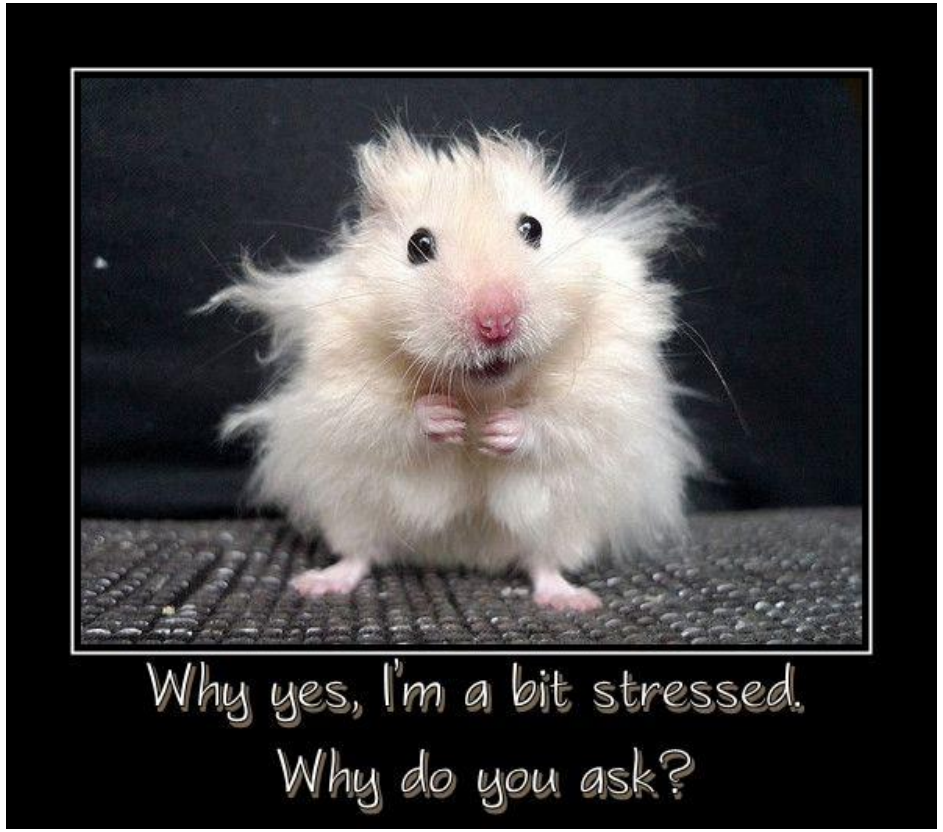
**February**: Submitted for funding under EPF

**April**: NYS Budget Passed-funding approved

**April-May**: Contracting, recruitment, ordering, site selection, etc

**May/June**: Trainings (3)

**June-September/October**: Sampling



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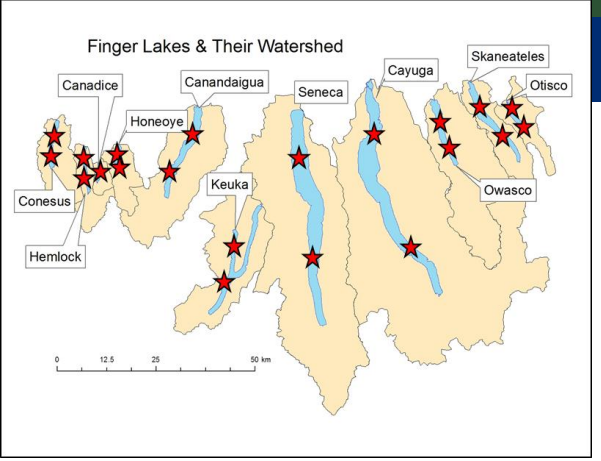
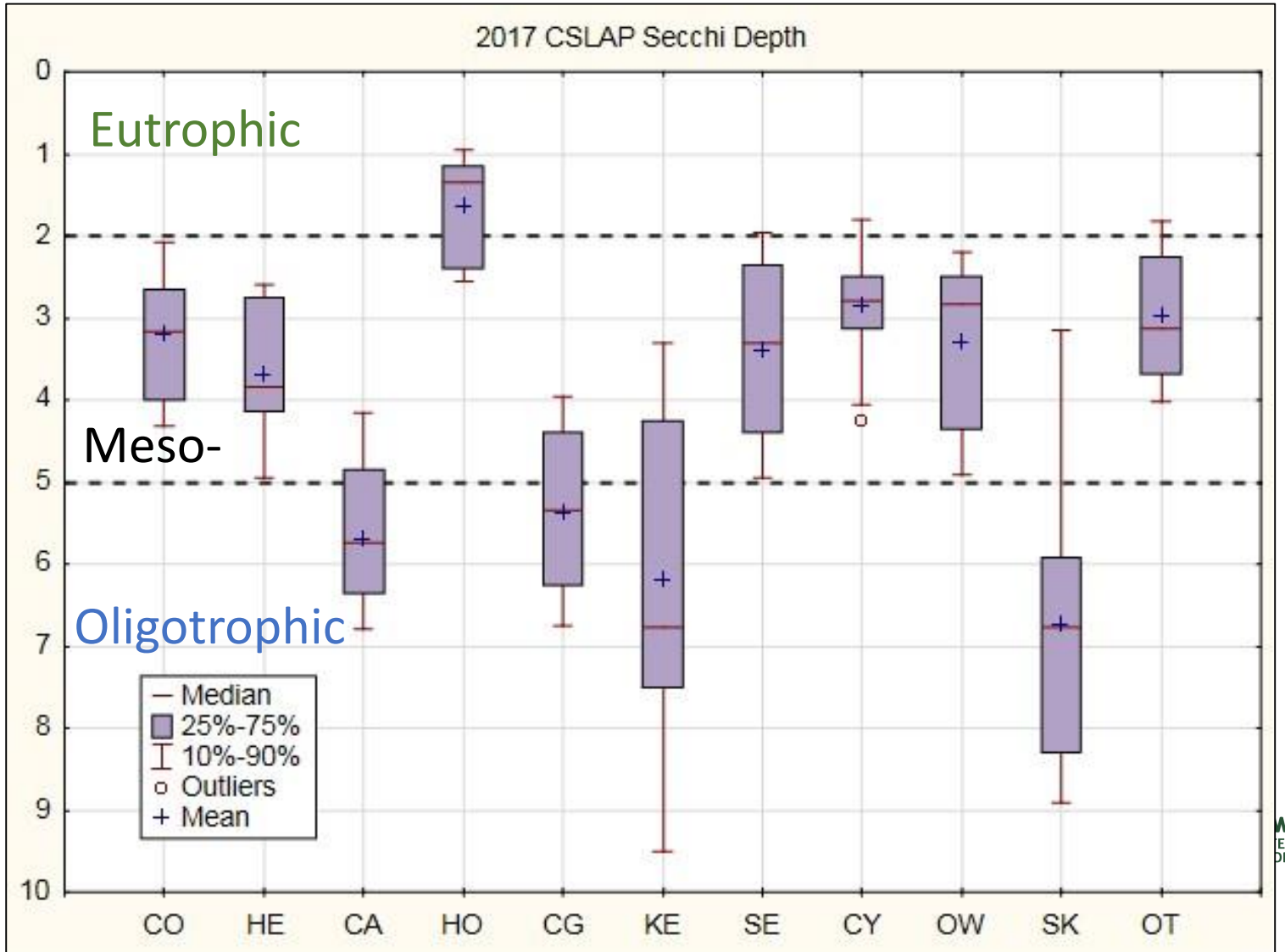
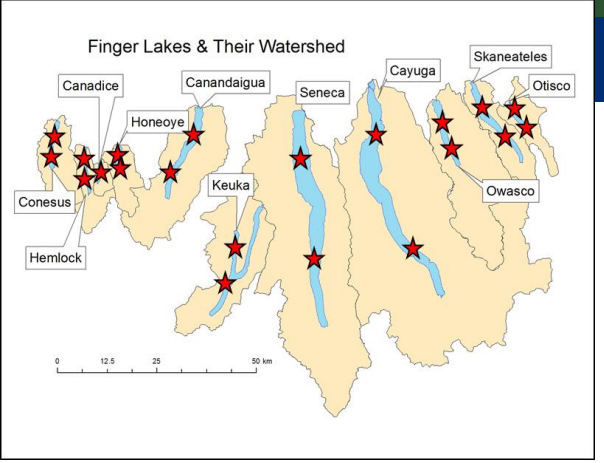


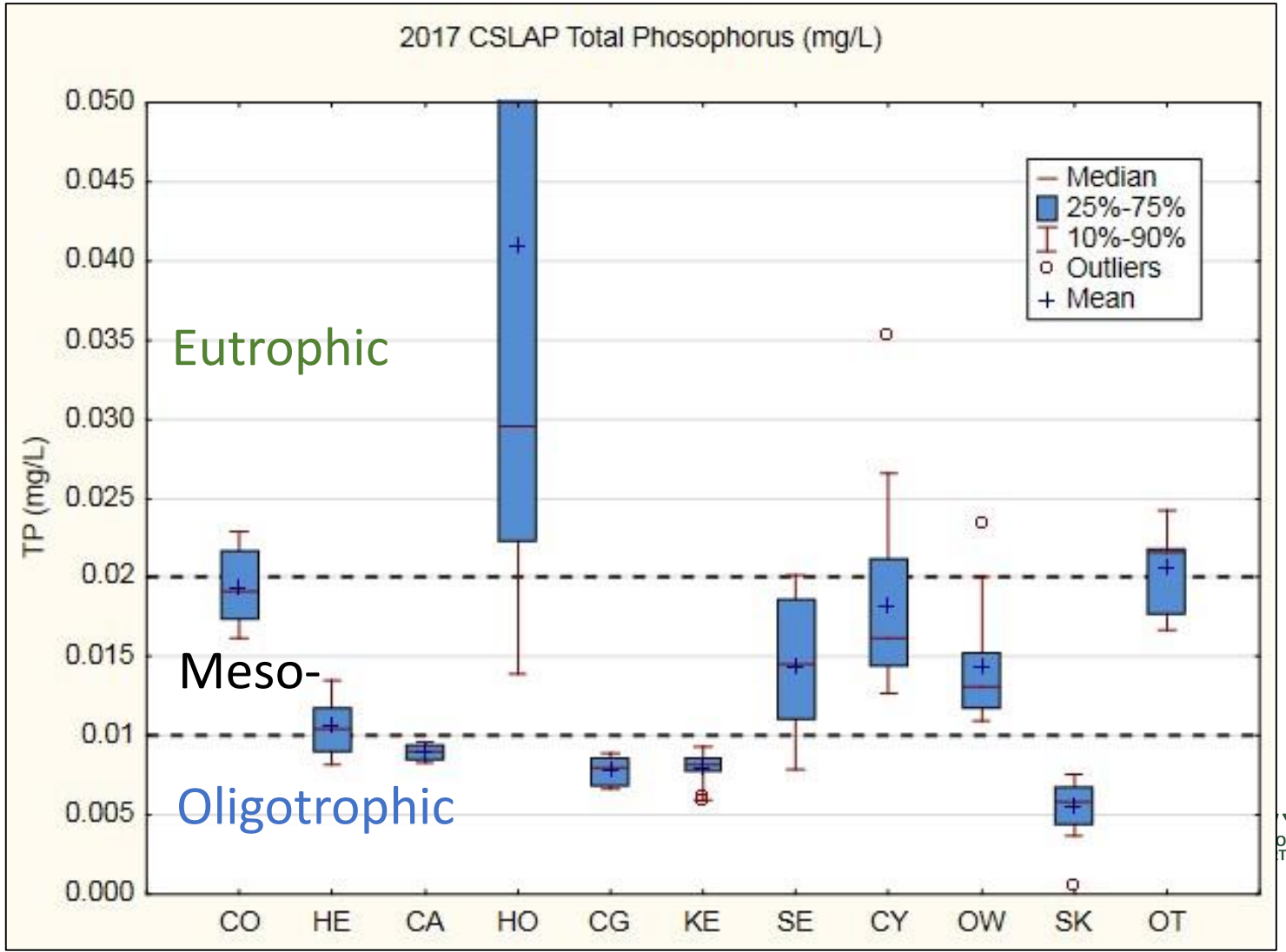




| 2017 NYS Stats (Summer) | Secchi Disc (m) |
|---|---|
| NYS Mean | 3.3 |
| NYS Range | < 1 – > 9 |




# 2017: CSLAP in the Finger Lakes

| 2017 NYS Stats (Summer) | TP (mg/L) |
|---|---|
| NYS Mean | 0.028 |
| NYS Range | 0.004 – > 0.3 |



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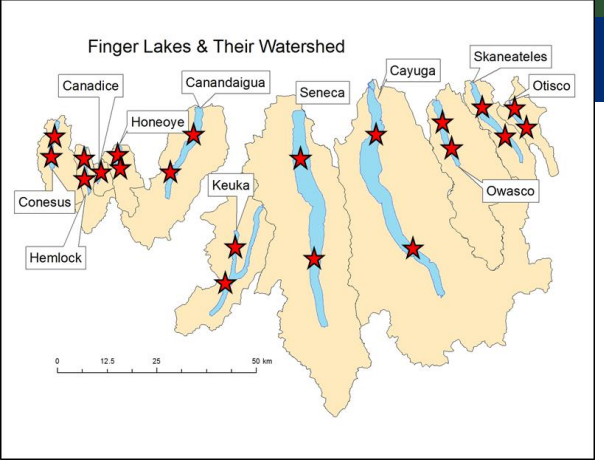
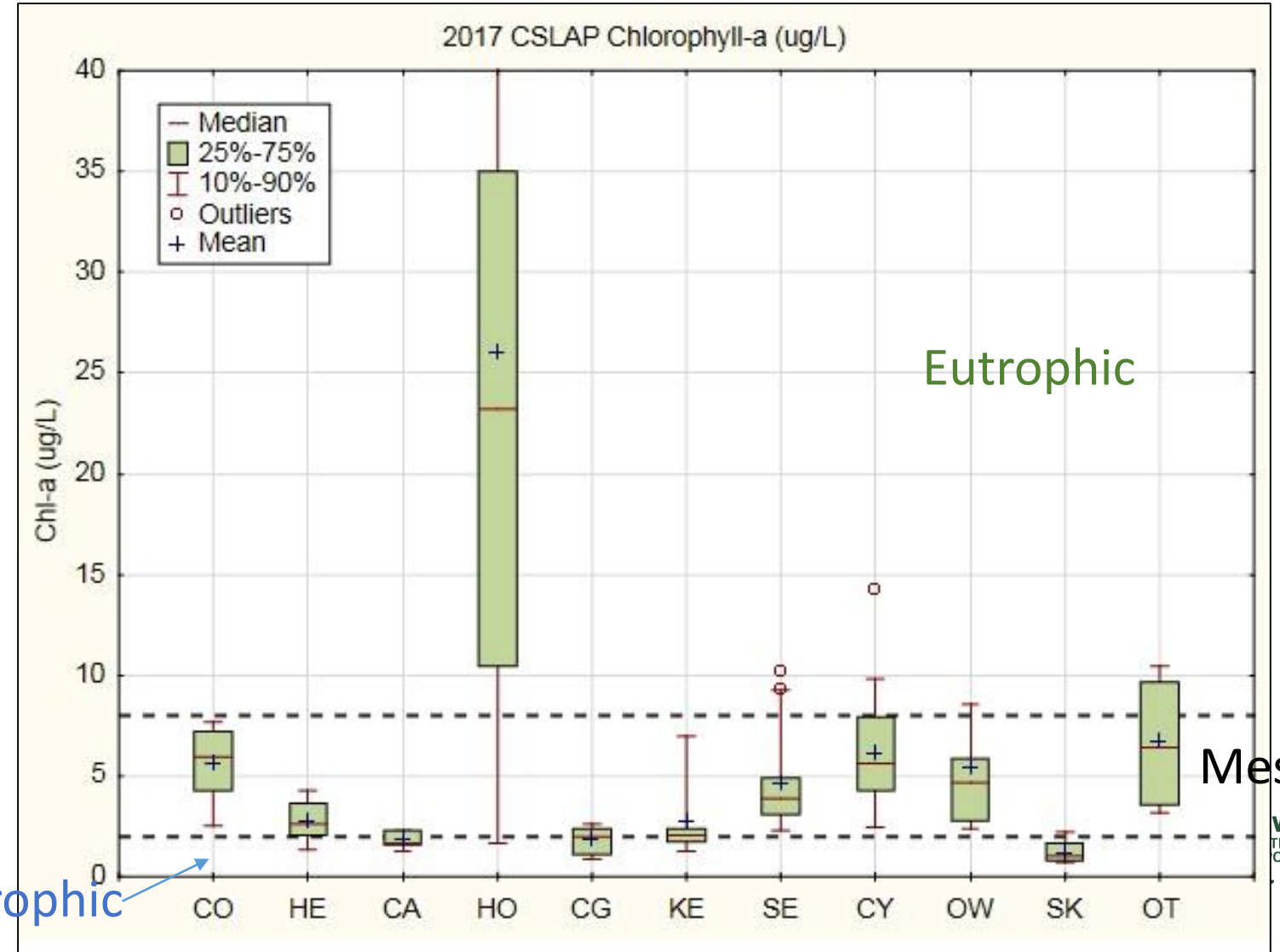



| 2017 NYS Stats (Summer) | Chl-a (ug/L) |
|---|---|
| NYS Mean | 9.1 |
| NYS Range | 0.3 – > 50 |

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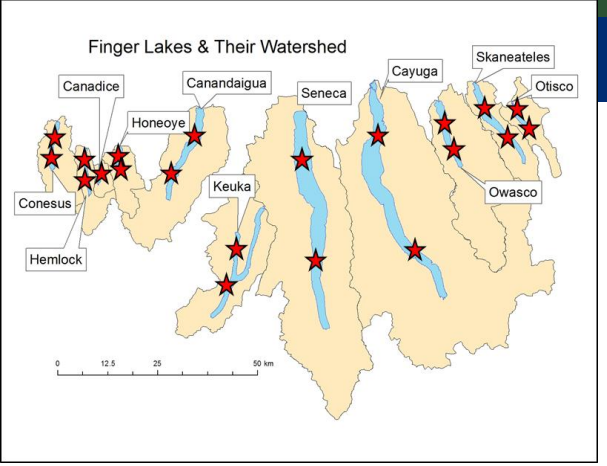
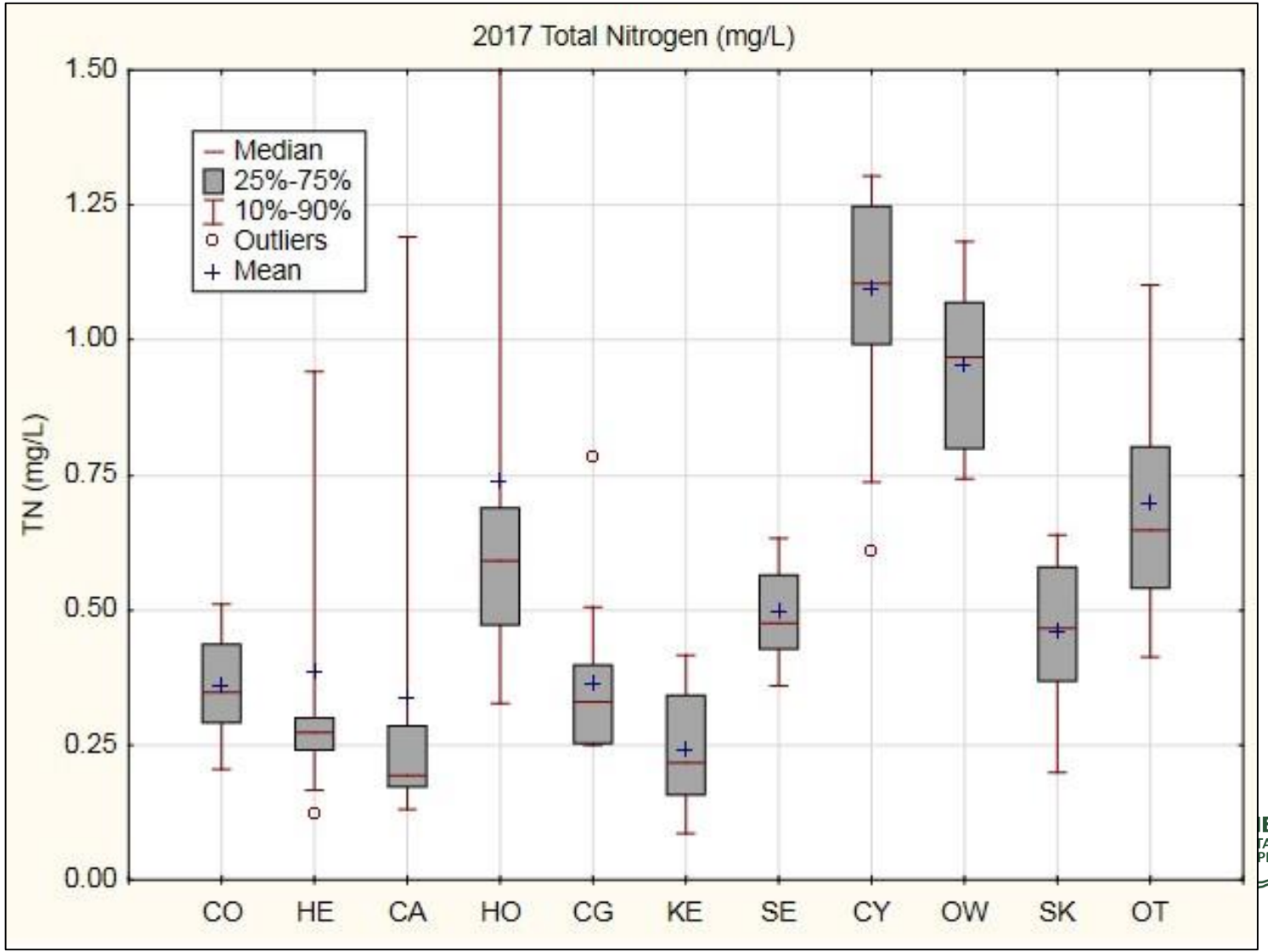



| 2017 NYS Stats | TN (mg/L) |
|---|---|
| NYS Mean | 0.54 |
| NYS Range | 0.13 – >1.5 |

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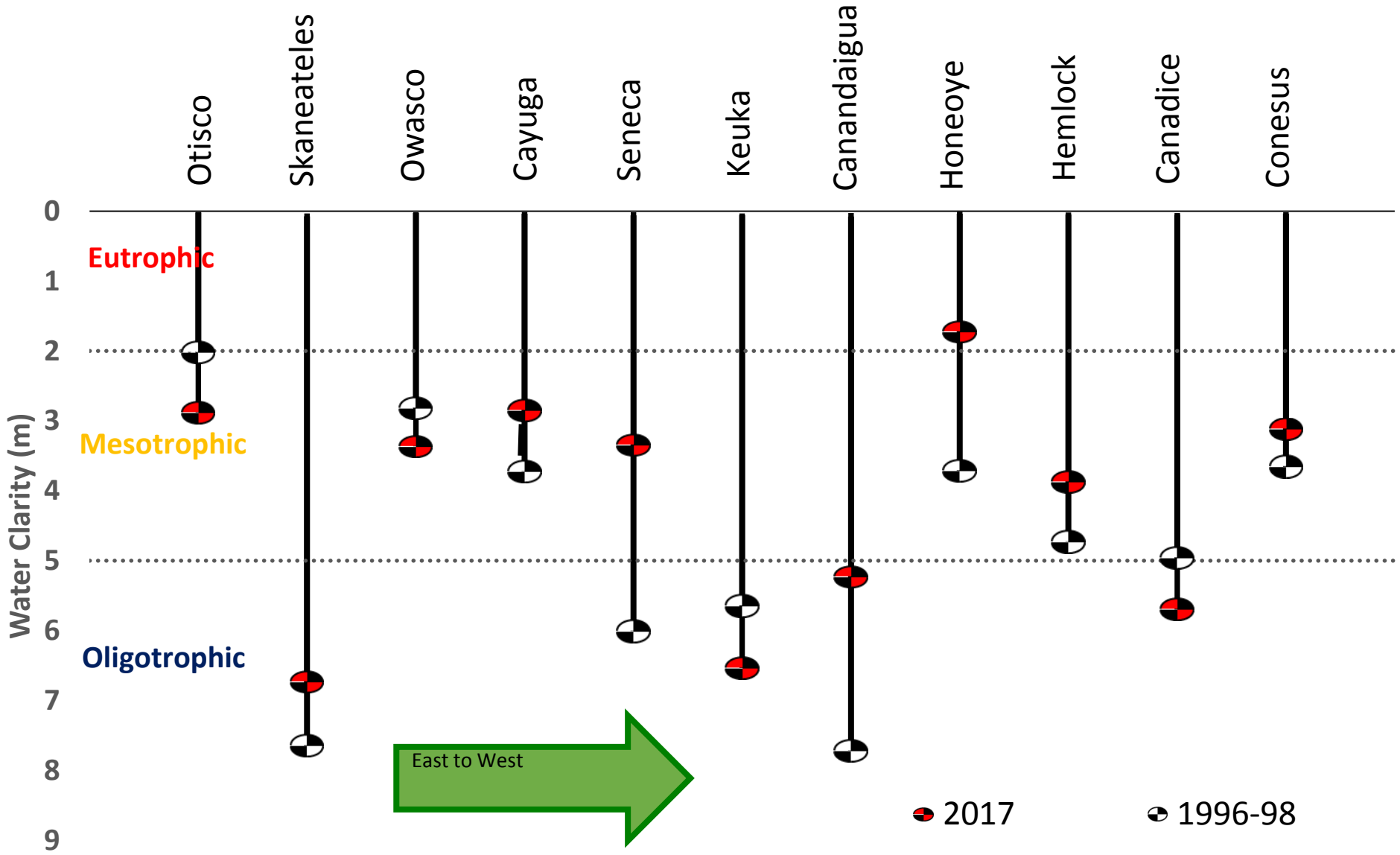
# Putting the Pieces Together

Carlson's Trophic State Index (TSI)

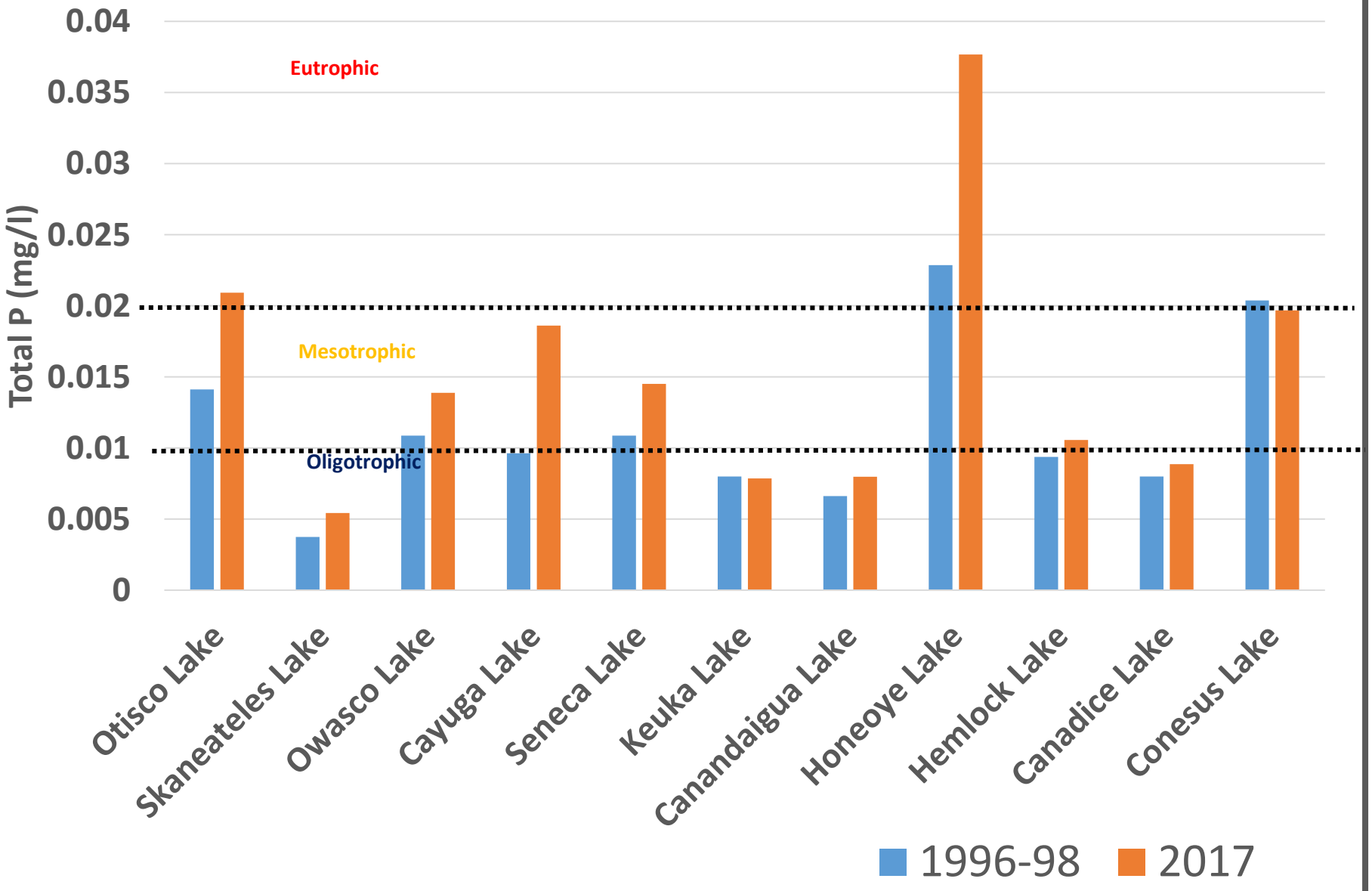
- Numerical score for determining a lake's water quality
  - developed in the 1970's

| Lake | Average TSI | Trophic State |
|---|---|---|
| Skaneateles | 34 | Oligo |
| Keuka | 36 | Oligo |
| Canadice | 36 | Oligo |
| Canandaigua | 36 | Oligo |
| Hemlock | 40 | Meso |
| Seneca | 44 | Meso |
| Owasco | 44 | Meso |
| Conesus | 46 | Meso |
| Cayuga | 46 | Meso |
| Otisco | 48 | Meso |
| Honeoye | 56 | Eu |

# Water Clarity Comparison, 1996-98 to 2017



# TP Comparison 1996-1998, 2017

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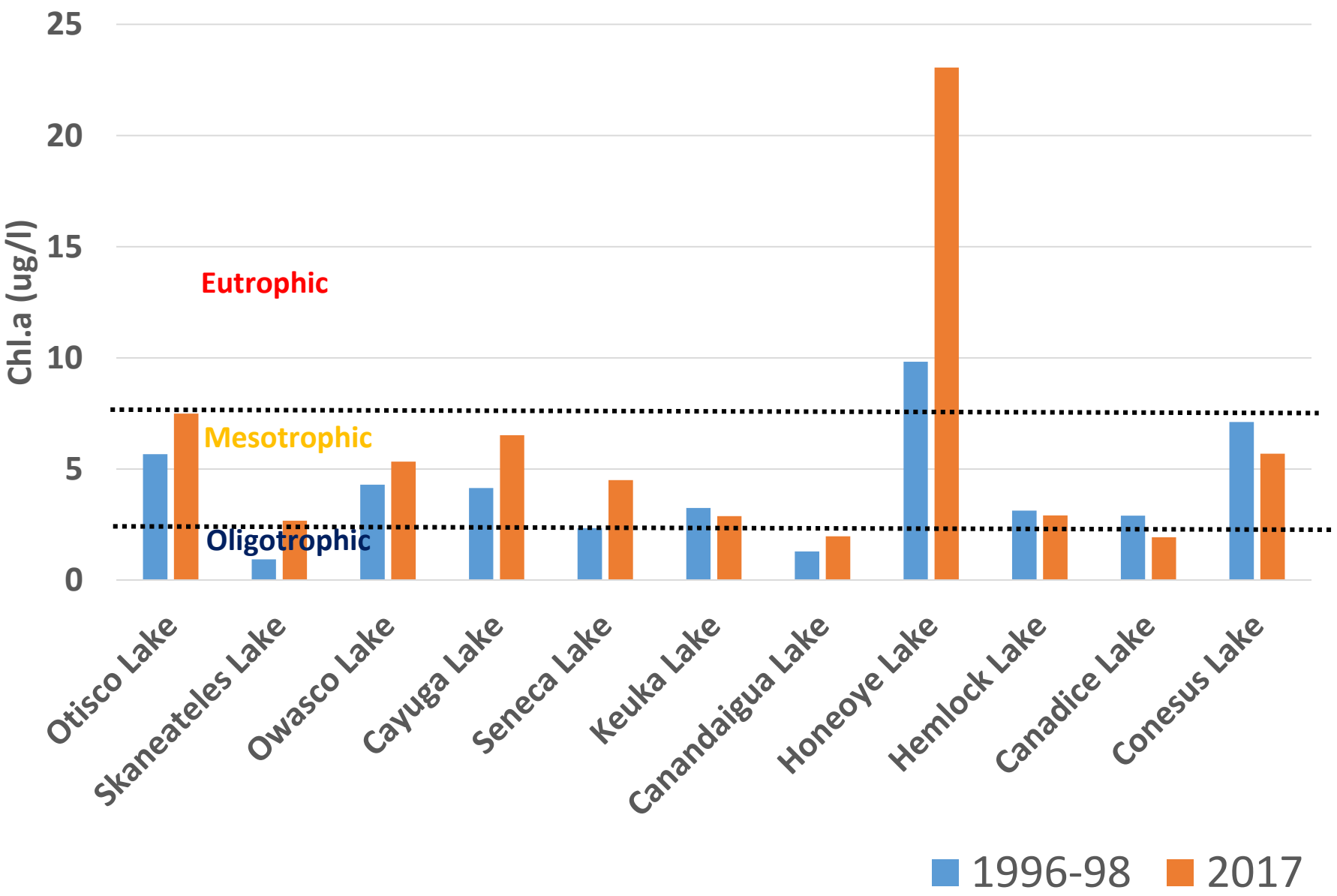
# Chl.a Comparison 1996-1998, 2017

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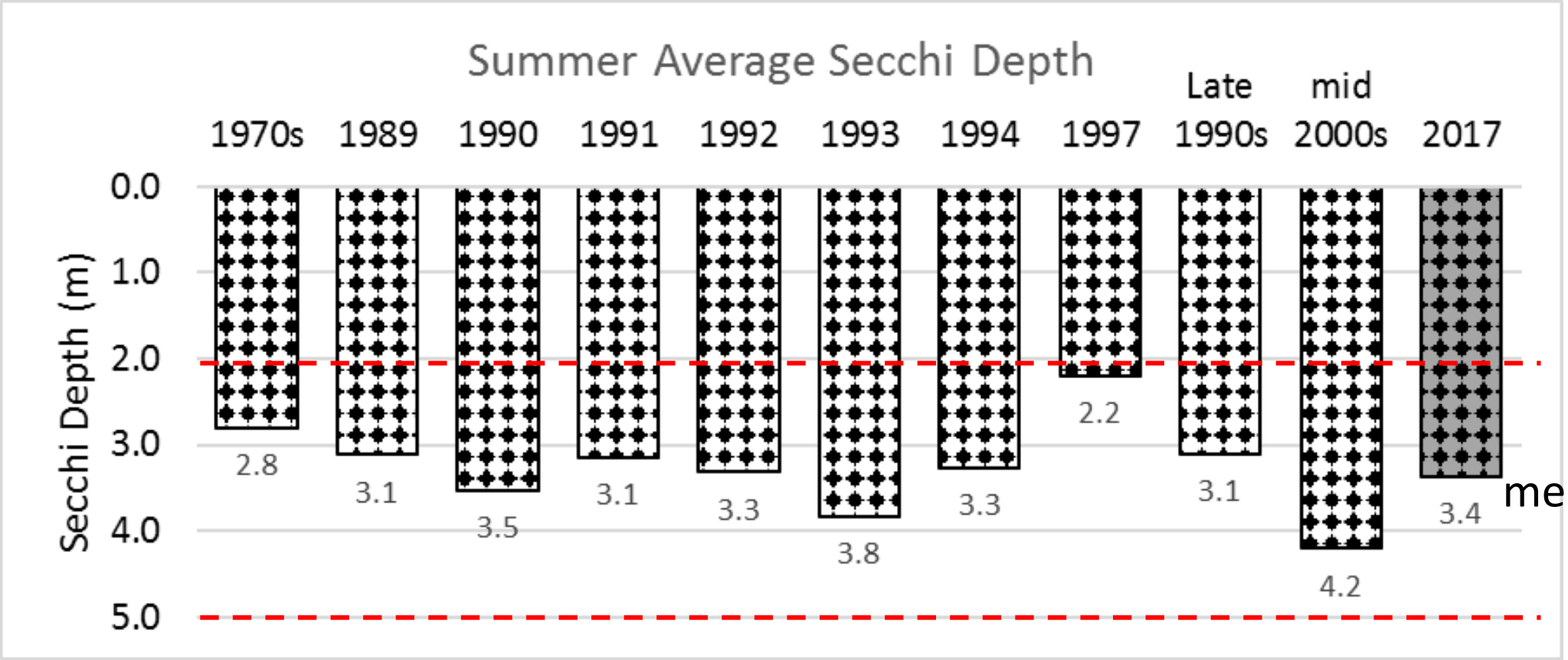
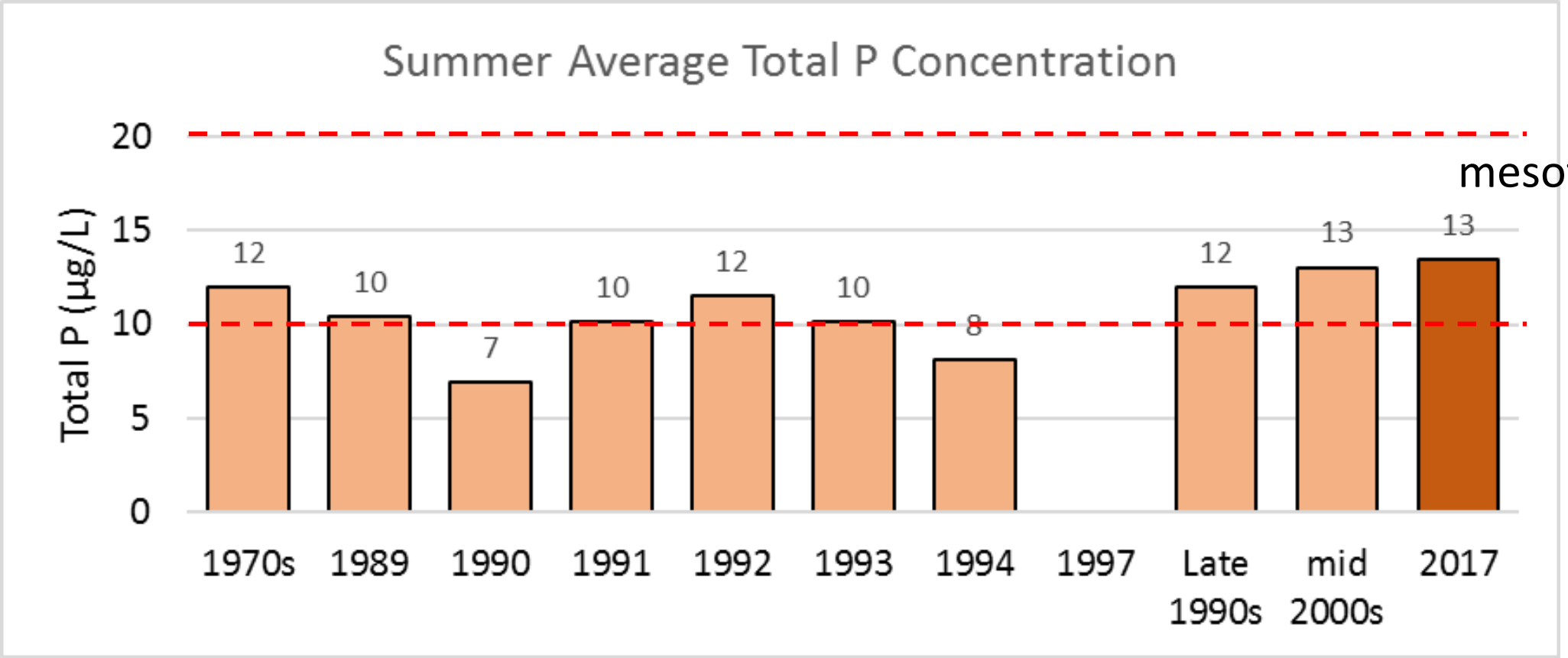
# Owasco Lake




mesotrophy

# Owasco Lake

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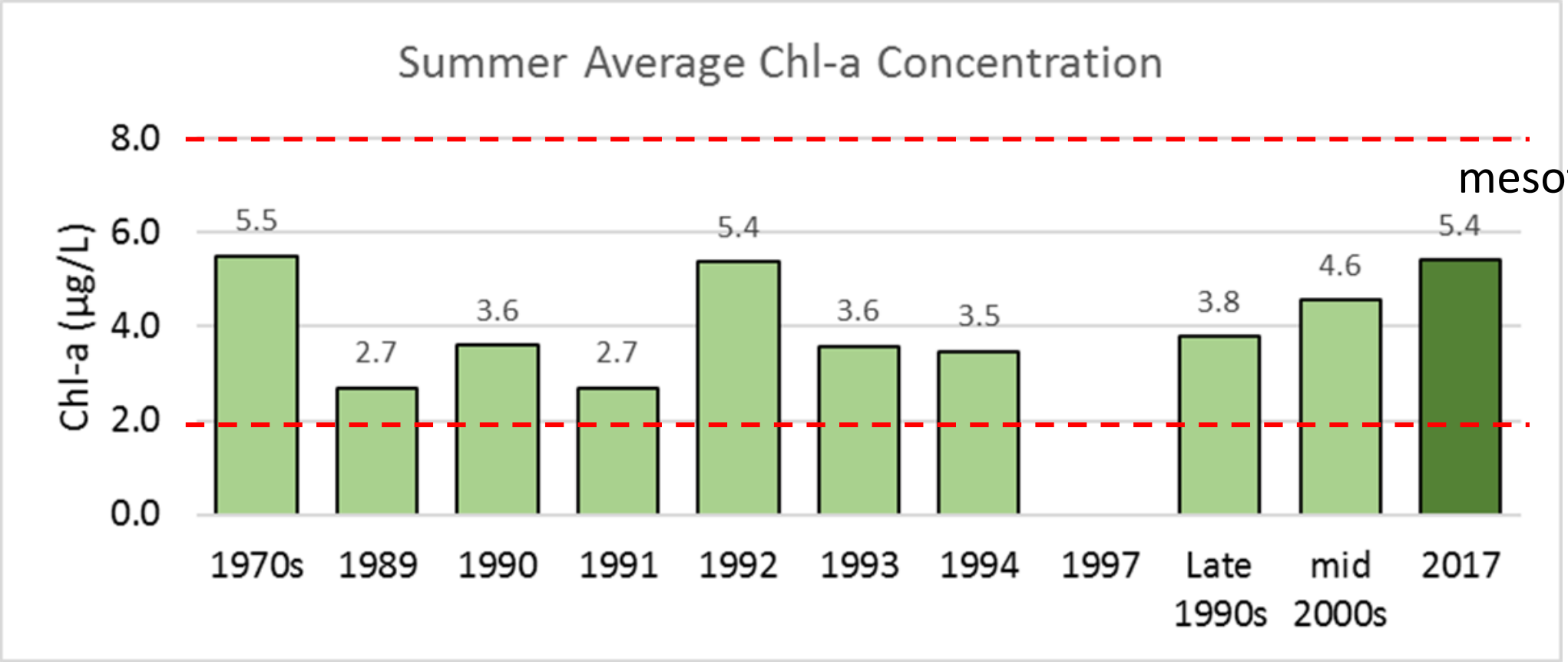


mesotrophy

# Historic CSLAP data

| Lake | CSLAP Years |
|---|---|
| Conesus | 1986-1991, 2017 |
| Hemlock | 2017 |
| Canadice | 2017 |
| Honeoye | 1996-2000, 2017 |
| Canandaigua | 2017 |
| Keuka | 2017 |
| Seneca | 1991-1996, 2017 |
| Cayuga | 2002-2007, 2017 |
| Owasco | 1989-1994, 2017 |
| Skaneateles | 1997-2001, 2017 |
| Otisco | 2017 |

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# Lessons Learned

- Long-term data sets are incredibly important – especially for HABs research
  - Temperature?
  - Nutrients?
  - Trophic State?

# The Finger Lakes in 2017

All 11 Finger Lakes had algal blooms in 2017

| Lake | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|
| Otisco | | | | S | | C |
| Skaneateles | | | | | | HT |
| Owasco | | HT | HT | HT | HT | HT |
| Cayuga | | | C | | C | HT |
| Seneca | | | | HT | HT | HT |
| Keuka | | | | | | HT |
| Canandaigua | | | | HT | C | HT |
| Honeoye | S | HT | HT | HT | C | C |
| Canadice | | | | | | C |
| Hemlock | | | | | | C |
| Conesus | | | S | | C | C |

**S (Suspicious Bloom):** DEC staff determined that conditions fit the description of a cyanobacteria HAB based on visual observations and/or digital photographs

**C (Confirmed Bloom):** Water sampling results have confirmed the presence of a cyanobacteria HAB which may produce toxins

**HT (Confirmed with High Toxins Bloom):** Water sampling results confirmed that there were toxins present in quantities to potentially cause health effects if people or animals came in contact with the water

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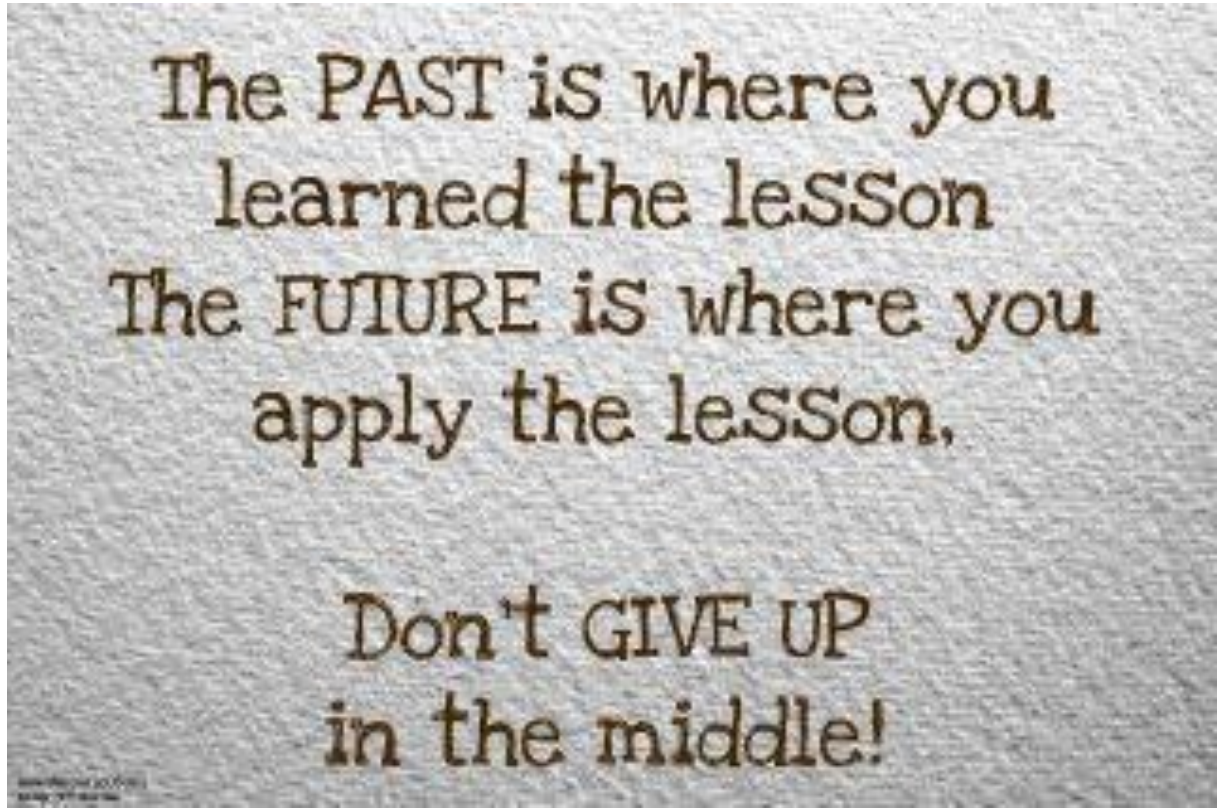
# Governor’s State of the State HABs Initiative

1. Convene four Regional HAB Summits in March 2018
2. HAB Action Plan development guided by steering committees by May 2018
3. Advanced Monitoring and Research
4. Pilot Treatment Technologies

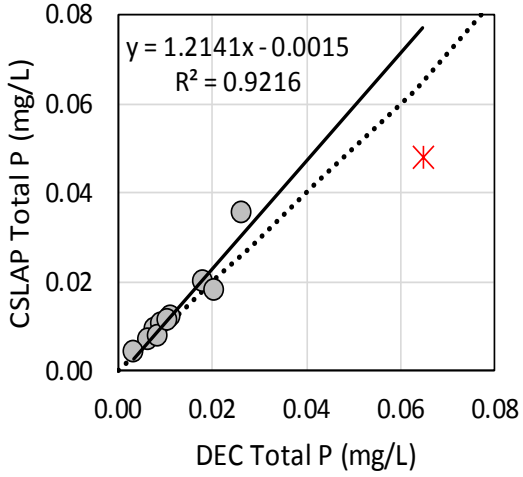
# Lessons Learned

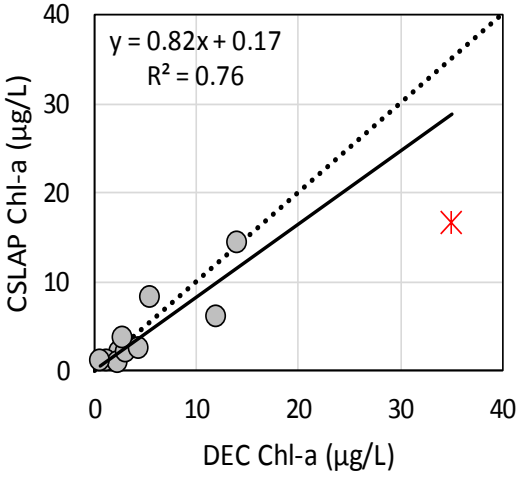
- Non-DEC data
  - ELAP, QAPP, DUAR
- “Special studies” expanded
  - Dissolved nutrients, DOC
- CSLAP interns
- Finger Lakes Regional Report

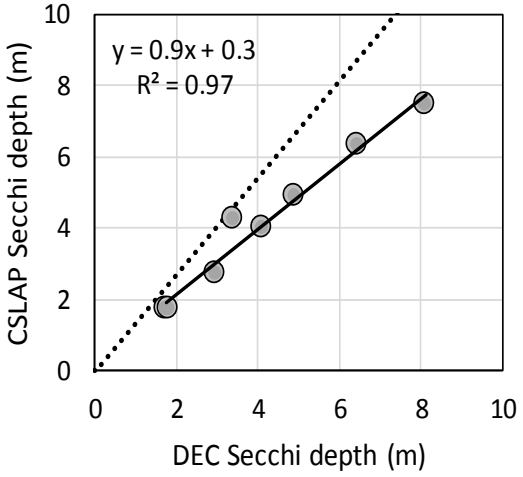


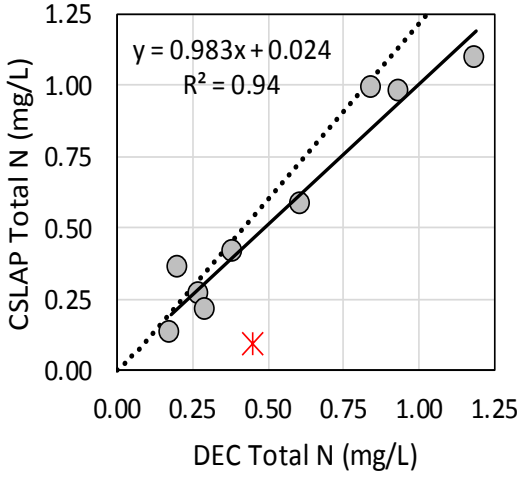
# Lessons Learned

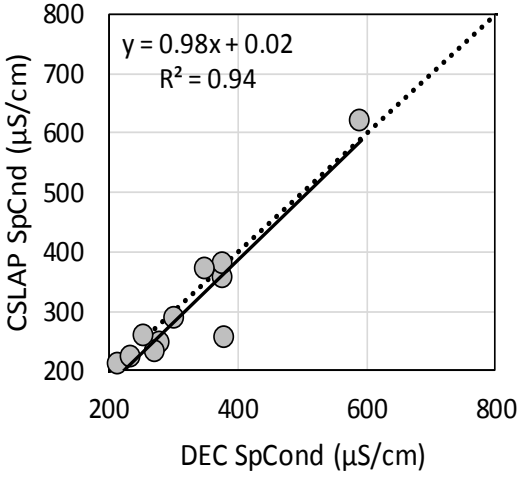
Field visits and duplicate samples



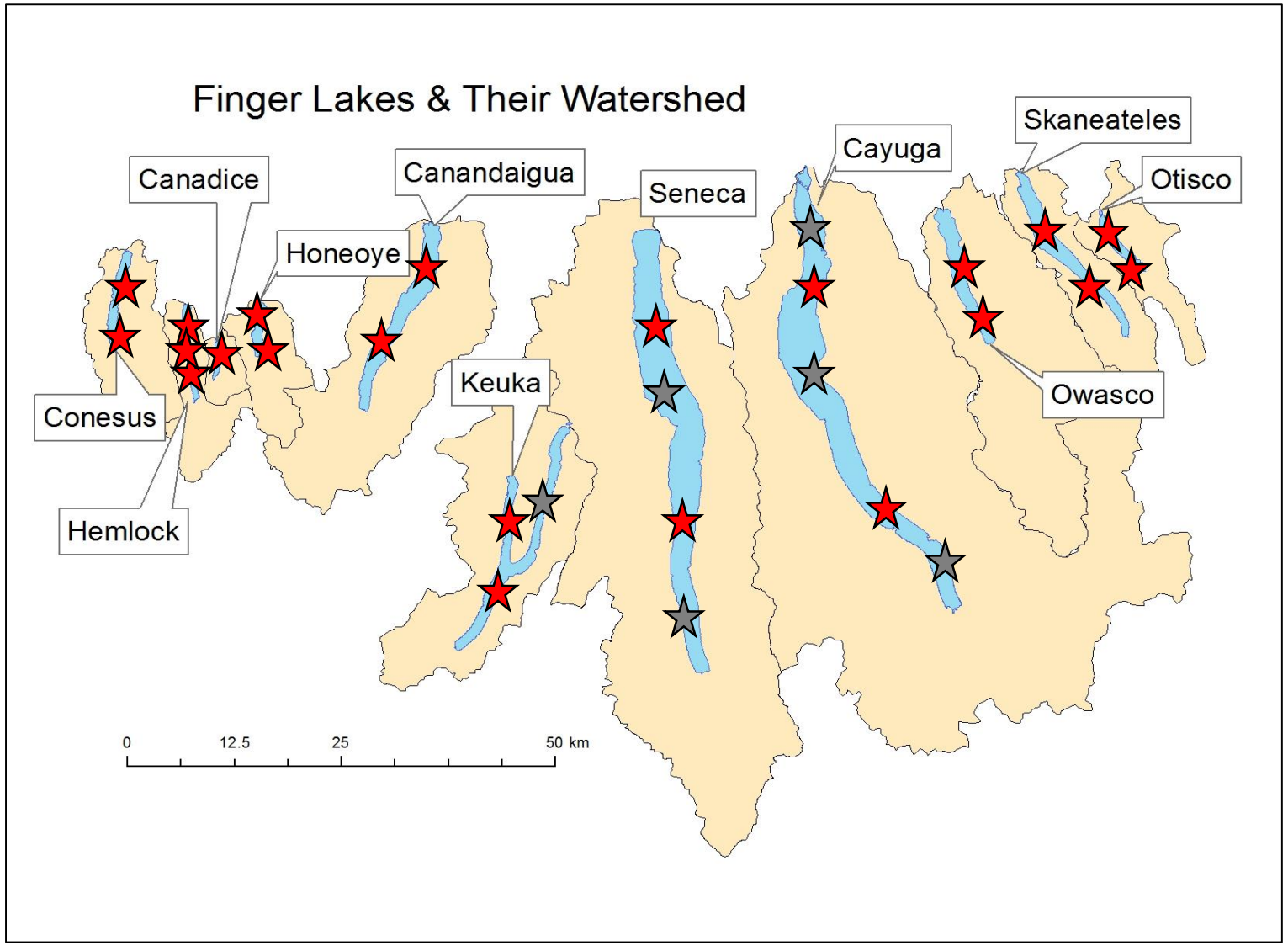



# 2018: CSLAP in the Finger Lakes

- 6 additional sites
- Additional analysis including:
  - SRP-Surface and deep
  - TDP and TDN - Surface and deep
  - DOC for deep samples
  - HAB toxins
  - Hypolimnetic samples (?)
  - Depth Profiles (?)



# NYSDEC Finger Lakes Hub Winter Sampling 2018

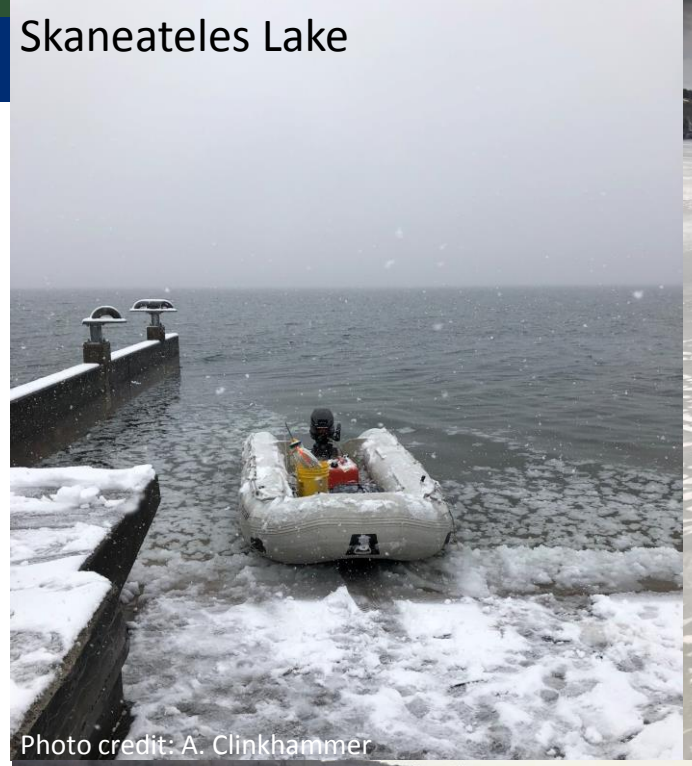


Photo credit: A. Clinkhammer

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Photo credit: L. McCaffrey

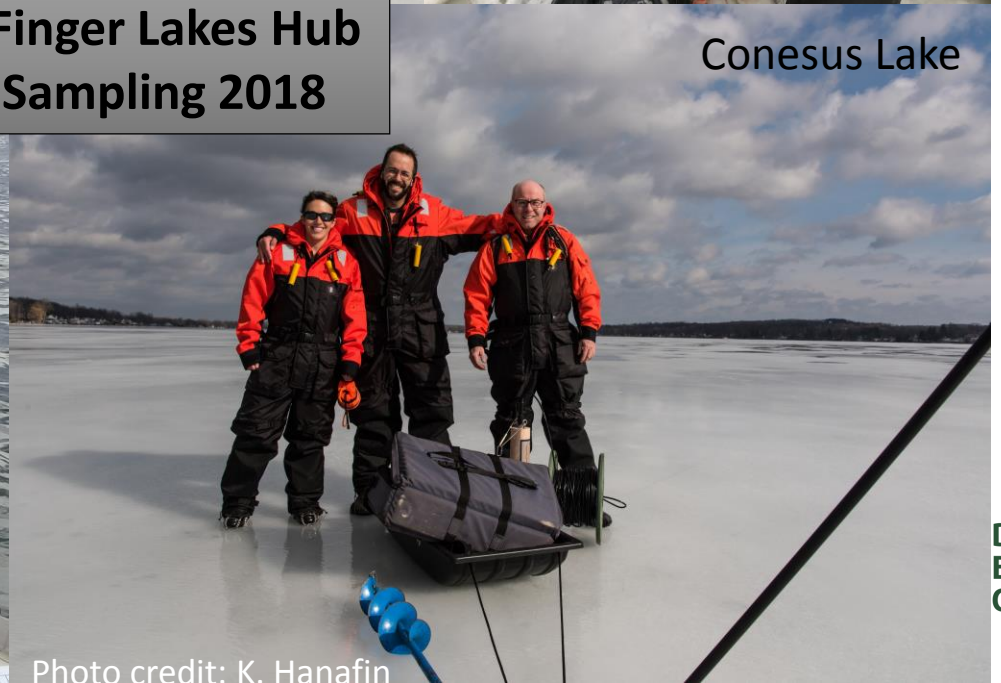

Photo credit: K. Hanafin

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# Thank You!

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315-426-7507

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**Thank you to all of our CSLAP Volunteers!**

Source: Landsat 8

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