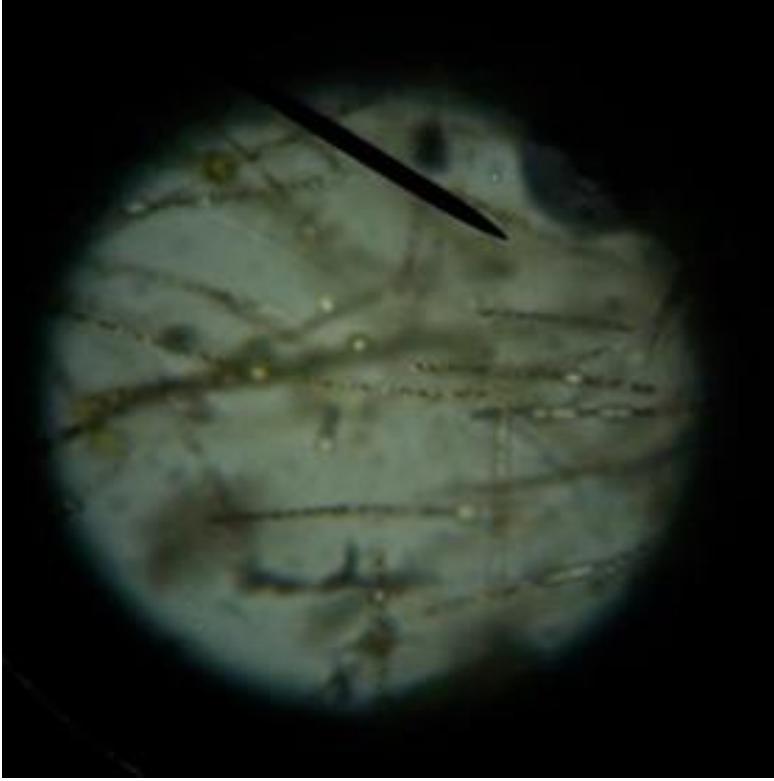


Phytoplankton Nutrient Response in Oyster Pond: Identification of Cyanobacteria and Potential for Future Blooms

Kristy Sullivan (Wheaton College, MA)

Mentor: Kristin Gribble, Ph.D.



*What nutrient conditions could stimulate
a bloom next summer?*

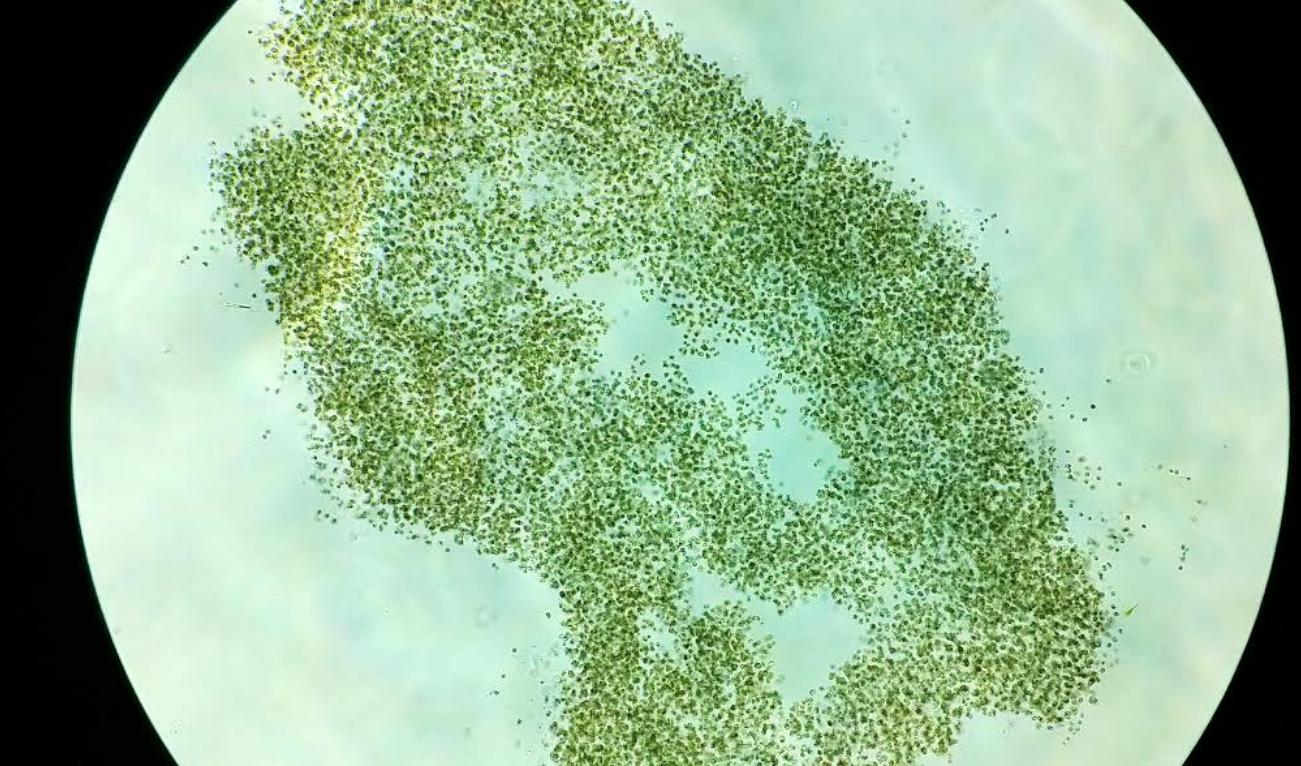
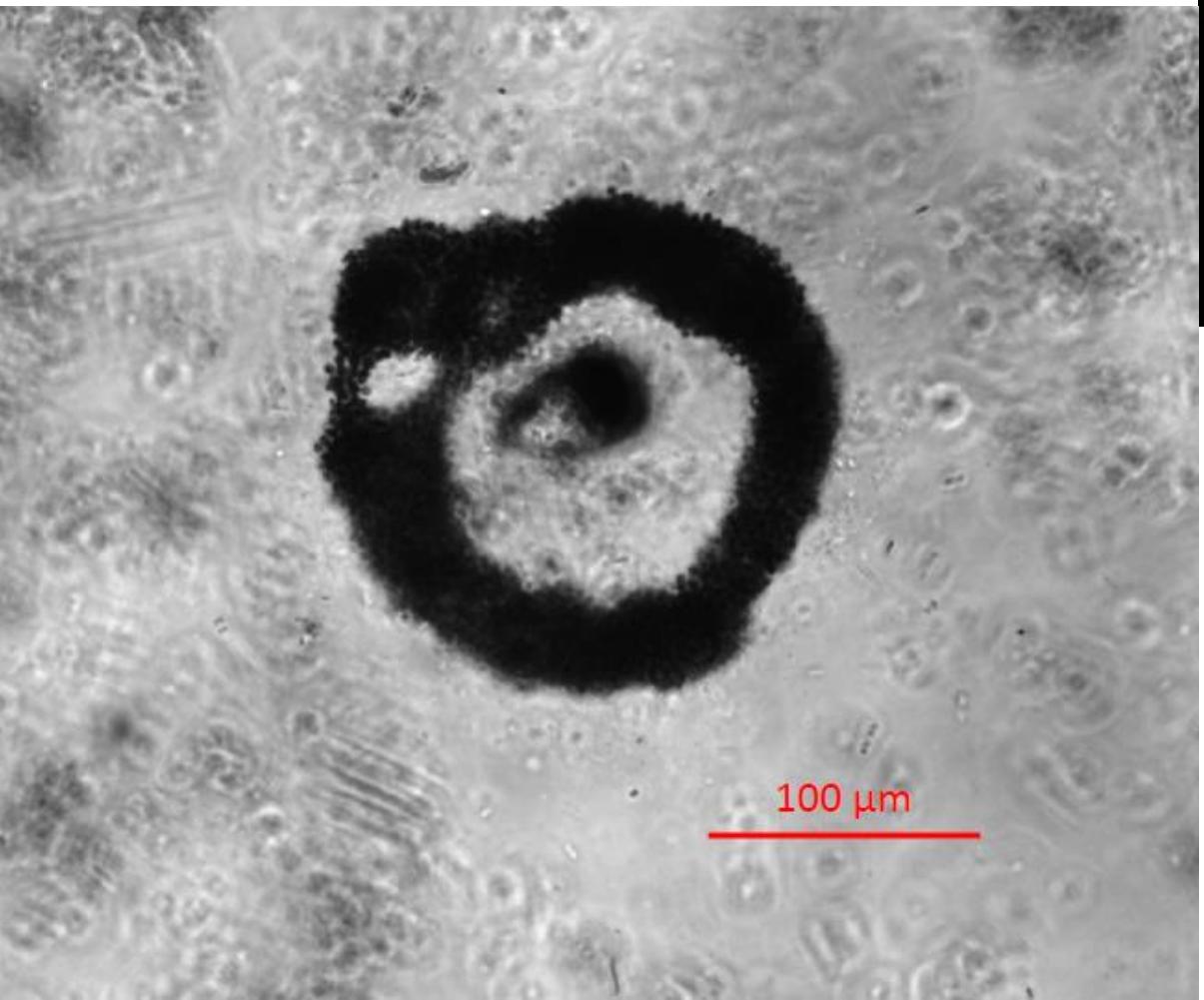
*Are cyanobacteria present in the water and/or
overwintering in the sediment?*



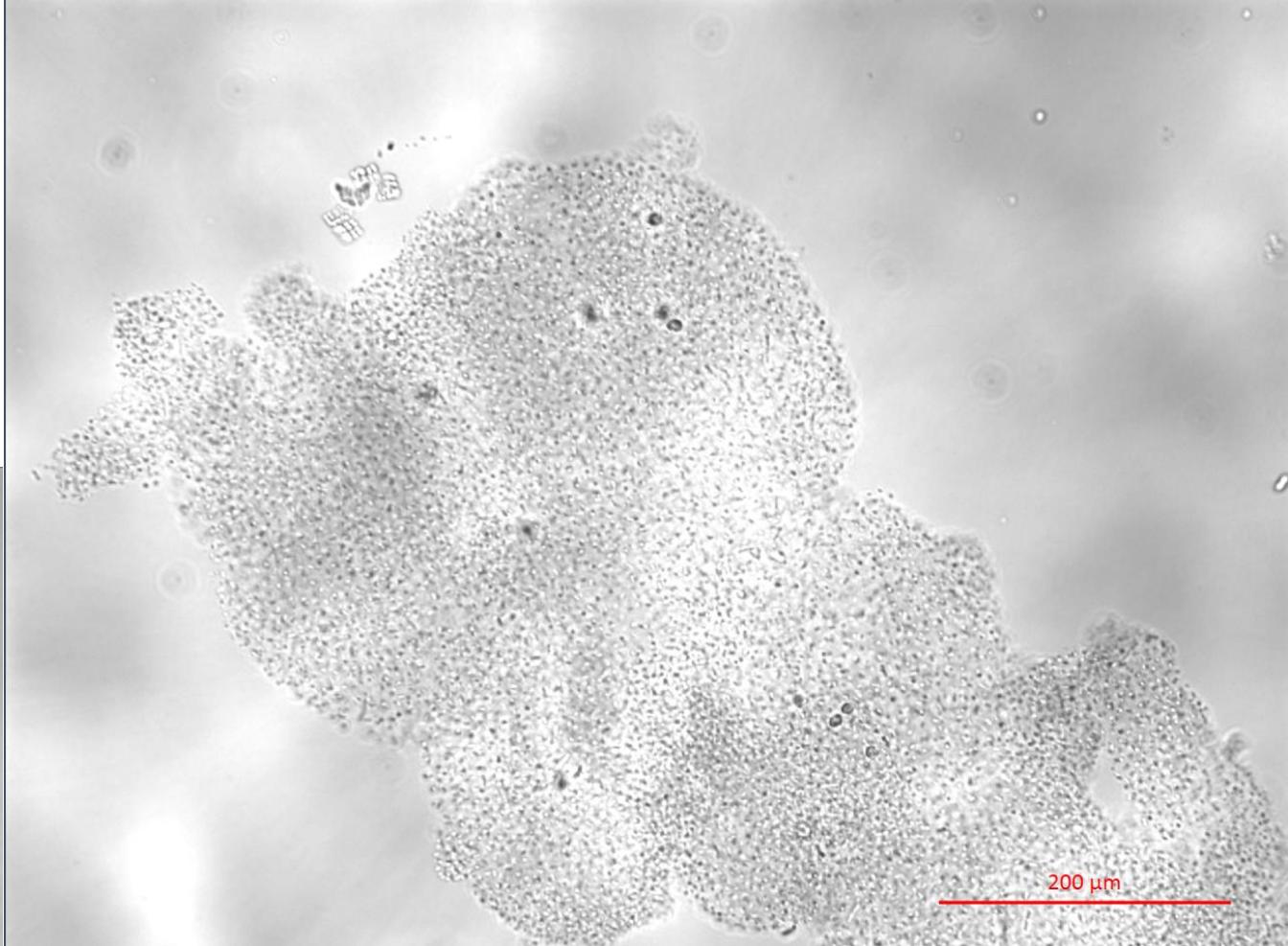
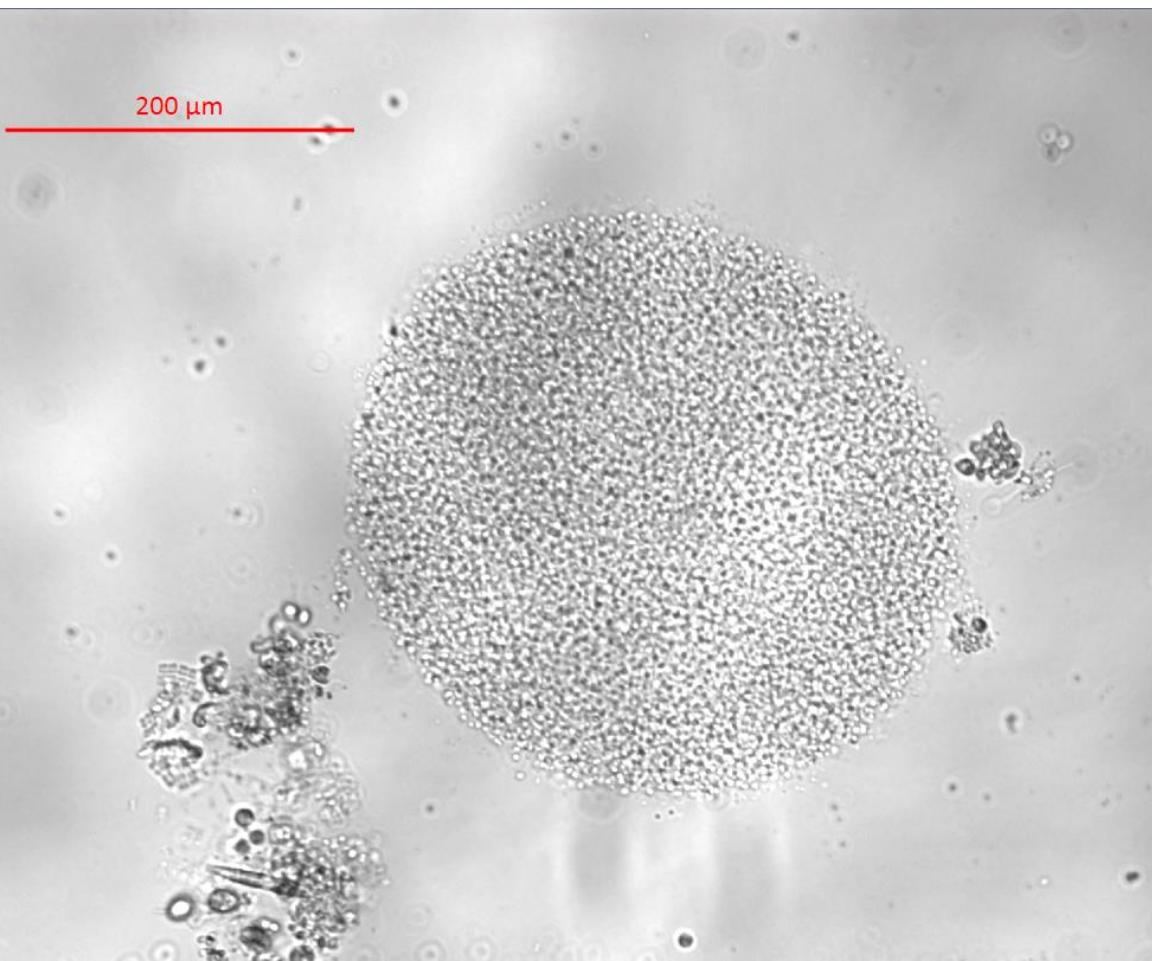
- Oyster Pond water profiles
- Water incubations (Control, P, N, N & P)
- Sediment incubations (Control, P, N, N & P)
 - Fluorescence
 - Cyanobacteria counts
 - Microscopy
 - PCR & sequencing



Microcystis



Aphanocapsa



- Microcystin synthetase gene B (350 bp)
 - Part of 10 gene cluster involved in biosynthesis of microcystin
- 16S rRNA gene (700 bp)

3000 bp

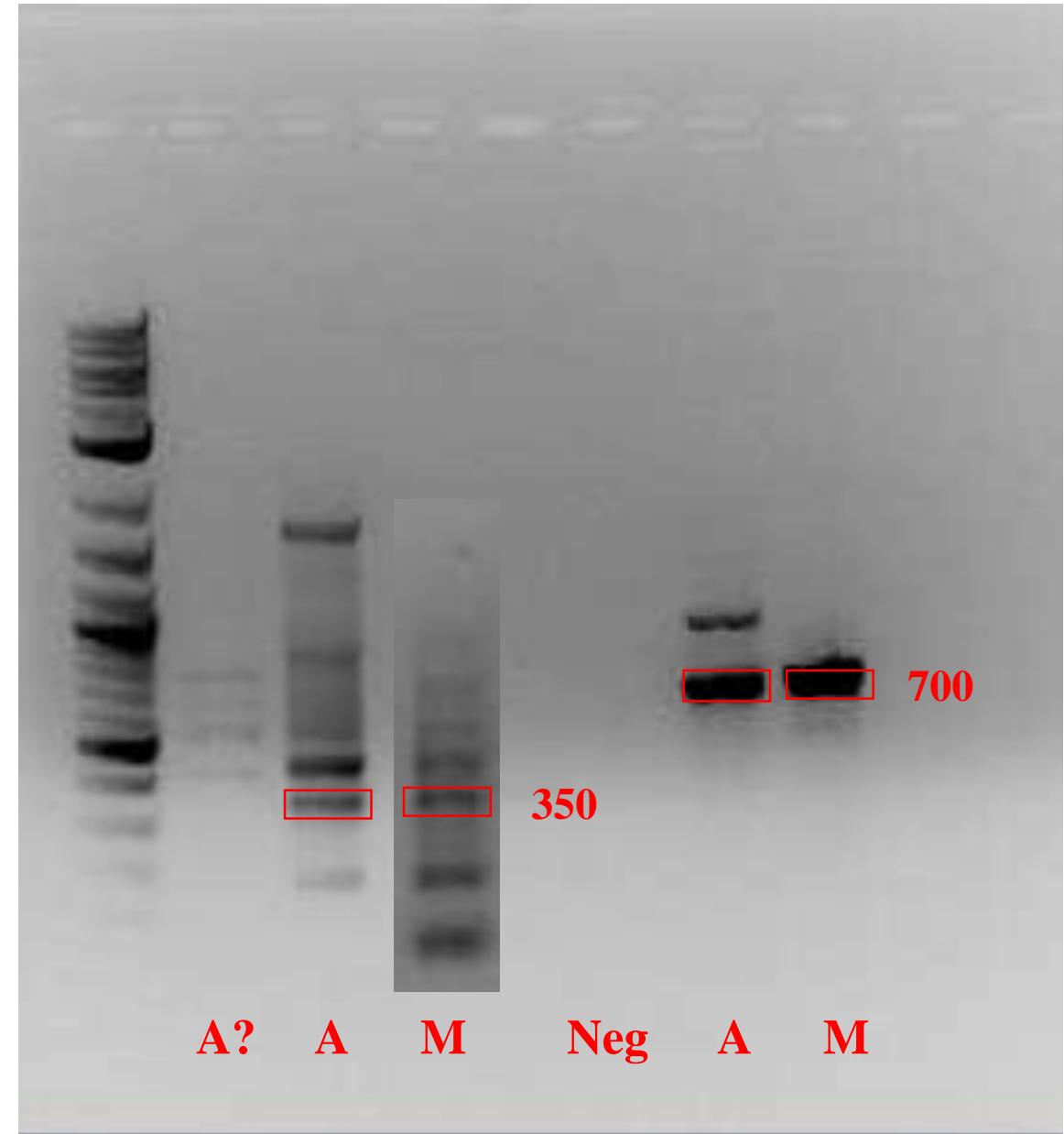
1000 bp

500 bp

A? A M Neg A M

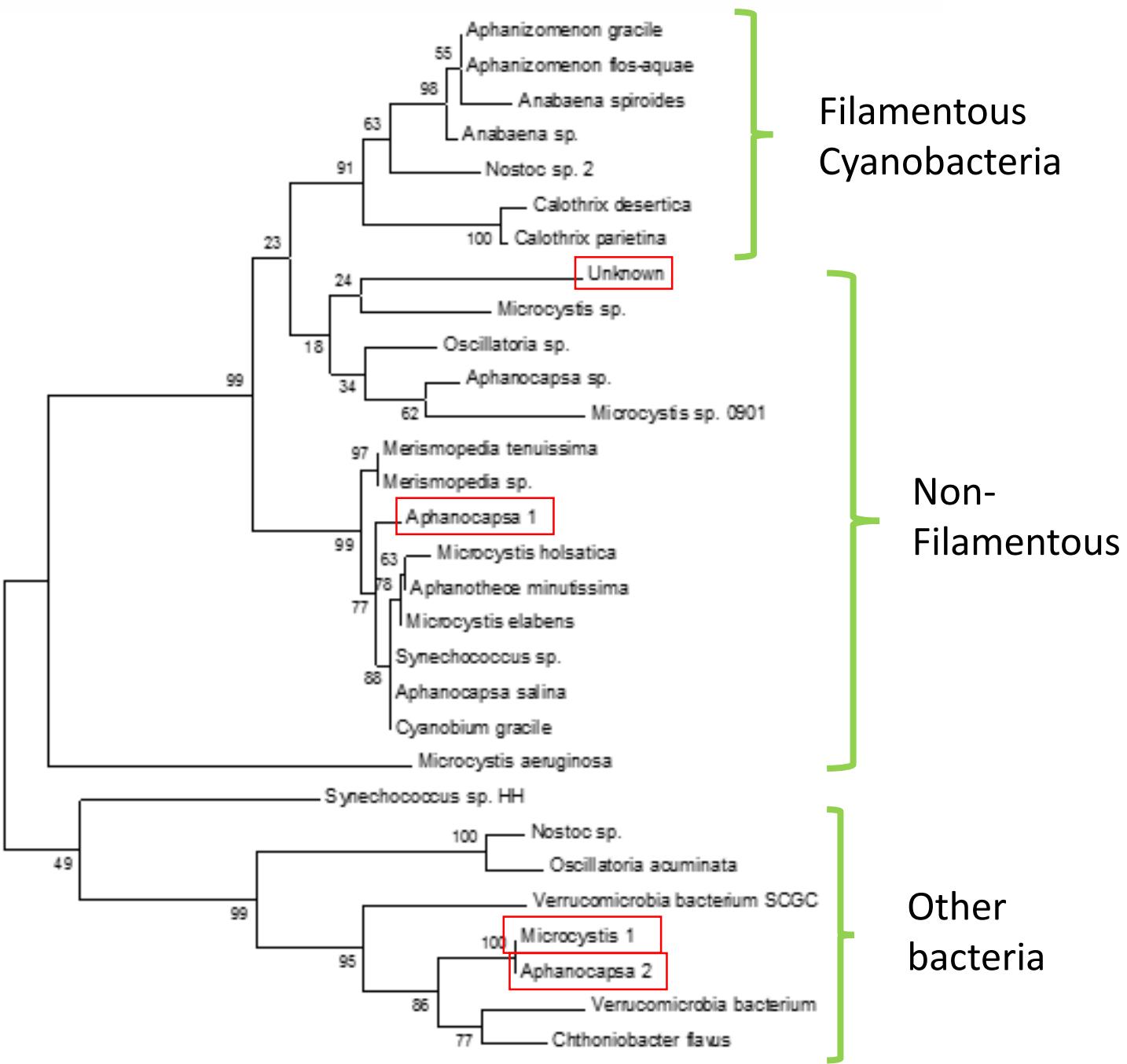
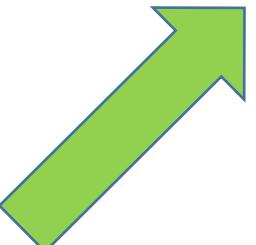
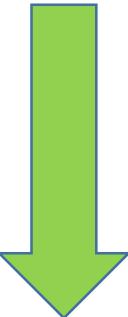
350

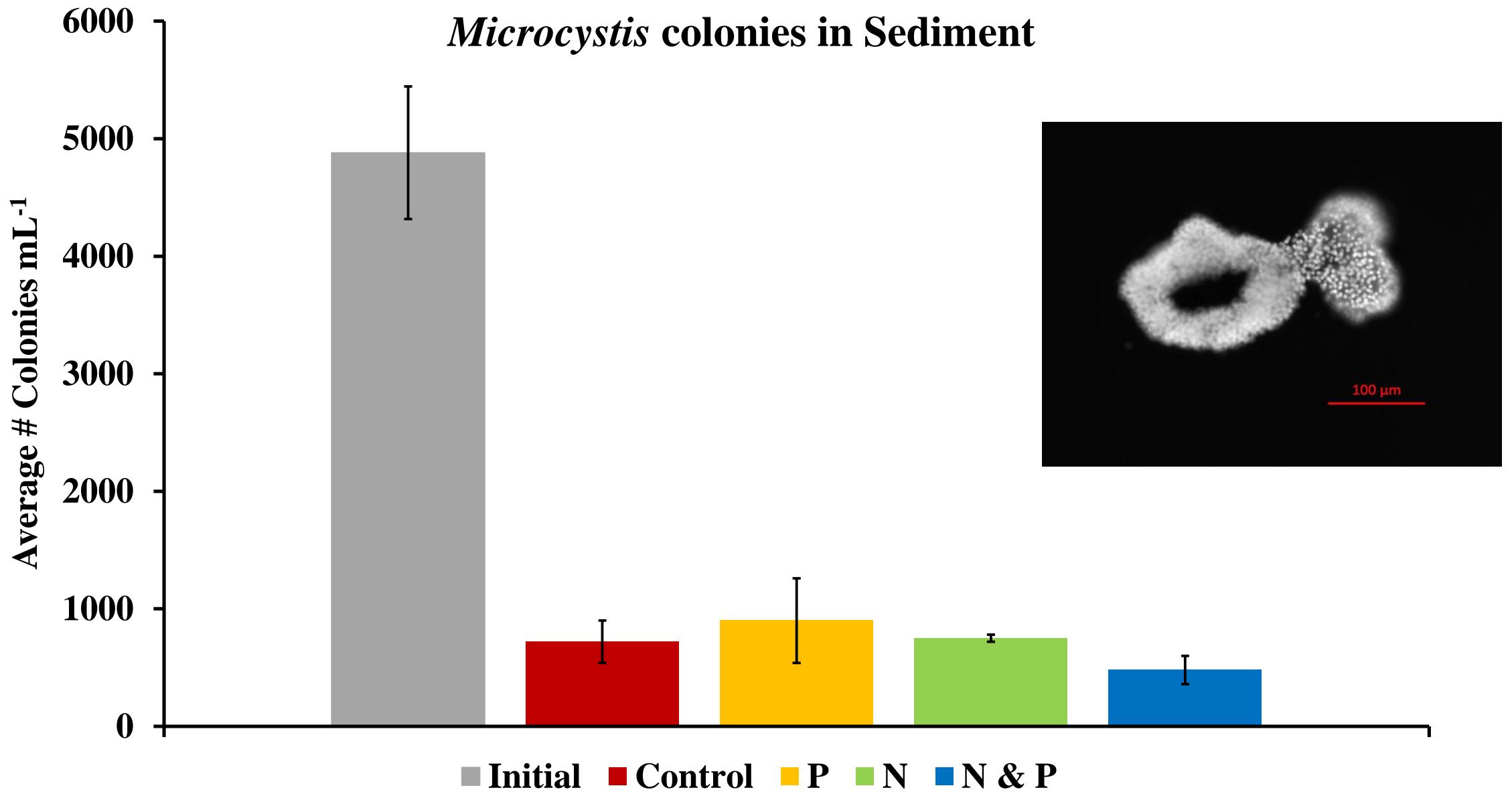
700



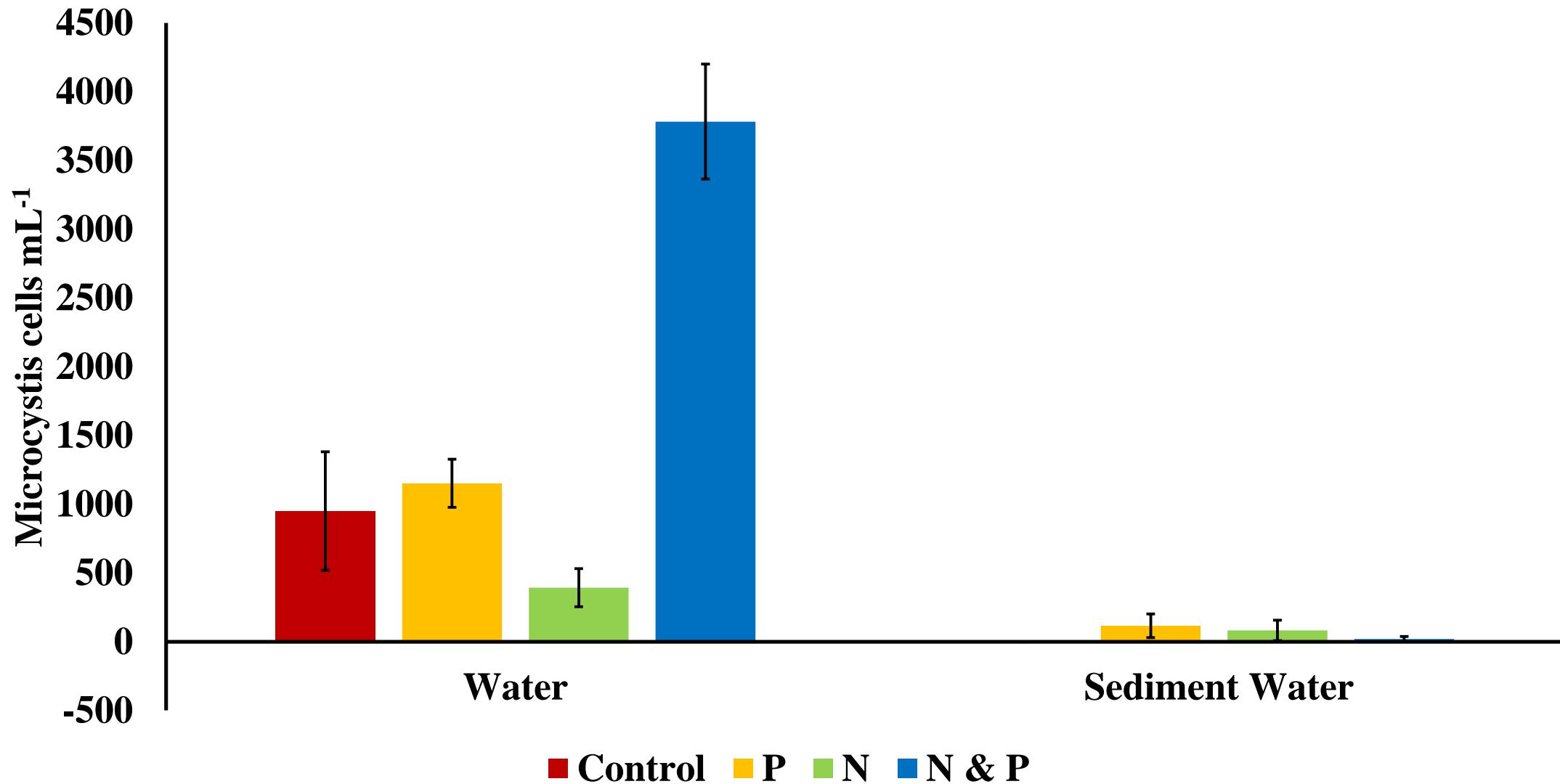
NCBI
BLAST

13. Oscillatoria sp.	GCTGGTCTGAGAGGGATGAGCGAGCCACACTGGGACT
14. Merismopedia tenuissima	GCTGGTCTGAGAGGGATGATTCAGGCCACACTGGGACT
15. Calothrix desertica	GCTGGTCTGAGAGGGACGATTCAGGCCACACTGGGACT
16. Nostoc sp. 2	GCTGGTCTGAGAGGGATGACCAAGCCACACTGGGACT
17. Microcystis holsatica	GCTGGTCTGAGAGGGATGATTCAGGCCACACTGGGACT
18. Aphanothecae minutissima	GCTGGTCTGAGAGGGATGATTCAGGCCACACTGGGACT
19. Calothrix parietina	GCTGGTCTGAGAGGGACGATTCAGGCCACACTGGGACT
20. Aphanocapsa sp.	GCTGGTCTGAGAGGGATGAGCGAGCCACACTGGGACT
21. Aphanocapsa salina	GCTGGTCTGAGAGGGATGATTCAGGCCACACTGGGACT
22. Cyanobium gracile	GCTGGTCTGAGAGGGATGATTCAGGCCACACTGGGACT
23. Merismopedia sp.	GCTGGTCTGAGAGGGATGATTCAGGCCACACTGGGACT
24. Microcystis aeruginosa	GCGGGTCTGAGAGGGATGATTCAGGCCACACTGGGACT
25. Microcystis elabens	GCTGGTCTGAGAGGGATGATTCAGGCCACACTGGGACT
26. Microcystis sp.	ACTGGTCTGAGAGGGATGACCAAGTCACACTGGGACT
27. Microcystis sp. 0901	GCTGGTCTGAGAGGGATGAGCGAGCCACACTGGGACT

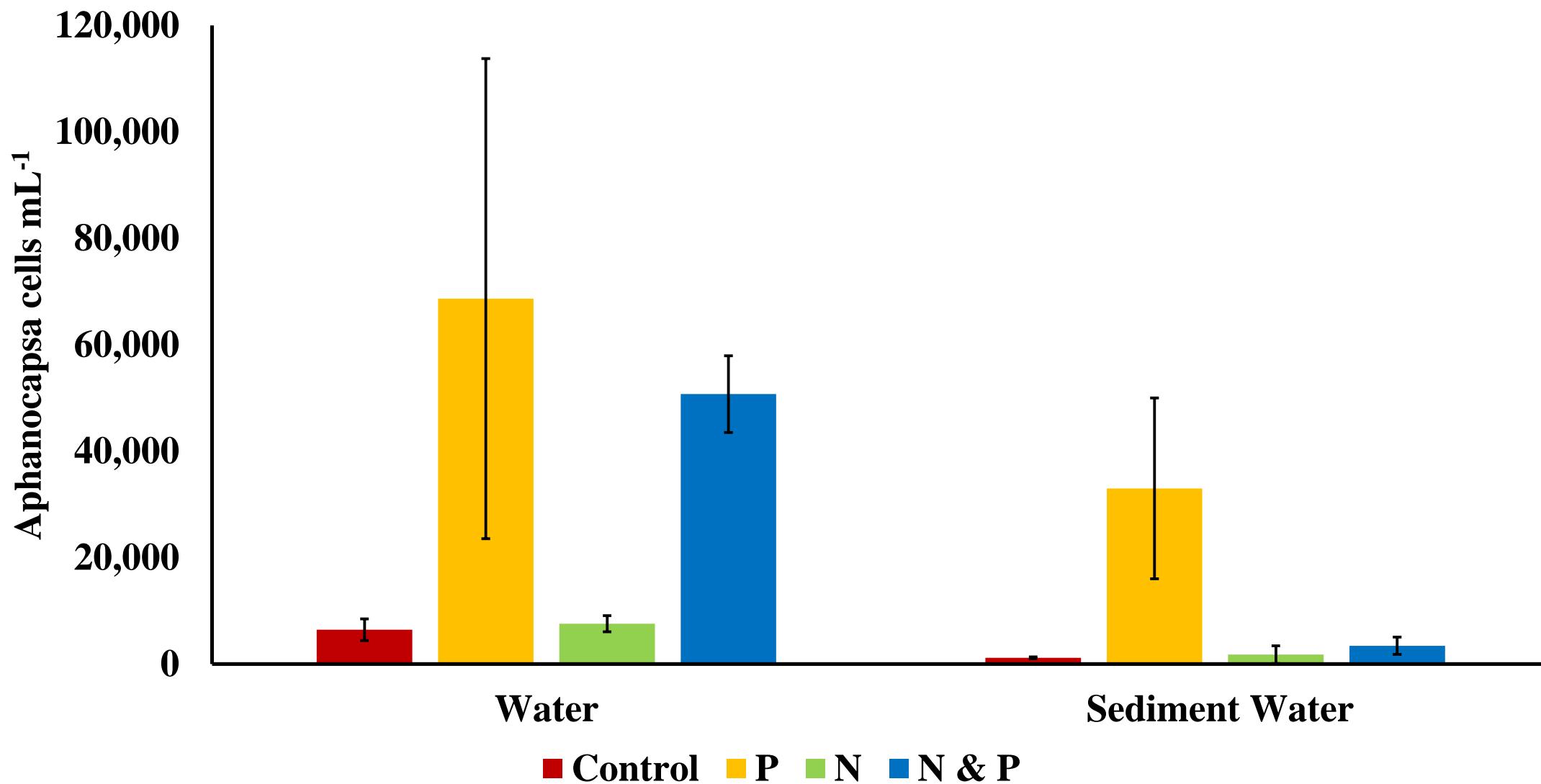




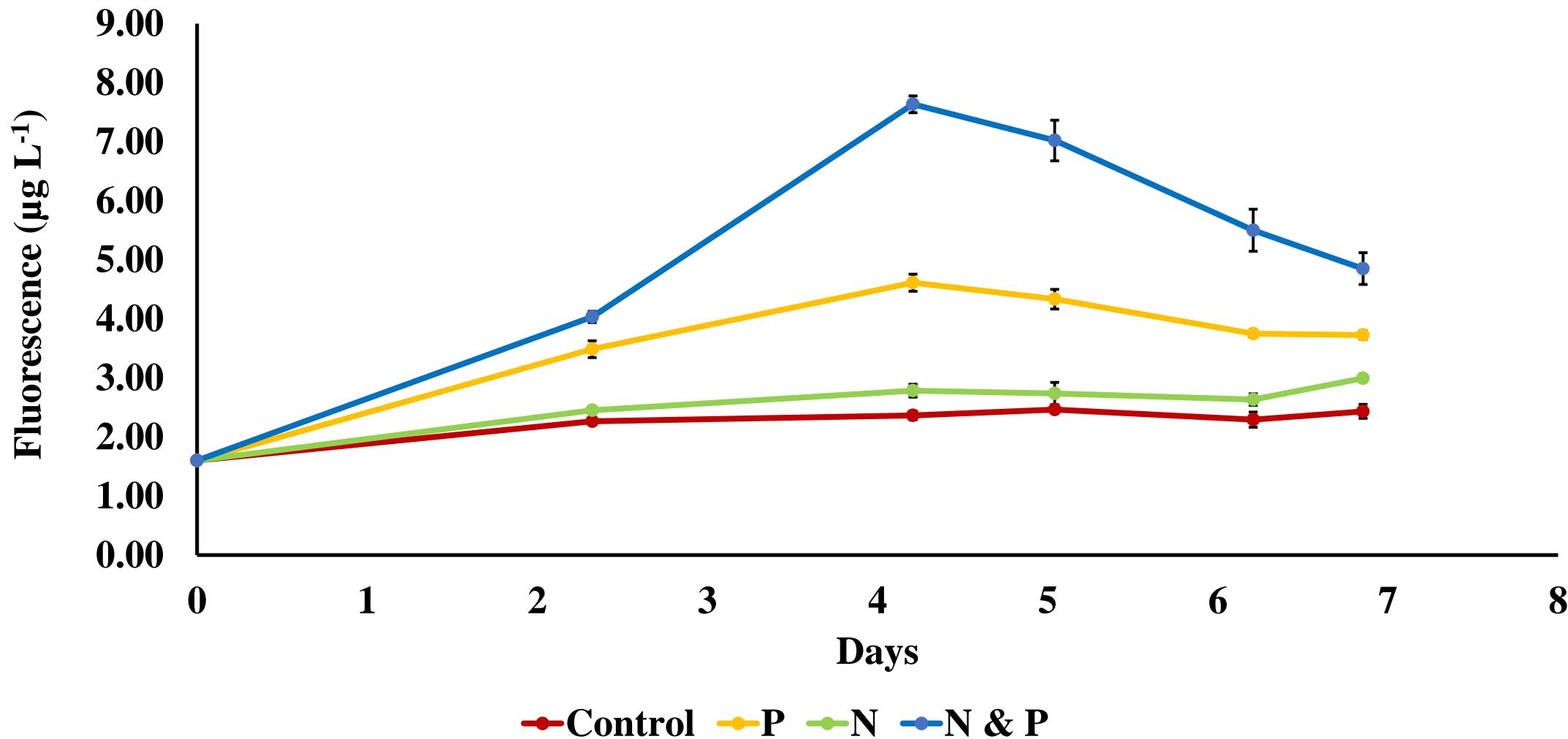
Microcystis cell counts



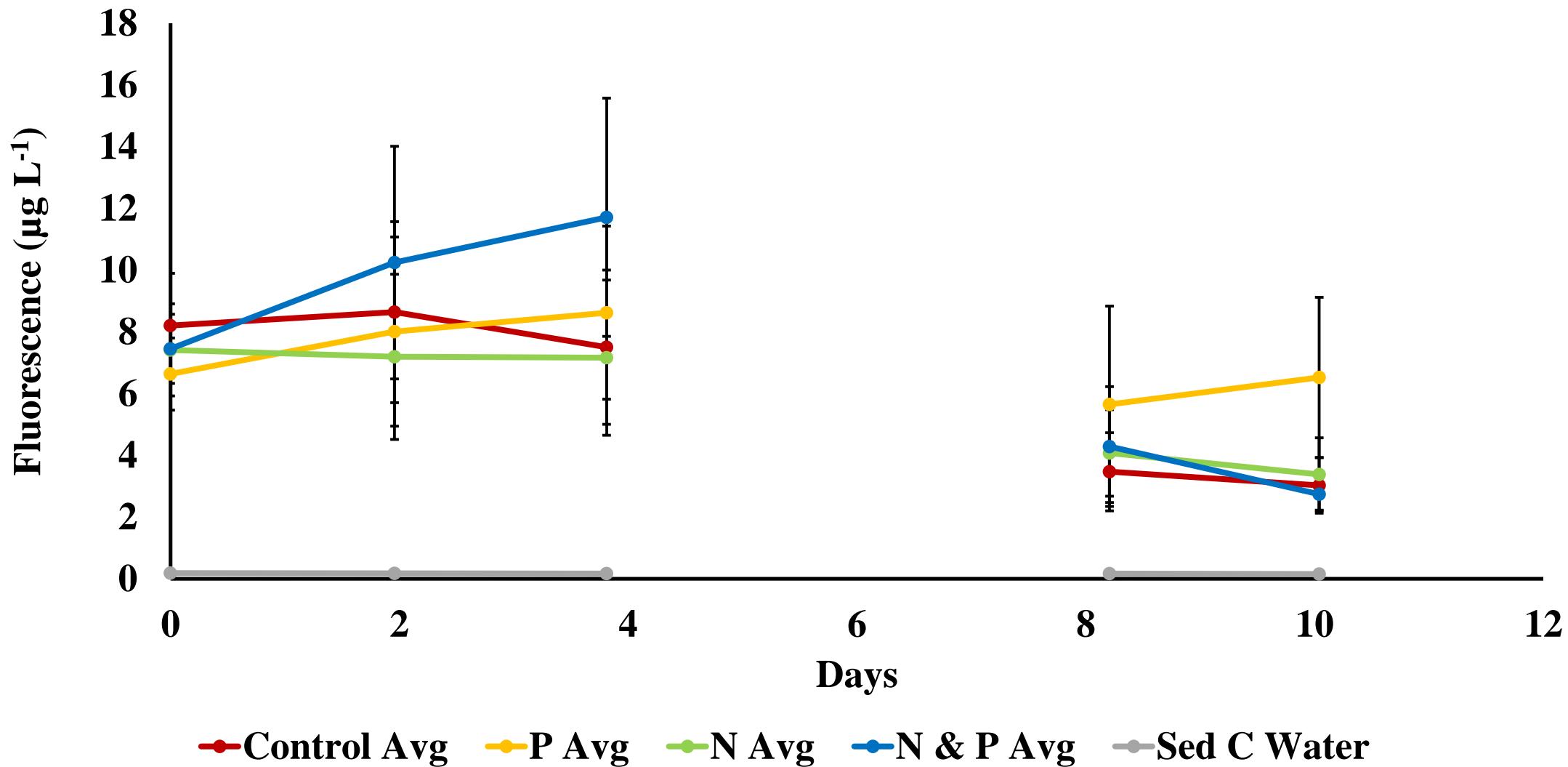
Aphanocapsa cell counts



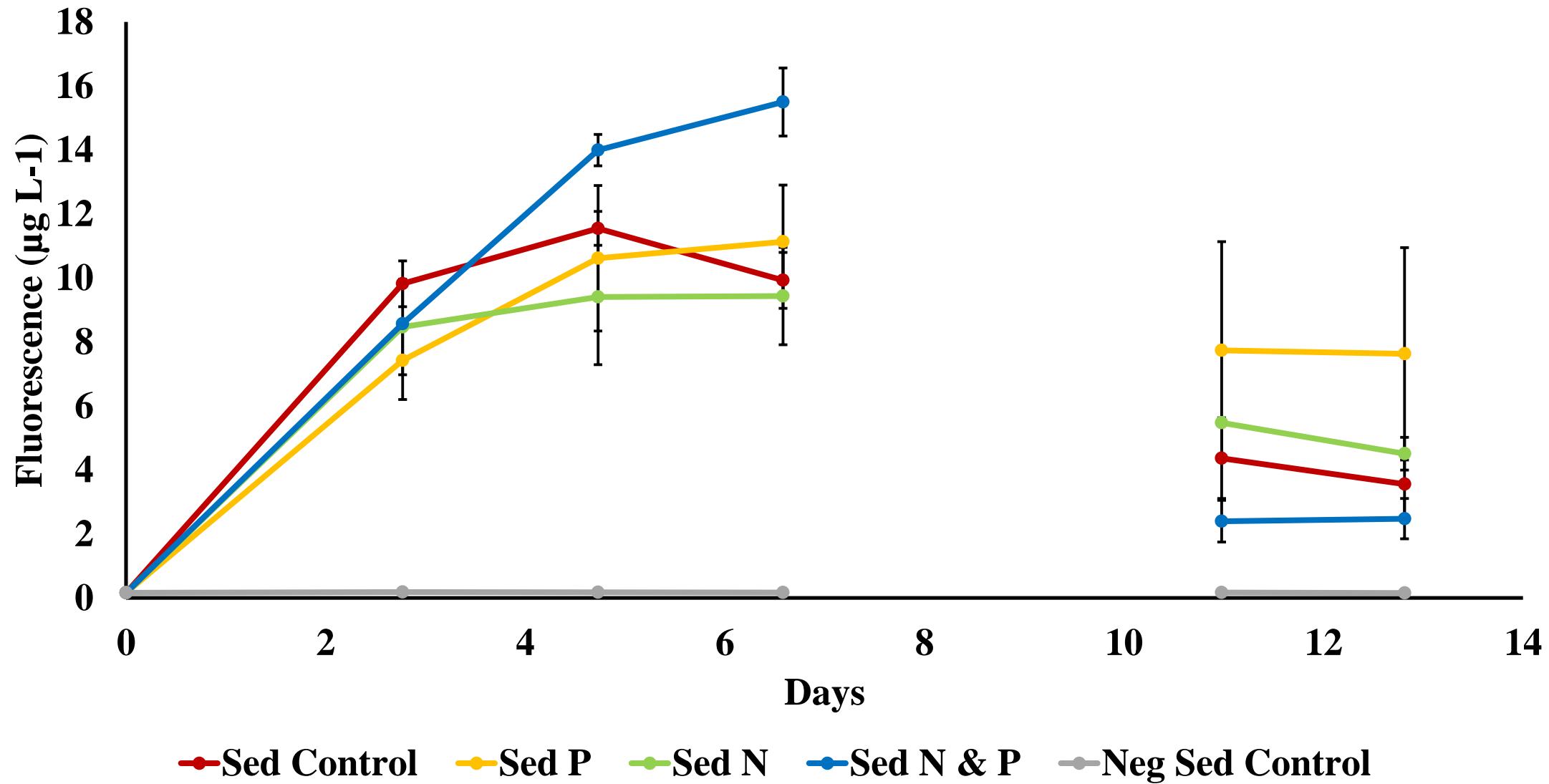
Average Fluorescence Water Incubation #2



Average Fluorescence Sediment Incubation

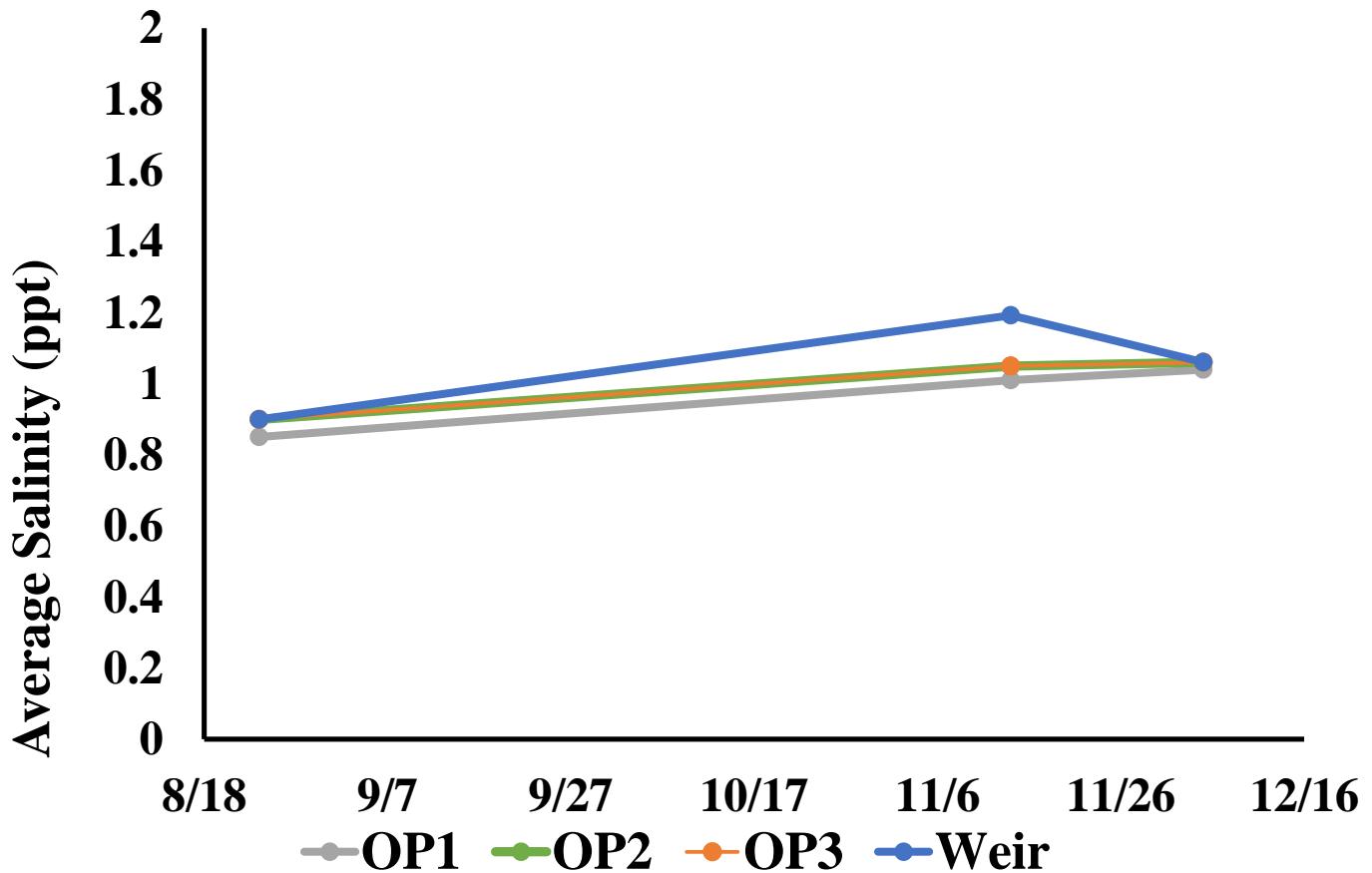


Average Fluorescence Sediment Incubations, Replicates 1 & 2



Conclusions

- If salinity stays <2 ppt, there could be another bloom
- *Microcystis* is present in the sediment
- *Microcystis* and *Aphanocapsa* produce microcystin





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SES TAs

Wendi Buesseler

Bill Kerfoot

Jim McIlvain

Louis Kerr