GEORGE MASON UNIVERSITY

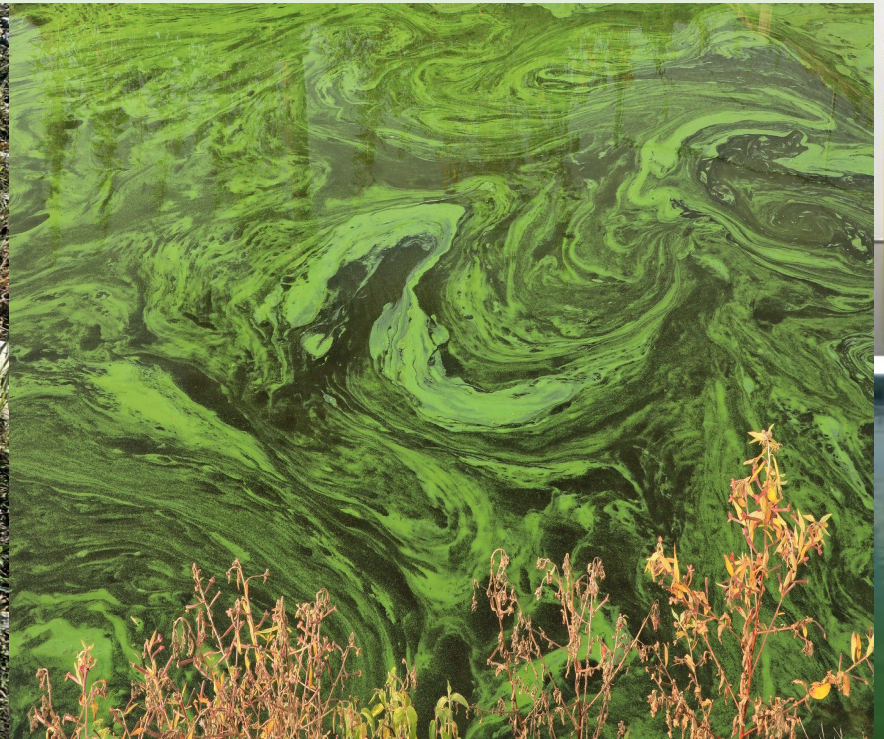
Investigating the cHAB Microseira wollei in the Tidal Freshwater Potomac

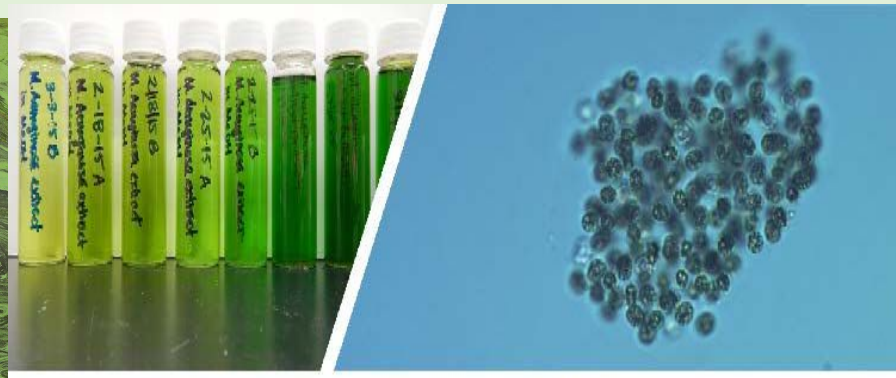
Potomac Environmental Research and Education Center

Janiece Jefferson

Primary Focus:

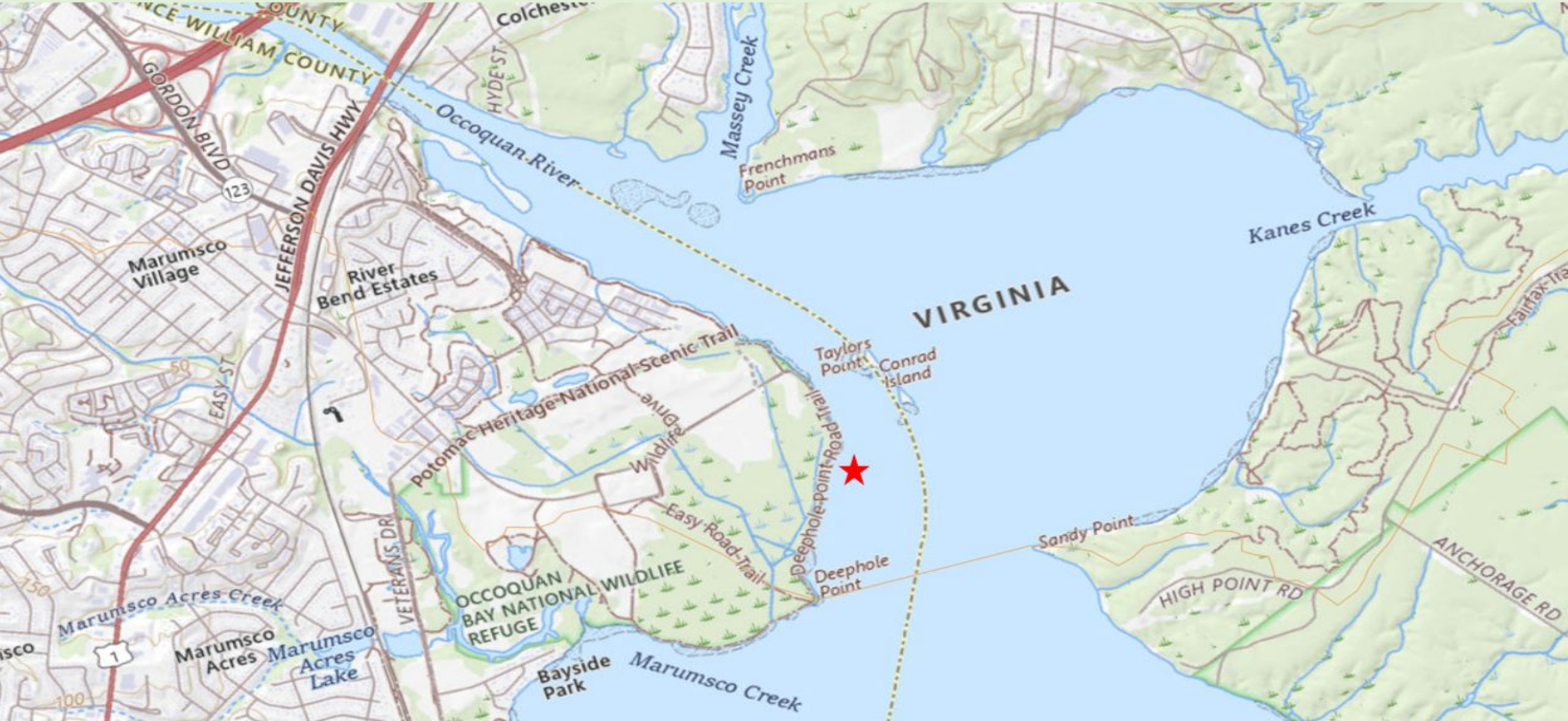
- Gain hands-on experience with cHAB field sampling methods and techniques for quantifying **Microseira wollei abundance**
- Learn and apply microscopy techniques to identify and characterize **cHAB morphology and composition**
- Conduct laboratory analyses including **chlorophyll *a*, phycocyanin, and ash-free dry weight** measurements on algal mat samples





Occoquan River

Study Site Area



Benthic and Floating Mat Collection

Field Sampling

On the water!

Dip nets, YSI Sonde, and Light meter

Floating M. wollei sample

Benthic and Floating Mat Collection

Field Sampling

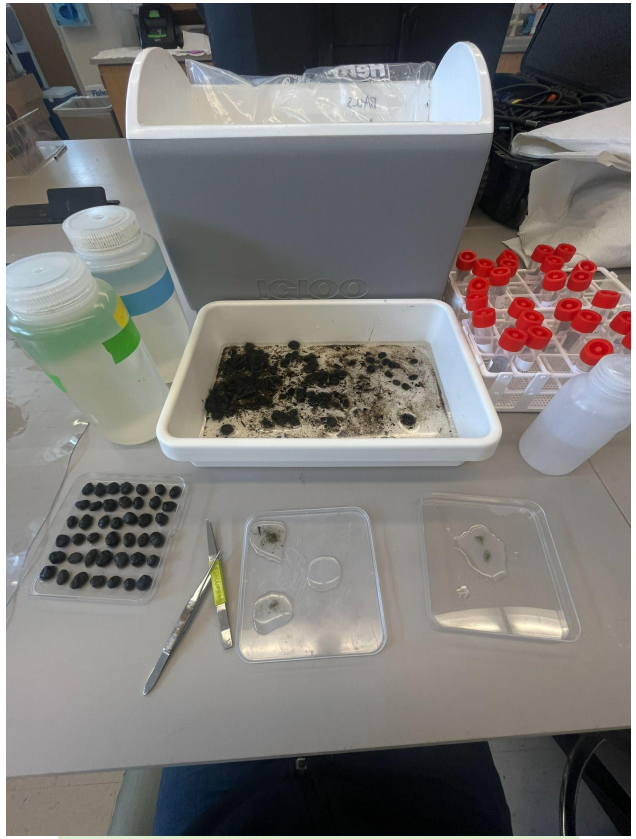
Dip Nets, YSI Sonde, and Light Meter

Obtaining Water Quality Metrics

Pre-Sorted M. wollei sample

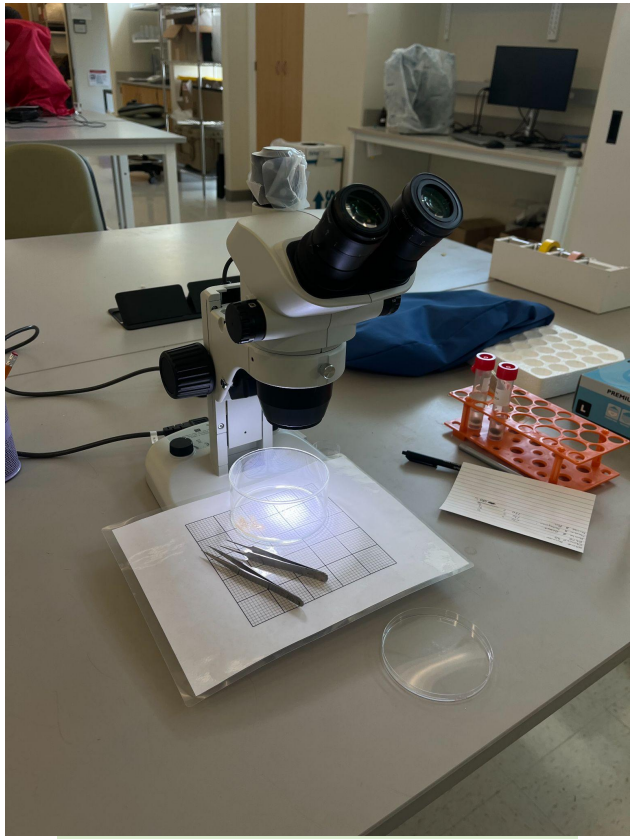
Prepared and Preserved Samples

Laboratory Processing and Analytical Techniques



Sorted Mats and Balls

Chlorophyll a & Phycocyanin Processing



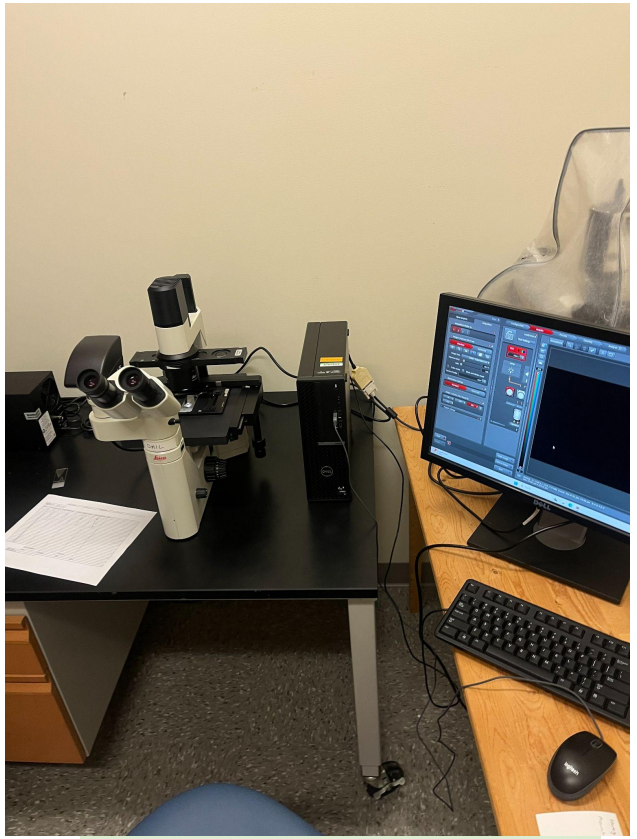
Microscopy

Prepared and Preserved Samples

Laboratory Processing and Analytical Techniques

Sorted Balls

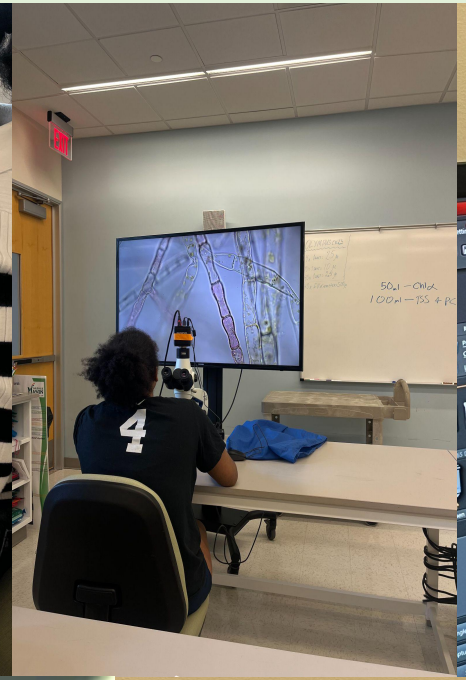
Chlorophyll a & Phycocyanin Processing

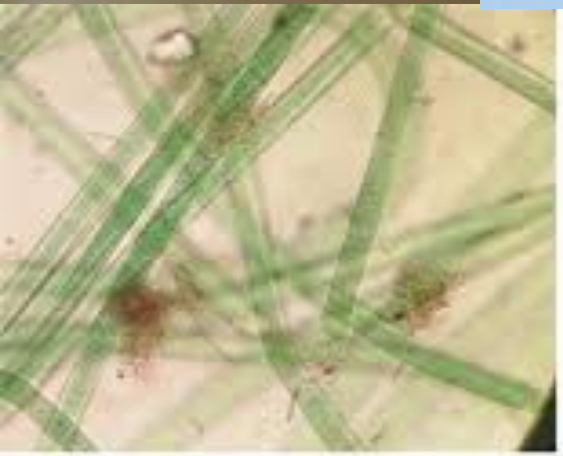


Microscopy

M. wollei Microscopy Assessment

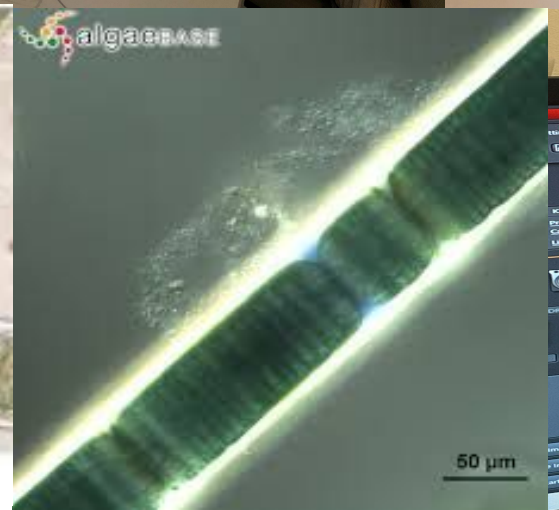
Laboratory Processing and Analytical Techniques





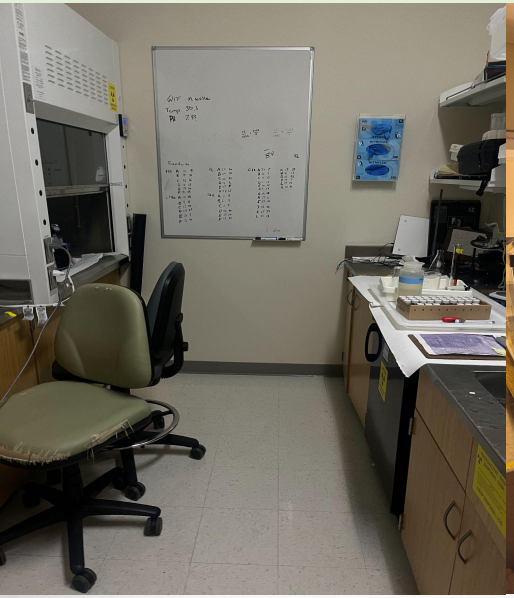
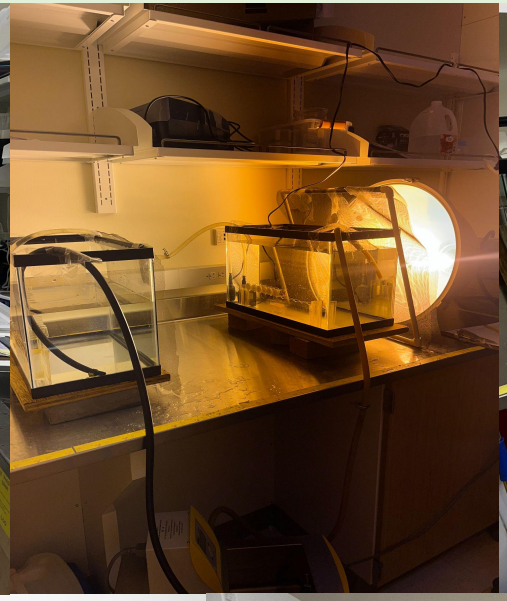
Phormidium filaments

Microcoleus filaments

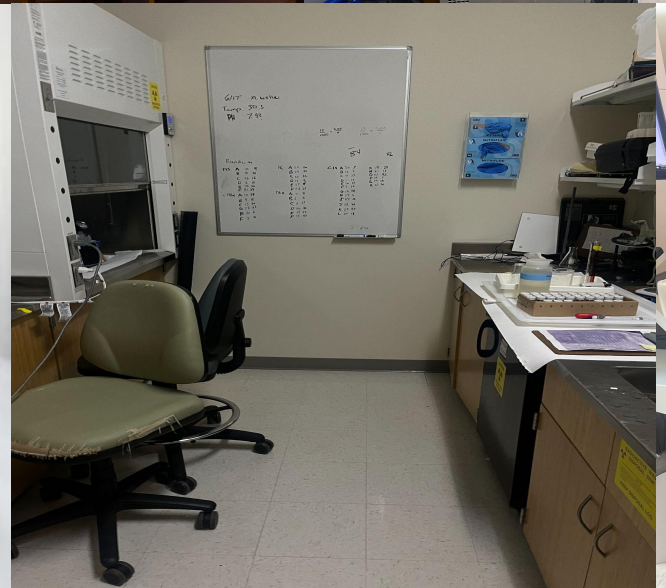


C-14 Uptake

Laboratory Processing and Analytical Techniques



Microscopy Analyses

Data Management & Preliminary Analysis

Triplcate	Replicate	Length of Filament (mm)	Length of Blank Cells (mm)	Length of Hormogonia Cells (mm)	Length of Full Cells (mm)	Percentages of Blank Cells (mm)	Percentages of Hormogoia Cells (mm)	Percentage of Full Cells
A	1	16	2.5	5.5	8	0.15625	0.34375	0.5
A	2	16.25	3	5.5	7.5	0.184615385	0.338461538	0.461538462
A	3	22	3	5	14	0.136363636	0.227272727	0.636363636
A	4	17.5	1.5	2.5	13.5	0.085714286	0.142857143	0.771428571
A	5	17.5	1	3.5	13	0.057142857	0.2	0.742857143
A	6	26	3	6	17	0.115384615	0.230769231	0.653846154
A	7	10	1.5	7	1.5	0.15	0.7	0.15
A	8	12	3	1.5	7.5	0.25	0.125	0.625
A	9	17.5	3	2	12.5	0.171428571	0.114285714	0.714285714
A	10	12.5	0.5	1.5	10.5	0.04	0.12	0.84

Chlorophyll *a* Data

Data Management & Preliminary Analysis

	Sample	Replicate	Filter. Weight (g)	Wet Weight (g)	ml filtered	ml extracted	Chla from Trilogy (ug/L)	Pheo from Trilogy (ug/L)	Chl (ug/vial)	Pheo (ug/vial)	Average Chl	Average Pheo		
7/16/2025	1 - Balls	A	0.0191	0.1047	5	16.00	2335.17	-313.45	37.36	-5.02	40.80	-7.20	40.8	-7.2
7/16/2025	1 - Balls	B	0.0191	0.0601	5	15.00	2874.90	-593.39	43.12	-8.90				
7/16/2025	1 - Balls	C	0.0191	0.1406	5	15.00	1409.88	45.22	21.15	0.68				
7/16/2025	1 - Balls	D	0.0191	0.1175	5	16.00	3142.08	-712.76	50.27	-11.40				
7/16/2025	1 - Balls	E	0.0191	0.1260	5	17.00	3204.22	-698.92	54.47	-11.88				
7/16/2025	1 - Balls	F	0.0191	0.1349	5	17.00	2261.76	-394.36	38.45	-6.70				

Phycocyanin Data

Data Management & Preliminary Analysis

Filter Weight (g)	Wet Weight (g)	Extracted (mL)	Trilogy (RFU) - PC	PC (ug/L)	PC (ug/vial)	Average PC	Trilogy (RFU) - PE	PE(ug/L)	PE (ug/vial)	Average PE		
0.0191	0.0585	19	78598.89	22970.67255	436.44	1005.22	7420.07	9317.4889	177.0322891	340.99	1005.22	340.99
0.0191	0.0807	16.8	107823.92	31592.0564	530.75		9380.98	11807.8446	198.3717893			
0.0191	0.1764	19.2	328412.81	96665.77895	1855.98		19795.45	25034.2215	480.6570528			
0.0191	0.0609	15.8	108754.18	31866.4831	503.49		10721.52	13510.3304	213.4632203			
0.0191	0.0864	18	229101.58	67368.9661	1212.64		21310.67	26958.5509	485.2539162			
0.0191	0.1088	15	337912.22	99468.1049	1492.02		25866.36	32744.2772	491.164158			

C-14 Data

Data Management & Preliminary Analysis

Alternate Code	Sample ID	Rep	Light	C14 added (uCi/vial)	C14 added (DPM/vial)	Inc Tim (hr)	pH	Titrant Vol (mL)	TotAlk (mg/L) as CaCO3	Uptake (DPM/vial)	Psyn Rate (mgC/vial/hr)	Avg Uptake (DPM/vial)	Wet Wt (g)	DPM/g wet wt	Avg DPM/g wet wt
A1	1-H++	A	2023.3	0.4	888000	1.00	7.43	7.1	71	40586	0.000	38967	0.0768	528464	446120
B1	1-H++	B	2023.3	0.4	888000	1.00	7.43	7.1	71	43253	0.000		0.079	547506	
C1	1-H++	C	2023.3	0.4	888000	1.00	7.43	7.1	71	33061	0.000		0.1260	262389	
A2	2-H++	A	2023.3	0.4	888000	1.00	7.43	7.1	71	34286	0.000	35751	0.0183	1873552	2091034
B2	2-H++	B	2023.3	0.4	888000	1.00	7.43	7.1	71	31179	0.000		0.0167	1867006	
C2	2-H++	C	2023.3	0.4	888000	1.00	7.43	7.1	71	41787	0.000		0.0165	2532545	

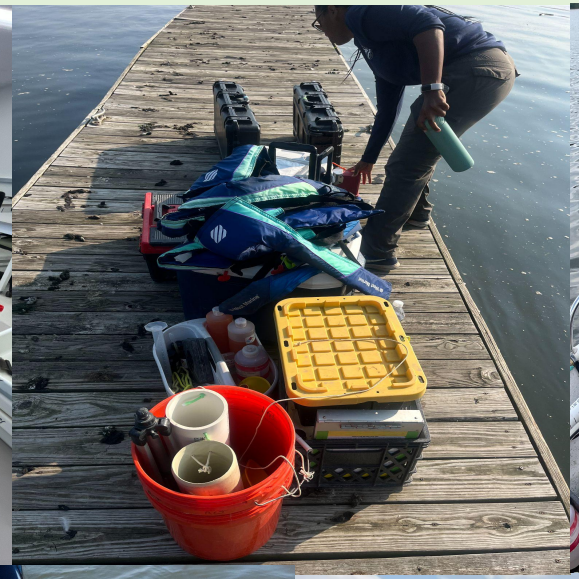
Ash Free Dry Weight

Data Management & Preliminary Analysis

Pre-weight (g)	Post-weight (g)	Ashed Weight (g)	Dry Wt (mg/vial)	AFDW (mg/vial)	AVG Average Dry Wt	AVG AFDW (mg/vial)		
0.4970	0.5321	0.5079	35.1	24.2	18.05	11.62	18.05	11.62
0.5056	0.5216	0.5136	16	8				
0.4688	0.4779	0.4712	9.1	6.7				
0.4313	0.4462	0.4348	14.9	11.4				
0.5279	0.5447	0.5346	16.8	10.1				
0.6091	0.6255	0.6162	16.4	9.3				
0.4289	0.4330	0.4295	4.1	3.5	4.53	3.63	4.53	3.63
0.4684	0.4750	0.4698	6.6	5.2				
0.4794	0.4835	0.4803	4.1	3.2				
0.4208	0.4259	0.4215	5.1	4.4				
0.3906	0.3935	0.3914	2.9	2.1				
0.4178	0.4222	0.4188	4.4	3.4				

Other Freshwater Analysis and Studies!







Thank you PEREC, The Jones Lab, Dr. Chris Jones, & Dr. Rosalina Christova!