

# Columbia Lake 2014 Data Report



## Columbia Lake 2014 Profile Data

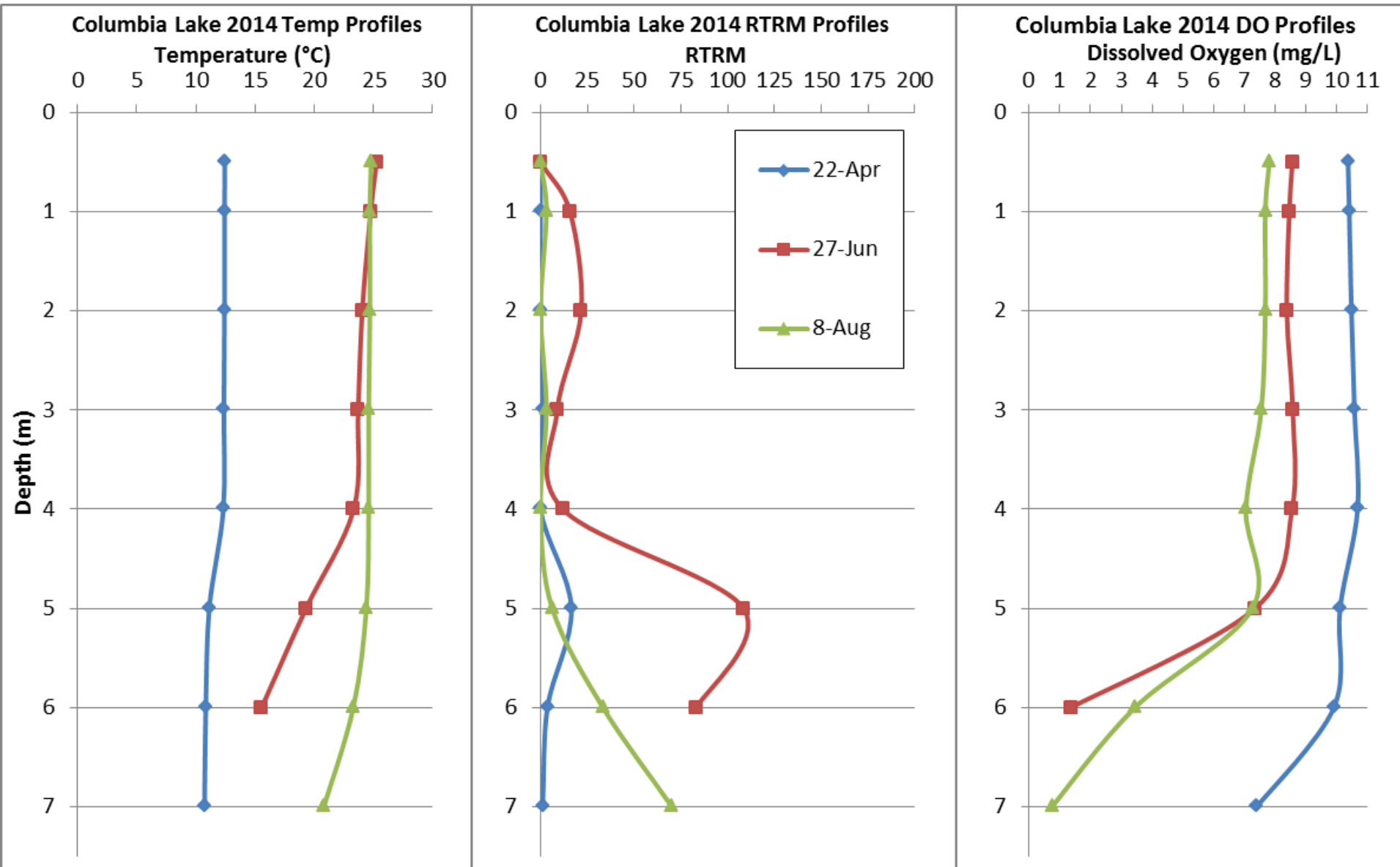
Temperature (°C)			
	> 24°C		
Depth (m)	22-Apr	27-Jun	8-Aug
0.5	12.4	25.3	24.8
1	12.4	24.8	24.7
2	12.4	24.1	24.7
3	12.4	23.7	24.6
4	12.3	23.3	24.6
5	11.1	19.3	24.4
6	10.8	15.6	23.3
7	10.7		20.8

RTRM			
	> 20		> 50
Depth (m)	22-Apr	27-Jun	8-Aug
0.5	0	0	0
1	0	16	3
2	0	22	0
3	1	9	3
4	0	12	0
5	16	108	6
6	4	83	33
7	1		70
<b>SumRTRM</b>	<b>23</b>	<b>250</b>	<b>116</b>
<b>MaxRTRM</b>	<b>16</b>	<b>108</b>	<b>70</b>

Dissolved Oxygen (mg/L)			
	< 1.0mg/L		
Depth (m)	22-Apr	27-Jun	8-Aug
0.5	10.4	8.6	7.8
1	10.4	8.5	7.7
2	10.5	8.4	7.7
3	10.6	8.6	7.6
4	10.7	8.6	7.1
5	10.1	7.4	7.3
6	9.9	1.4	3.4
7	7.4		0.7

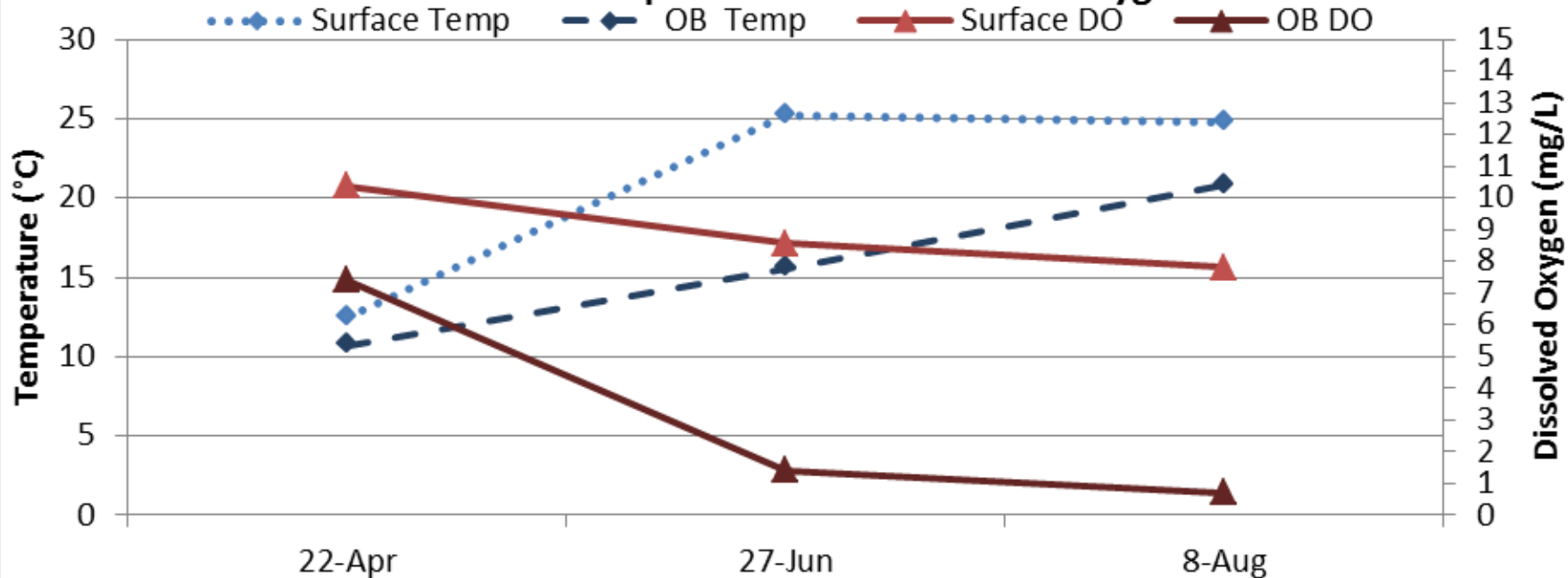
DO % Saturation			
	> 100%		
Depth (m)	22-Apr	27-Jun	8-Aug
0.5	99.6	105.4	94.4
1	100.1	103.2	92.6
2	100.5	100.9	92.7
3	101.5	102.3	90.7
4	102.2	101.5	84.7
5	94.2	82.7	87.0
6	91.7	13.4	40.4
7	68.5		8.3

# Columbia Lake 2014 Profile Data

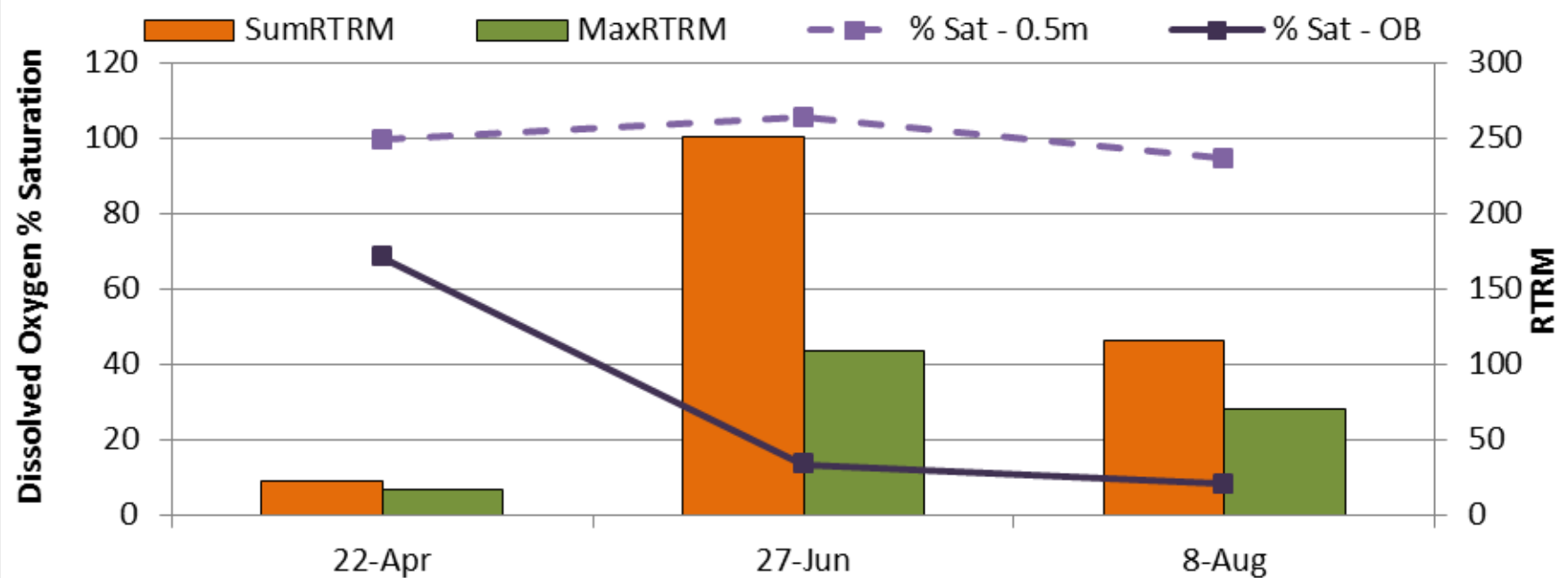


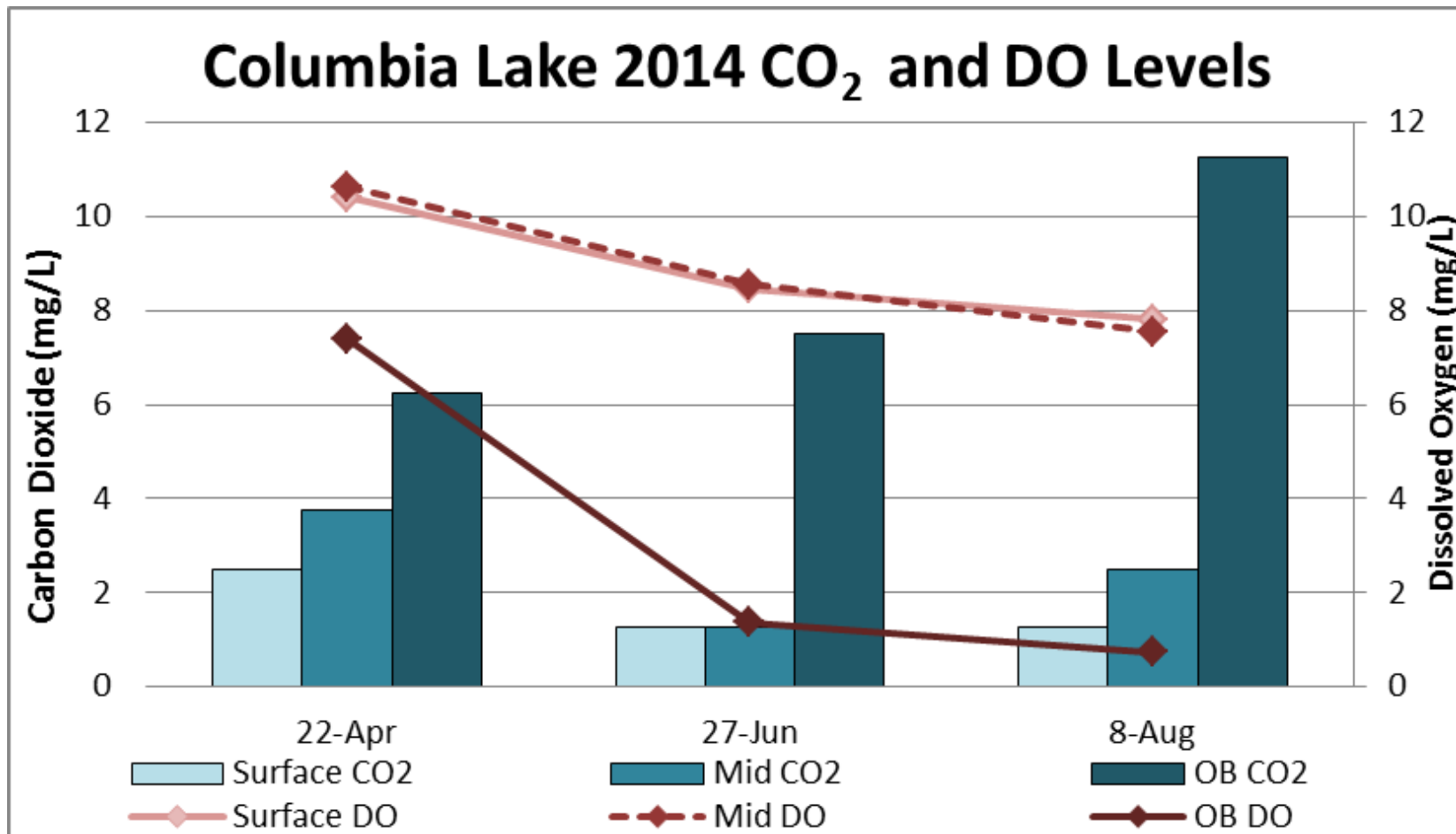
Very strong thermocline at 5m in June, resulted in more deep oxygen decline than typical

### Columbia Lake 2014 Temperature and Dissolved Oxygen Trends



### Columbia Lake 2014 RTRM and DO % Saturation





#### Dissolved CO<sub>2</sub> (mg/L)

	22-Apr	27-Jun	8-Aug
Surface CO <sub>2</sub>	2.5	1.25	1.25
Mid CO <sub>2</sub>	3.75	1.25	2.5
OB CO <sub>2</sub>	6.25	7.5	11.25
Difference (OB-S)	3.75	6.25	10

CO<sub>2</sub> accumulation in over-bottom water indicates significant anaerobic respiration at the deep sediment-water interface.

# Columbia Lake 2014 Profile Data

pH	< 6		> 8.3
	22-Apr	27-Jun	8-Aug
<b>0.5</b>	8.1	7.4	7.5
<b>1</b>	8.1	7.5	7.5
<b>2</b>	8.0	7.5	7.5
<b>3</b>	7.9	7.5	7.5
<b>4</b>	7.9	7.5	7.4
<b>5</b>	7.8	7.0	7.4
<b>6</b>	7.7	6.5	6.8
<b>7</b>	7.6		6.7

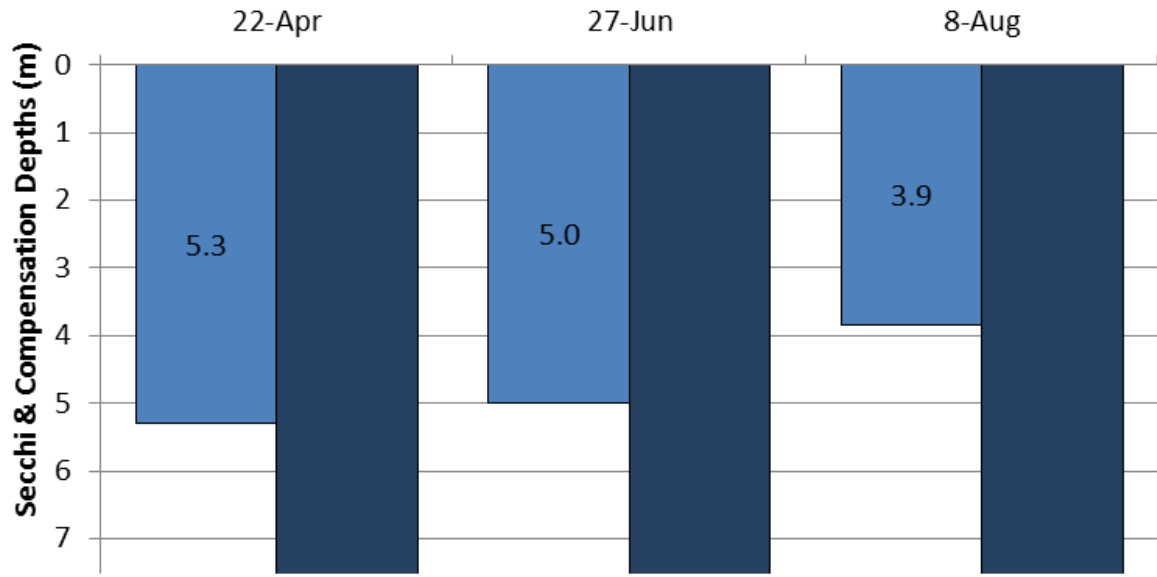
Turbidity (NTU)	>2		>10
	22-Apr	27-Jun	8-Aug
<b>0.5</b>	0.6	1.0	
<b>1</b>	0.6	0.7	3.1
<b>2</b>	0.5	0.2	
<b>3</b>	0.5	0.2	
<b>4</b>	0.7	0.4	3.2
<b>5</b>	0.9	1.5	
<b>6</b>	0.6	5	
<b>7</b>	0.7		3.4

Specific Conductivity (umhos/cm)			
Depth (m)	22-Apr	27-Jun	8-Aug
<b>0.5</b>	95	76	
<b>1</b>	95	76	85
<b>2</b>	95	76	
<b>3</b>	95	76	
<b>4</b>	95	76	85
<b>5</b>	95	75	
<b>6</b>	95	80	
<b>7</b>	95		90

ORP	< 0		
	22-Apr	27-Jun	8-Aug
<b>0.5</b>	163	175	108
<b>1</b>	163	177	108
<b>2</b>	164	179	109
<b>3</b>	164	180	111
<b>4</b>	164	181	113
<b>5</b>	165	194	115
<b>6</b>	166	207	129
<b>7</b>	168		104

# 2014 Columbia Lake Transparency

■ Secchi ■ Comp Dpth



## Transparency (m)

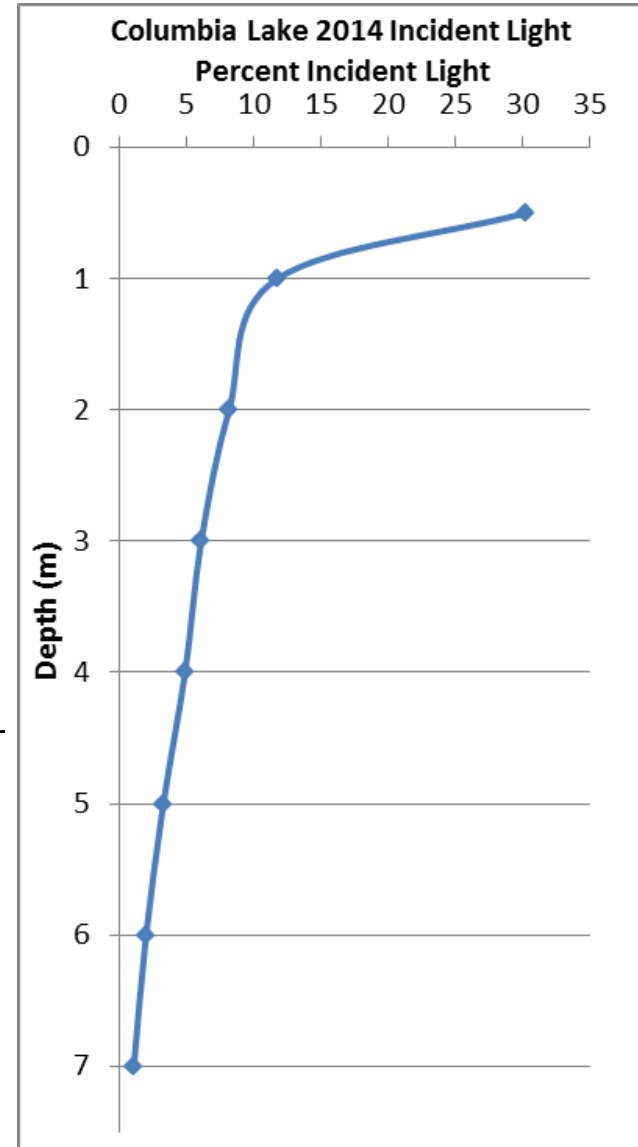
Date	22-Apr	27-Jun	8-Aug
Secchi	5.3	5.0	3.9
Comp Dpth	10.6	10.0	7.7

## Light Extinction Depths (m)

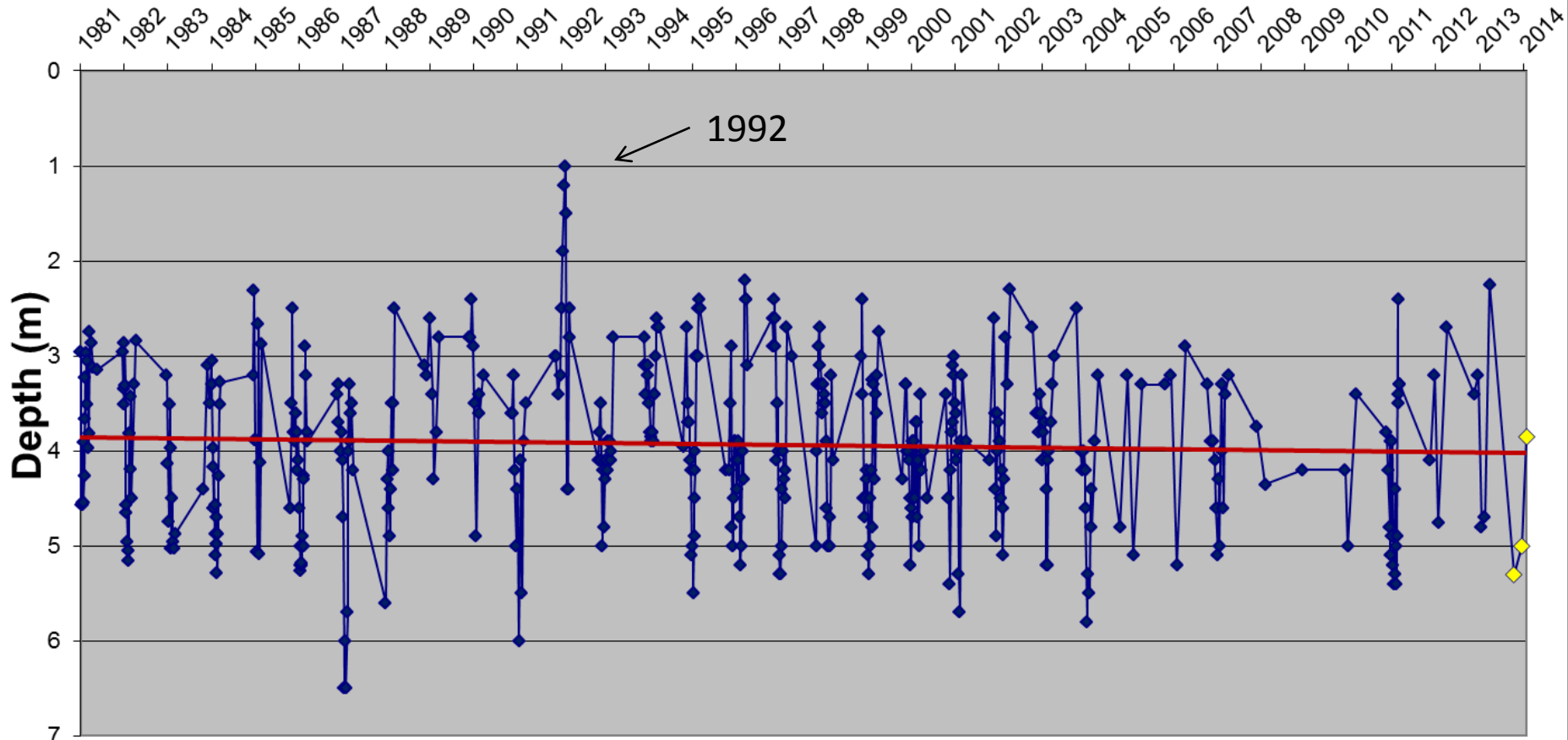
Date	22-Apr
10% IL	1.5
1% IL	7.2

## Percent Incident Light (%)

Depth (m)	22-Apr
0.5	30
1	12
2	8
3	6
4	5
5	3
6	2
7	1



# Columbia Secchi History 1981-2014





# Columbia Lake 2014 Chemistry Data

Total Phosphorus as P ( $\mu\text{g/L}$ )			
Depth (m)	22-Apr	27-Jun	8-Aug
1 m	12	7	4
Mid	10	9	7
OB	10	16	20

Low Phosphorus

Ammonia as N ( $\mu\text{g/L}$ )			
Depth (m)	22-Apr	27-Jun	8-Aug
1 m	29	<10	<10
Mid	24	<10	<10
OB	15	14	<10

Low Ammonia

Nitrite / Nitrate ( $\mu\text{g/L}$ )			
Depth (m)	22-Apr	27-Jun	8-Aug
1 m	25	<10	<10
Mid	32	<10	<10
OB	44	<10	<10

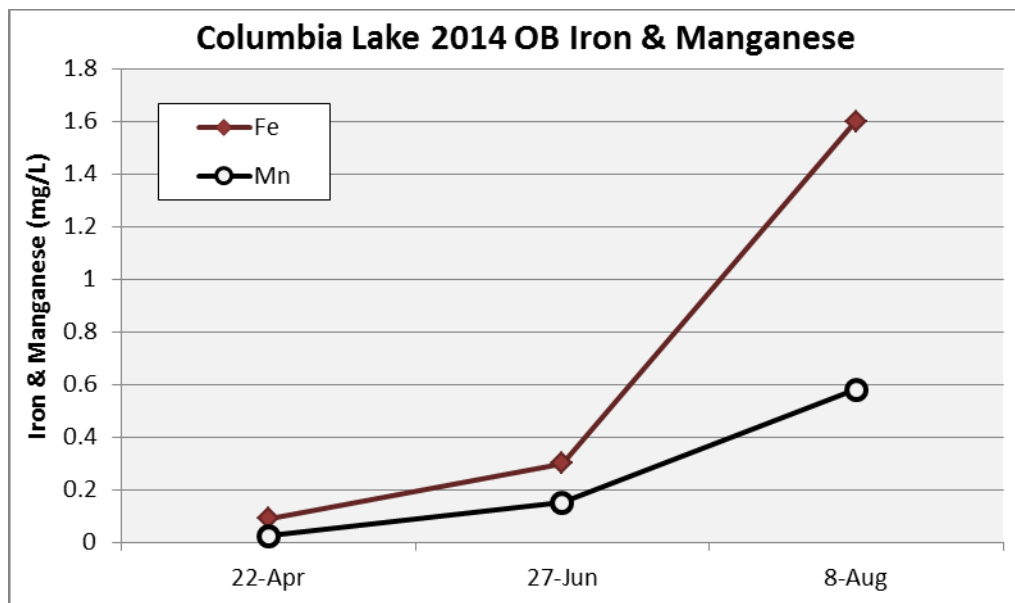
Nitrate exhausted early

Silica (mg/L)			
Depth	22-Apr	27-Jun	8-Aug
1m	3.7	0.17	0.64

Low silica levels limit Diatom growth

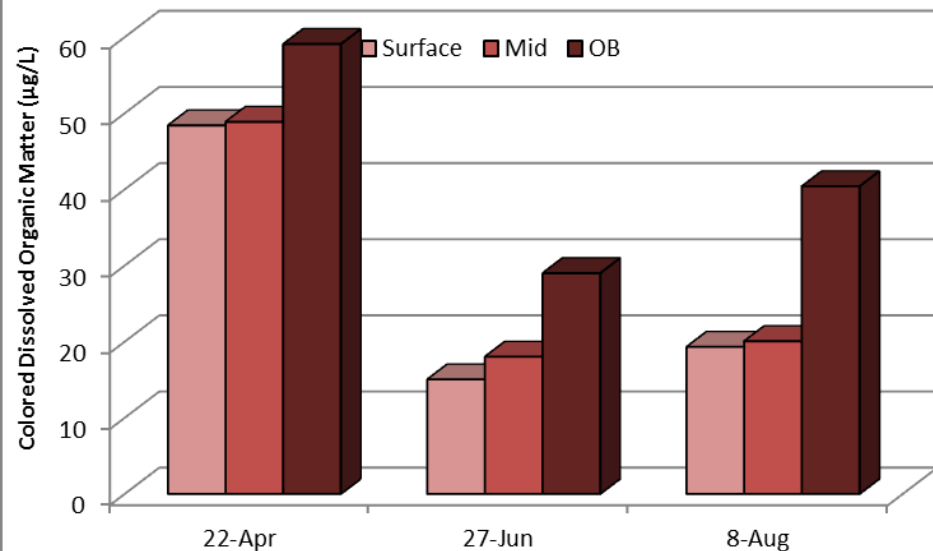
Iron (mg/L)			
Depth	22-Apr	27-Jun	8-Aug
OB	0.09	0.3	1.6

Manganese (mg/L)			
Depth (m)	22-Apr	27-Jun	8-Aug
OB	0.023	0.15	0.58

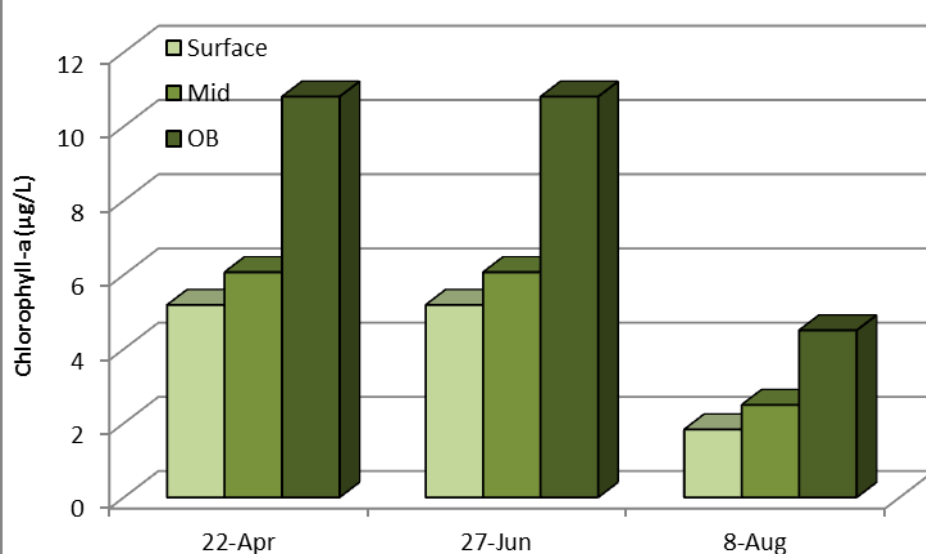


# Columbia Lake 2014 Fluorometer Results

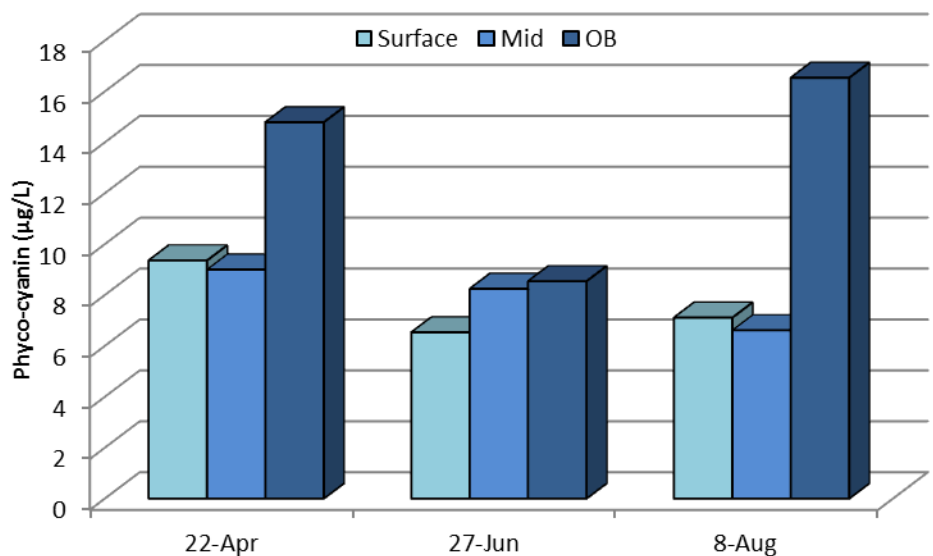
## Columbia Lake 2014 CDOM Levels



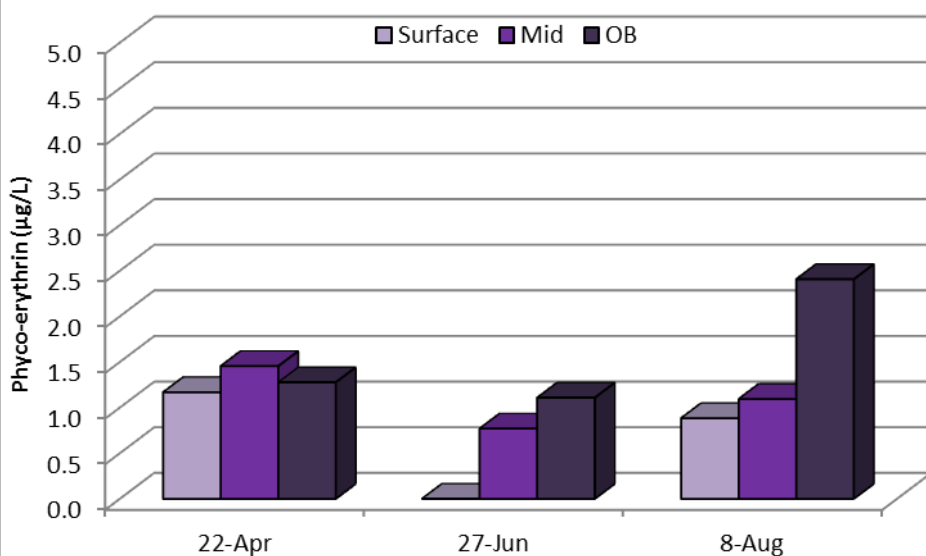
## Columbia Lake 2014 Chl-a Levels



## Columbia Lake 2014 Phycocyanin Levels



## Columbia Lake 2014 Phycoerythrin Levels

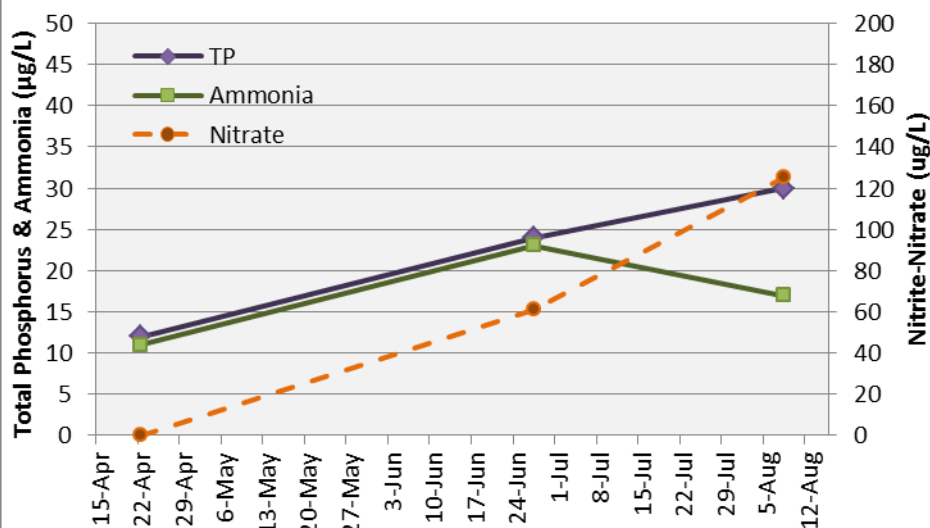


# Erdoni Brook 2014 Chemistry and Fluorometer Results

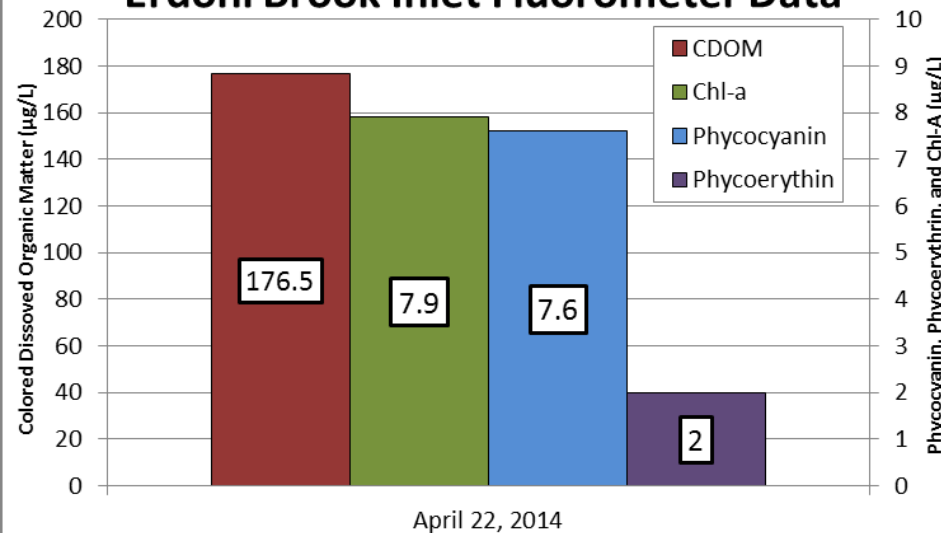
## Erdoni Brook 2014 Chemistry Results

	22-Apr	27-Jun	8-Aug
<b>Total Phosphorus (ug/L)</b>	12	24	30
<b>Ammonia (ug/L)</b>	11	23	17
<b>Nitrite-Nitrate (ug/L)</b>	<10	61	125
<b>Silica (mg/L)</b>		9.5	13.7

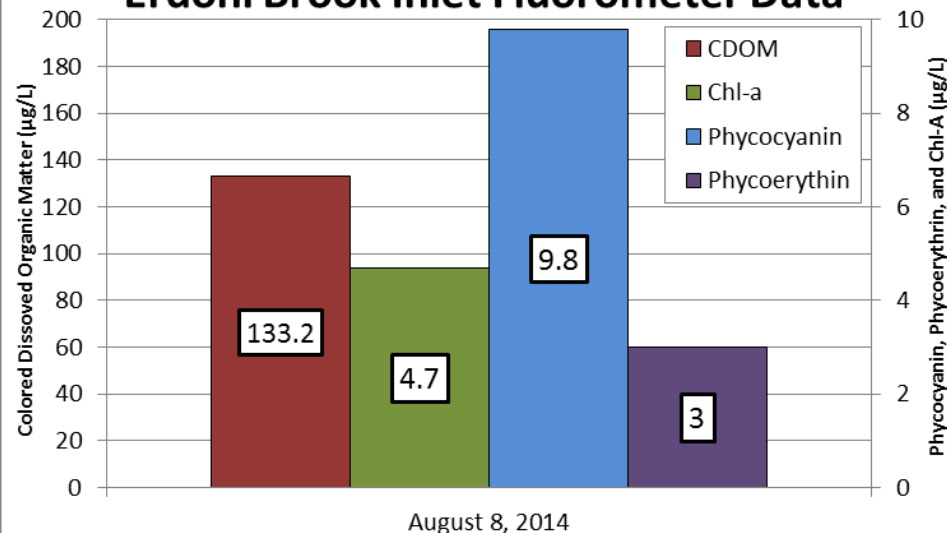
## Erdoni Brook Inlet 2014 Nutrients



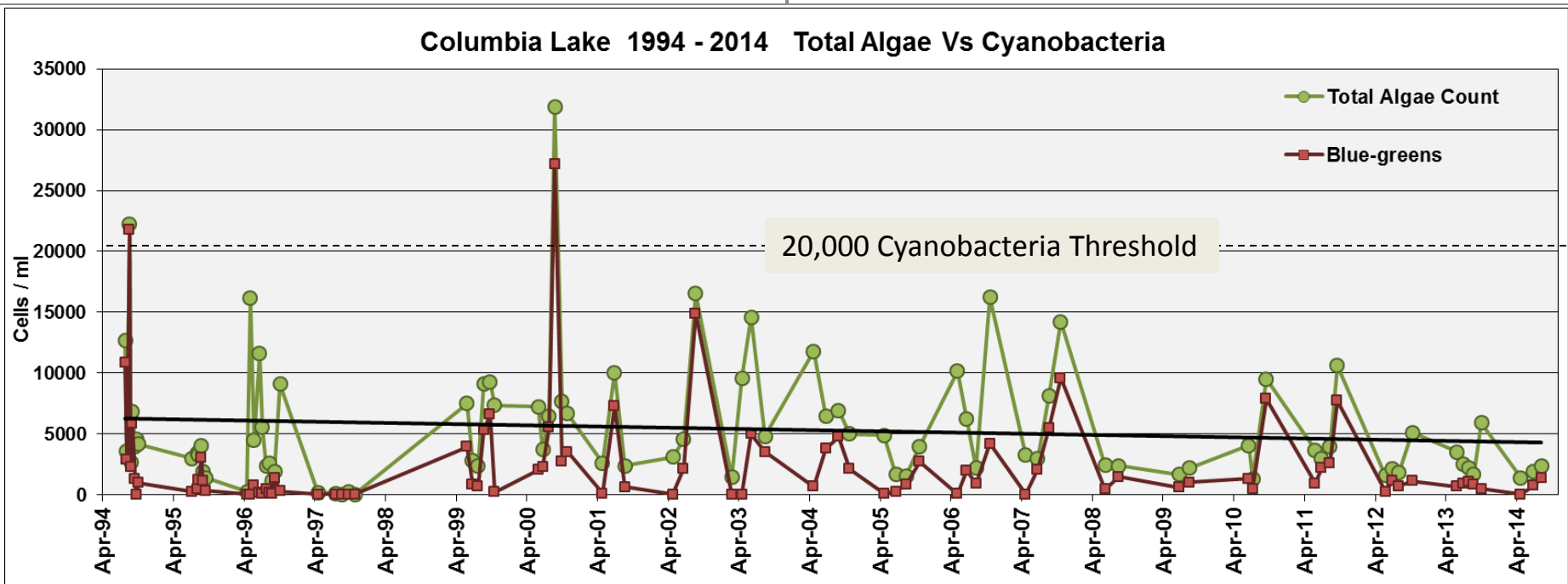
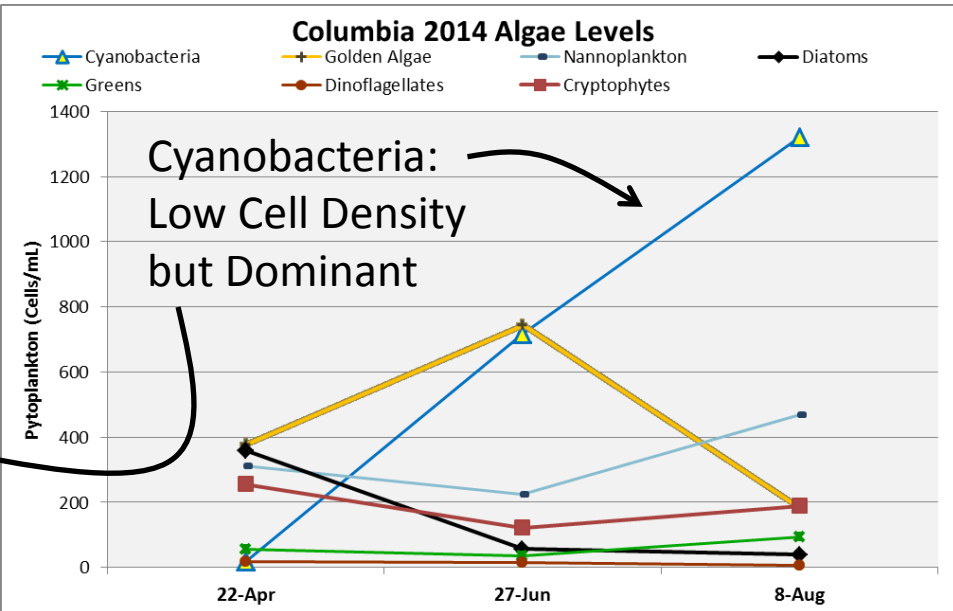
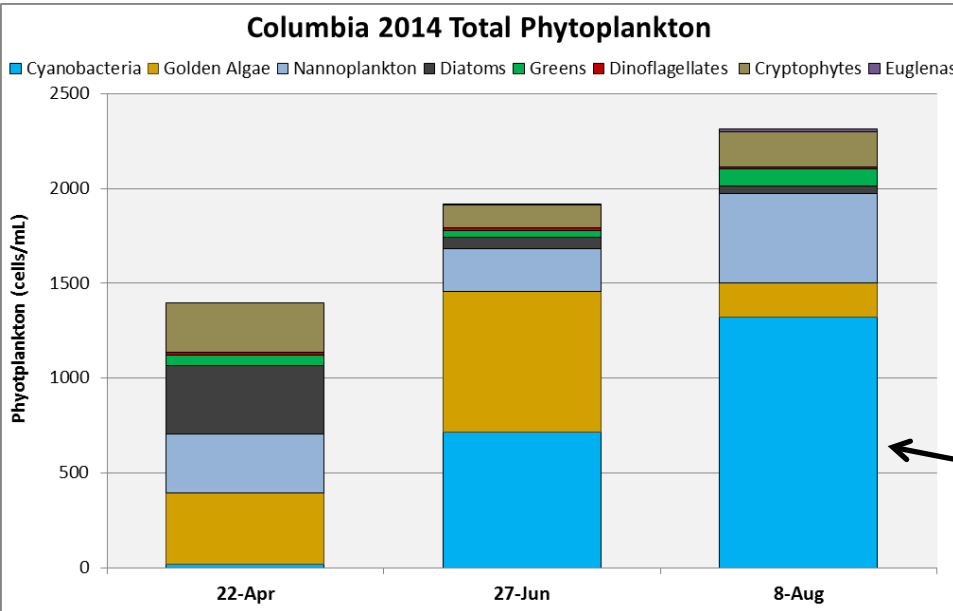
## Erdoni Brook Inlet Fluorometer Data



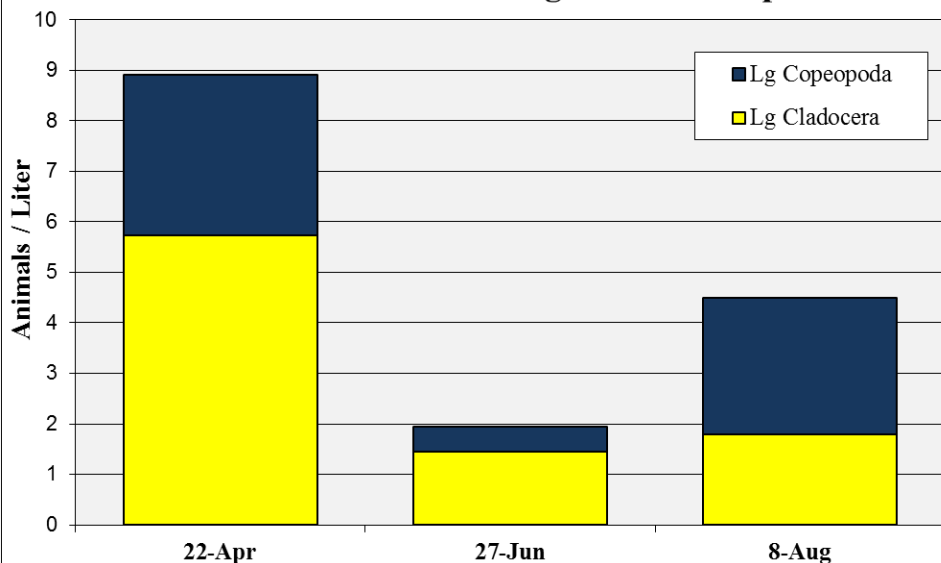
## Erdoni Brook Inlet Fluorometer Data



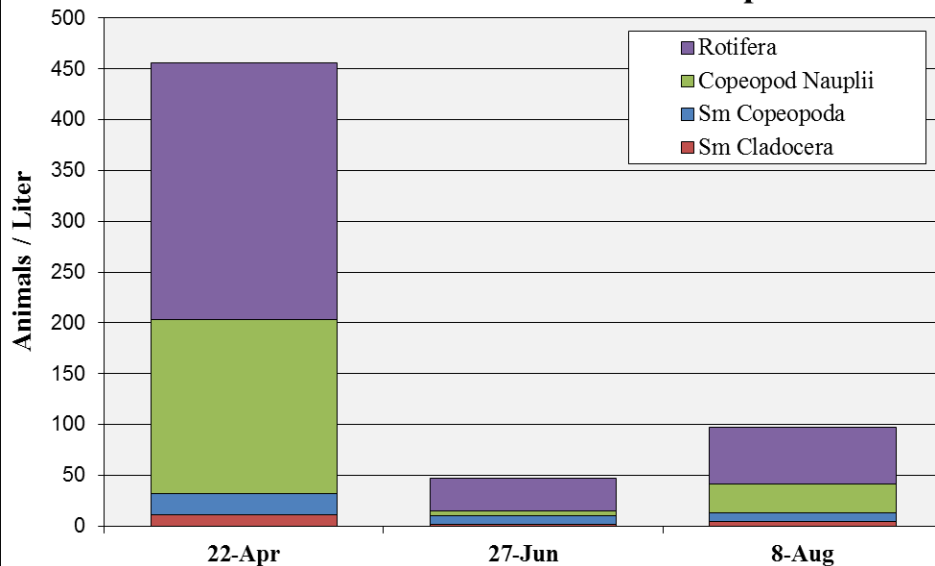
# Columbia Lake 2014 Algae



### Columbia Lake 2014 Large Bodied Zooplankton



### Columbia Lake 2014 Small Bodied Zooplankton



### Columbia Lake 1994 - 2014 Large Cladocera

