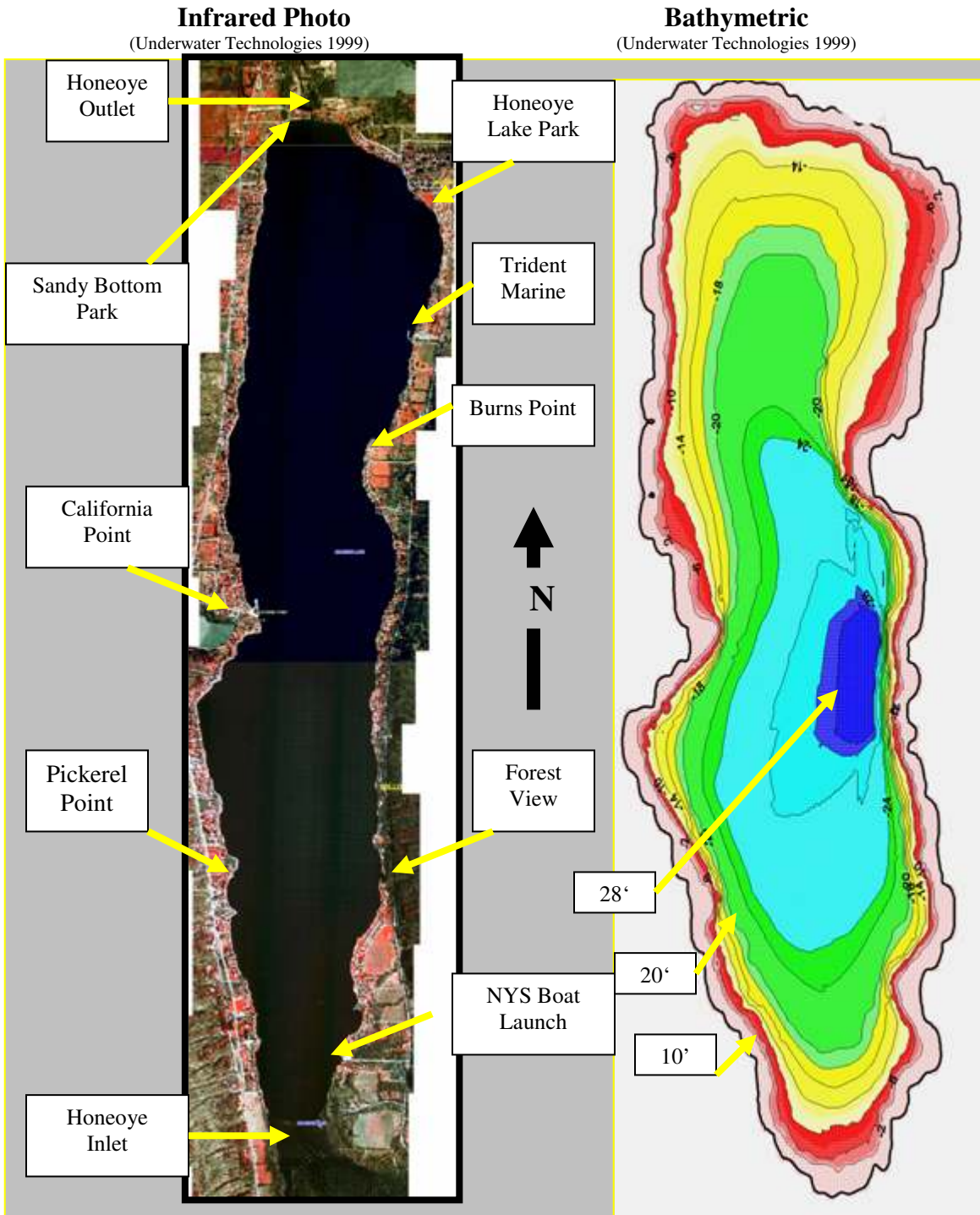


Honeoye Lake Data Summary

Jack Starke

October 25, 2005



HONEOYE LAKE WATERSHED SHOWING SUBWATERSHEDS



HONEOYE LAKE STATISTICS

Maximum length	4.1 miles	6.6 km	
Maximum width	0.88 miles	1.42 km.	
Mean width	0.67 miles	1.08 km.	
Shoreline length	10.6 miles	17.06 km.	
Surface area	2.82 sq. mi.	7.32 sq. km.	1805 acres
Maximum depth	30.2 ft.	9.2 meters	
Mean depth	16.1 ft.	4.9 meters	
Volume	9.2 billion gal.	34.8 million m ³	
Hydraulic retention time	292-352 days		
Mean elevation	803.43 ft.	244.89 m.	30 years of data
Highest level (1972)	806.49 ft.	245.82 m.	30 years of data
Lowest level (1985)	802.20 ft.	244.51 m.	30 years of data
Major Tributaries	Honeoye Inlet Briggs Gully Bray Gully Affolter Creek		

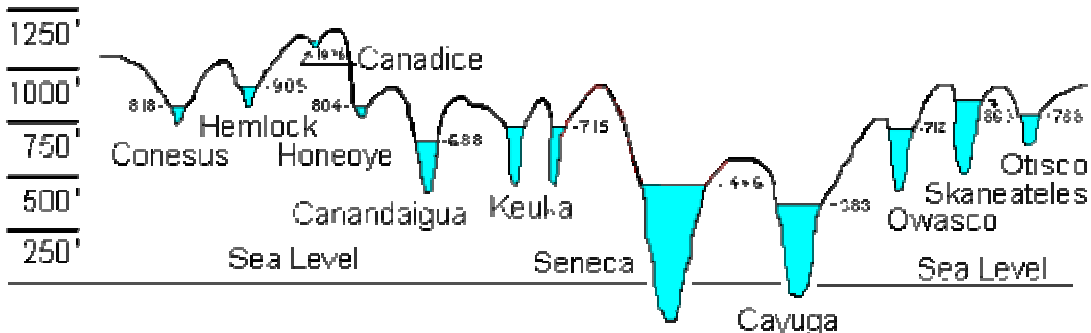
Depth Distribution

Depth	Percent
0-5	6.6
5-10	10.1
10-15	15.2
15-20	21.2
20-25	24.2
25-30	21.2
30+	1.5

654 lakefront parcels including:

- Sandy Bottom Park.
- Honeoye Lake Park Association: 1500 ft. of shoreline, lake access for 235 homes.
- Trident Marina
- Buffalo Tract- Single parcel broken into 13 properties with long term leases.
- New York State Boat Launch
- California Point

COMPARATIVE DEPTHS AND LEVELS OF THE ELEVEN FINGER LAKES



HONEOYE LAKE WATERSHED STATISTICS

Watershed Width	4.25 mi.	6.8 km.	
Watershed Length	10.9 mi.	17.4 km.	
Watershed Area	38.3 sq. mi.	99.1 sq. km.	24498 acres
Sub-watersheds			Area (acres)
1	North Shore DD	64	DD- Direct Drainage
2	Times Union Creek	651	
3	Quail Hill DD	832	
4	Bray Gully	1165	
5	East Shore DD	2387	
6	Briggs Gully	3140	
7	Inlet	10676	
8	Canadice Corners DD	1273	
9	Affolter Gully	1585	
10	West Shore DD	919	
	<u>Lake Area</u>	<u>1805</u>	
	Total	24497	

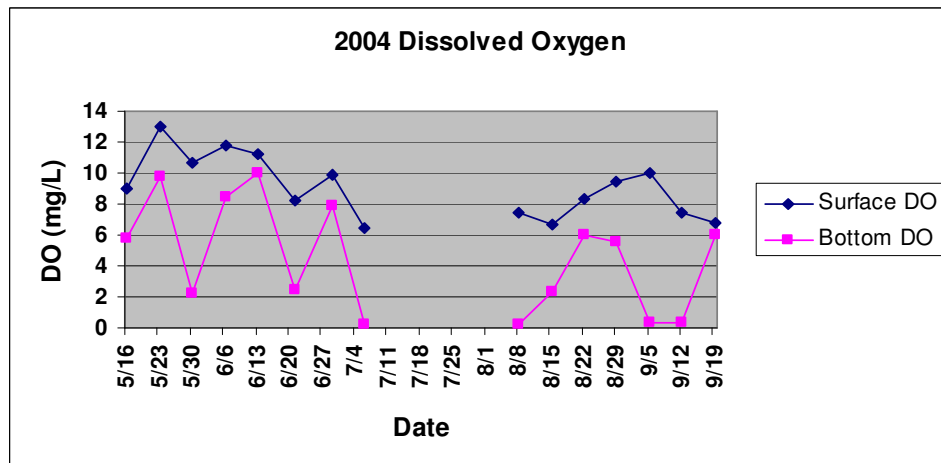
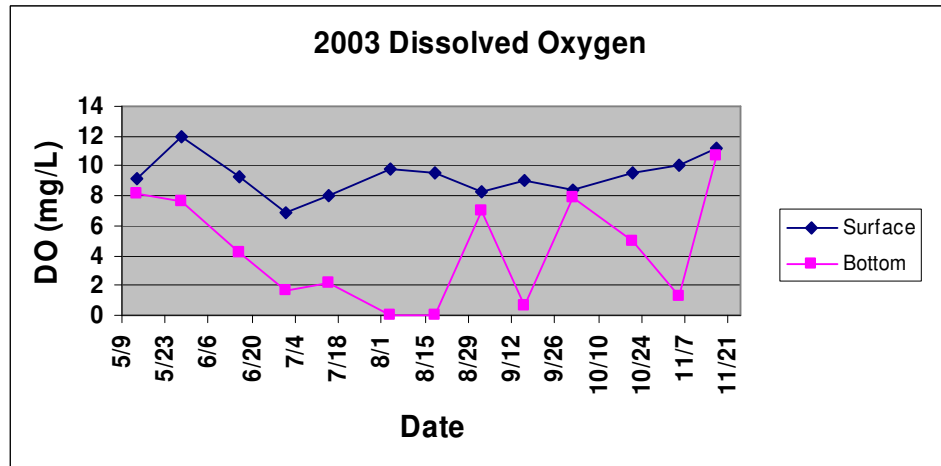
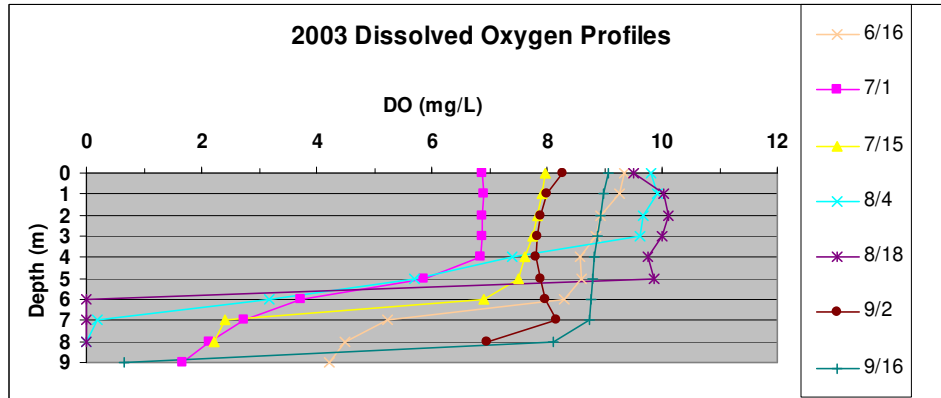
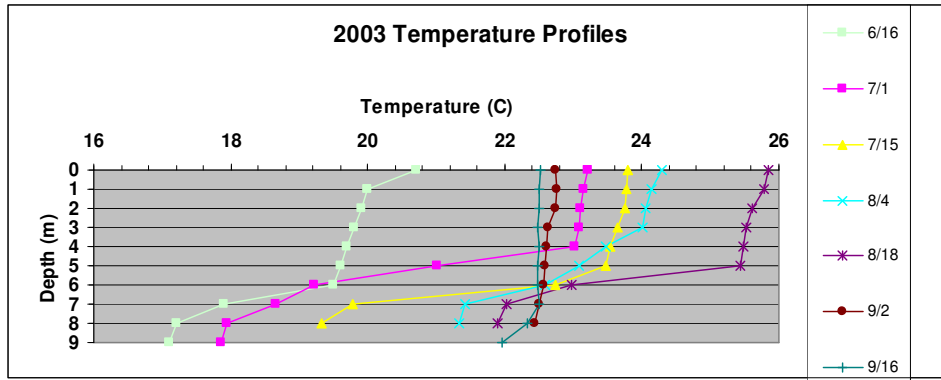
Annual Precipitation	30-35 in.	76-89 cm.	1/3 as snow
Mean annual temperature	45.9 F	7.7 C	
Mean summer temperature	70-75 F	21-24 C	
Mean winter temperature	22-27 F	-6 - -3 C	
Coldest Month	February	21.1 F	
Warmest Month	July	69.7 F	
Growing Season	140-170 dependent on elevation		
Population	1930	823	
	1970	1276	
	1980	1837	
	2005	2160	

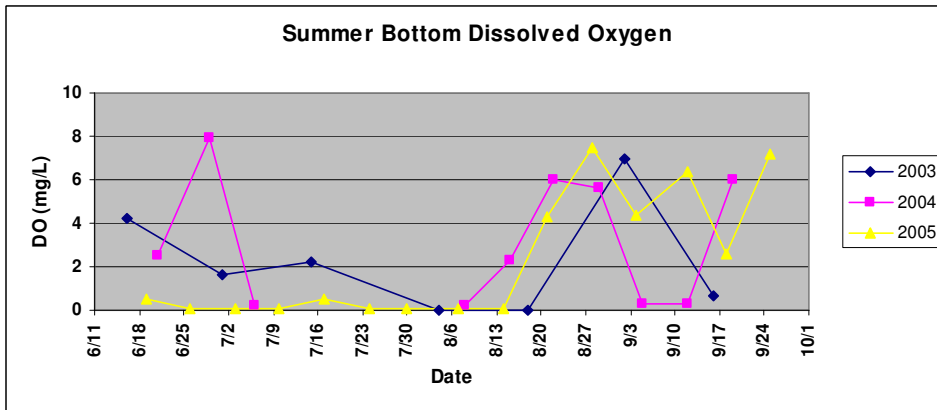
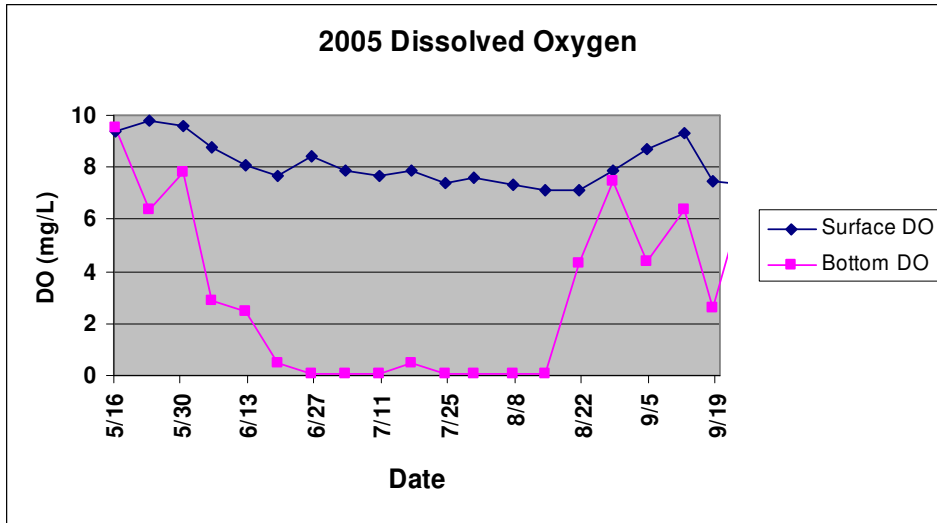
Bedrock Genesee Group- dark shale, gray silty shale, fossiliferous limestone
 Sonyea Group- dark gray shale imbedded with siltstone
 Wesfalls Group- inter-bedded gray shale, siltstones, sandstones

Major Public Lands

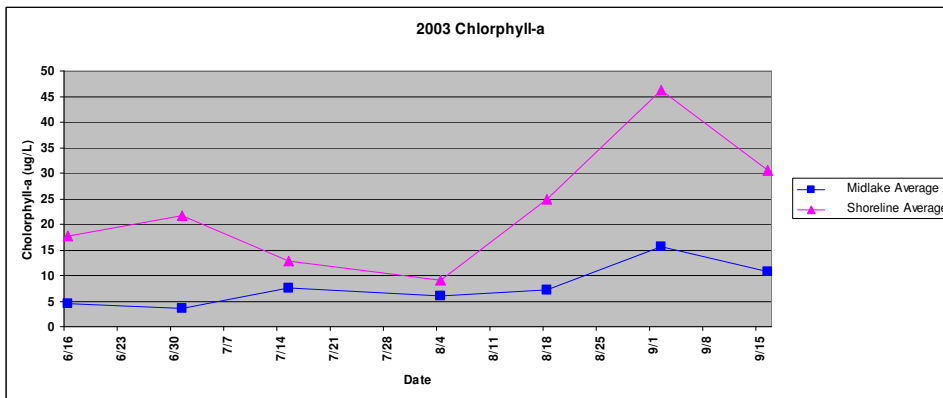
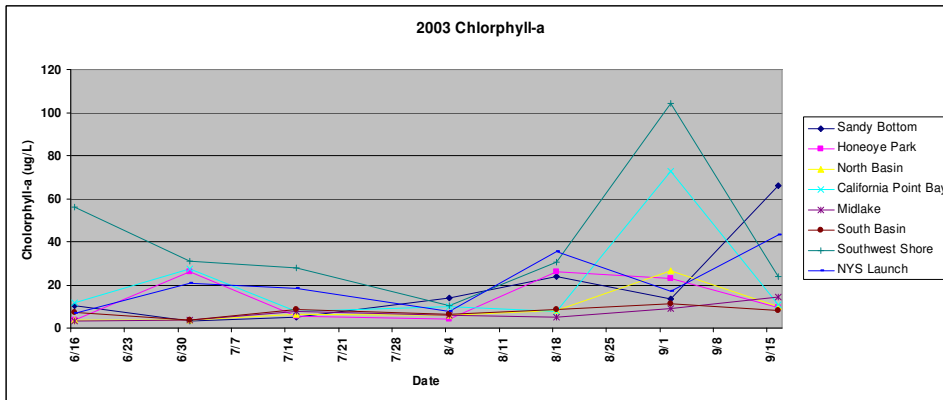
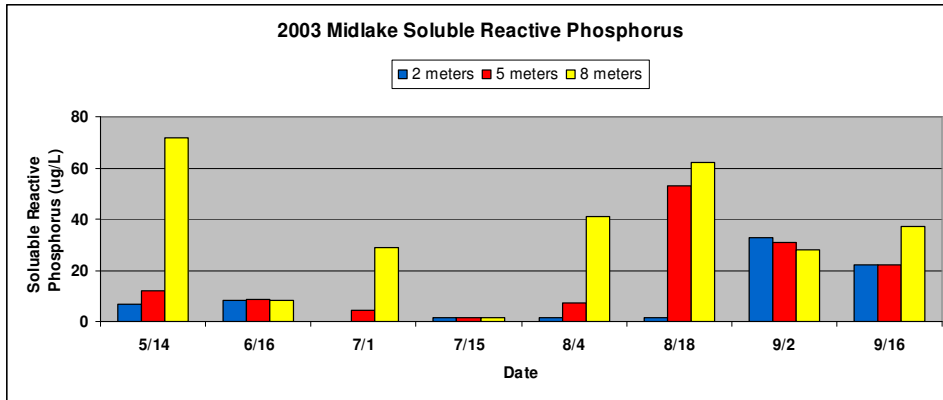
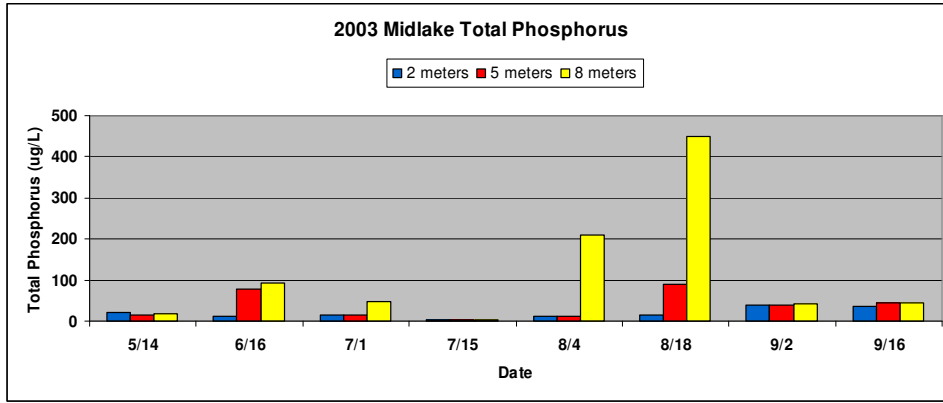
▪ Cumming Nature Center (Rochester Museum and Science Center)	914
▪ NYS Parks' Harriet Hollister Spencer State Recreation Area	696
▪ NYSDEC Honeoye Inlet Wildlife Management Area	2200
▪ Finger Lakes Community College's Muller Conservation Field Station	50
▪ The Nature Conservancy's Muller Boy Scout Reservation	164
▪ Finger Lakes Land Trust's Wesley Hill Preserve	360

Honeoye Lake Temperature and DO Summary

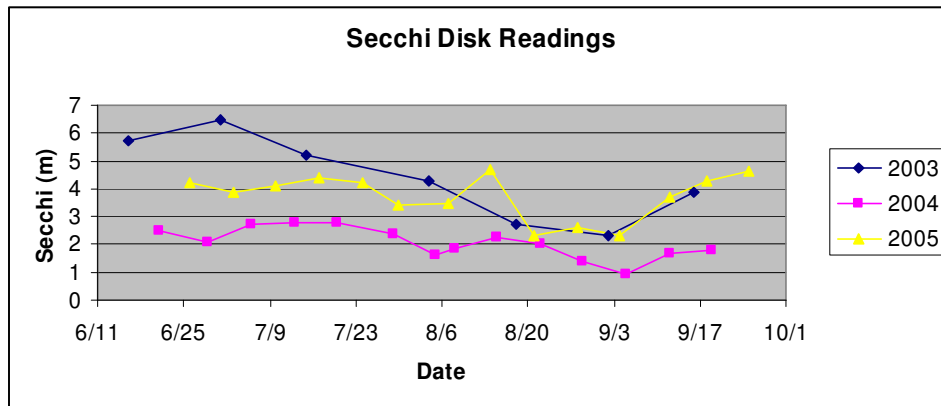
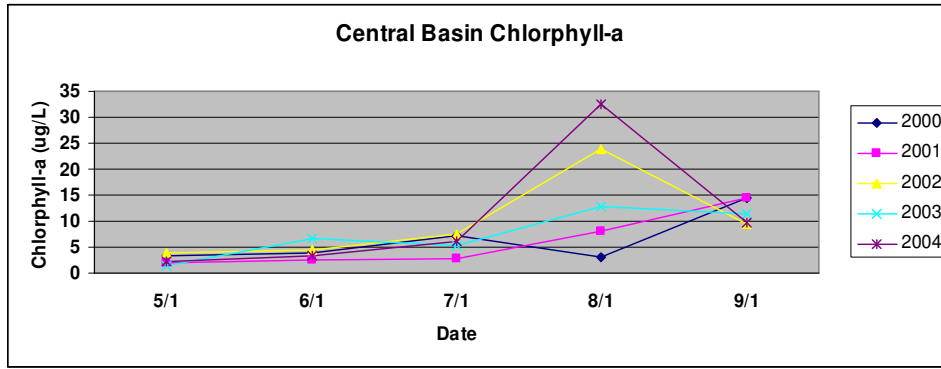




2003 Trophic Indicators



Historical Trophic Indicators



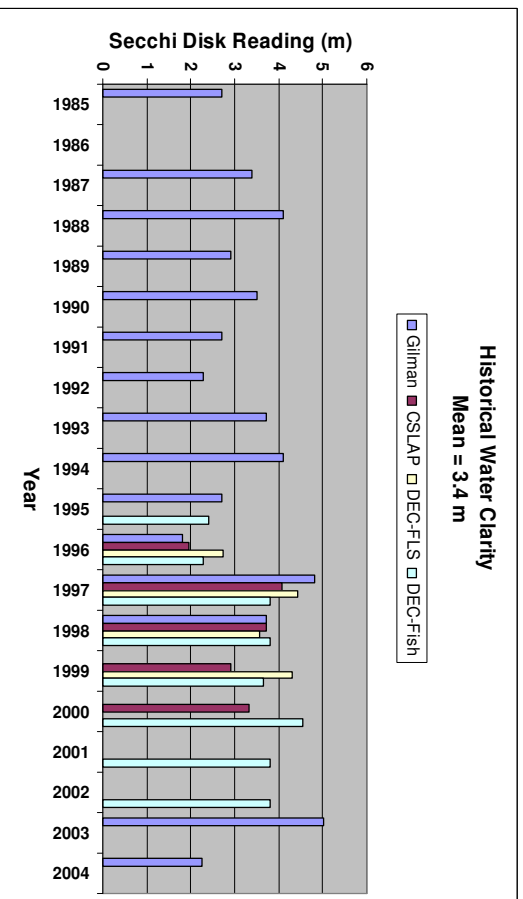
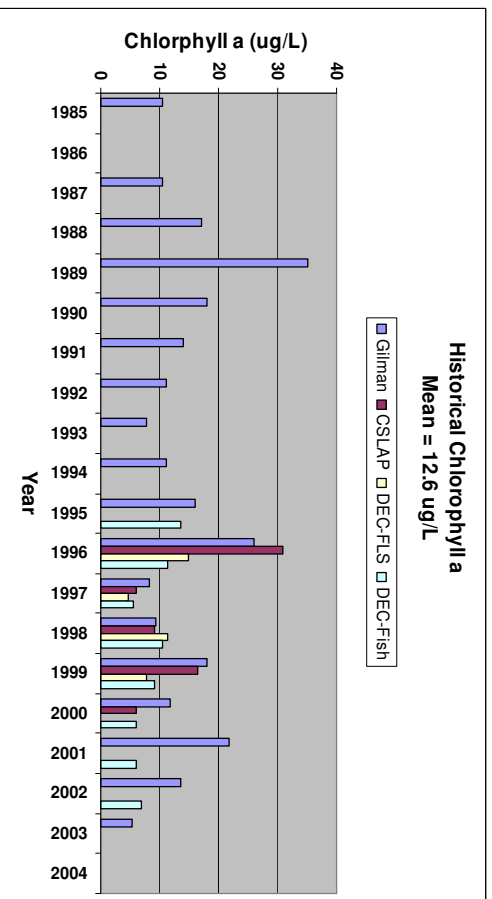
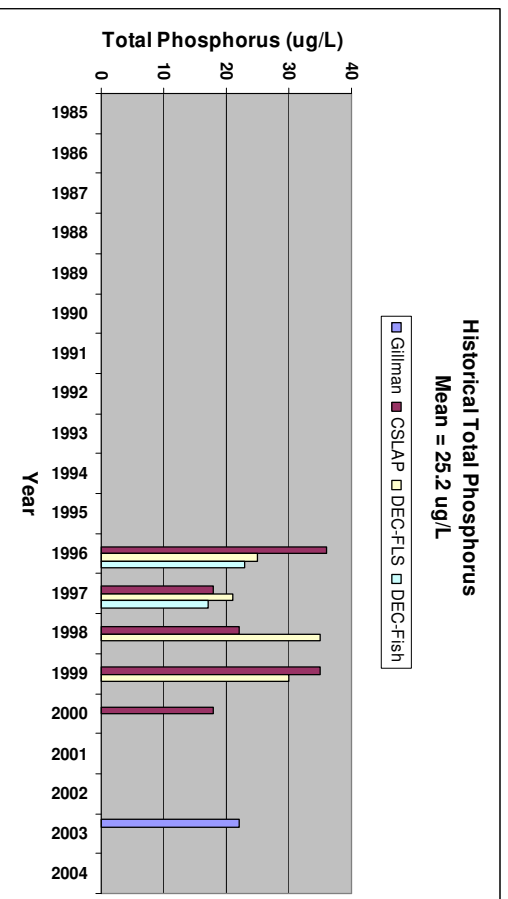
Conventional Trophic Status Indicators

Indicator	Oligotrophic	Mesotrophic	Eutrophic	Honeoye Lake
Winter Total phosphorus (ug/L)	<10	10-20	>20	13-48
Summer Chlorophyll-a (ug/L)	<4	4-10	>10	1-35
Water Clarity Secchi (m)	>4	2-4	<2	1.8-6.8
Hypolimnetic oxygen (% saturation)	>80	10-80	<10	0-100

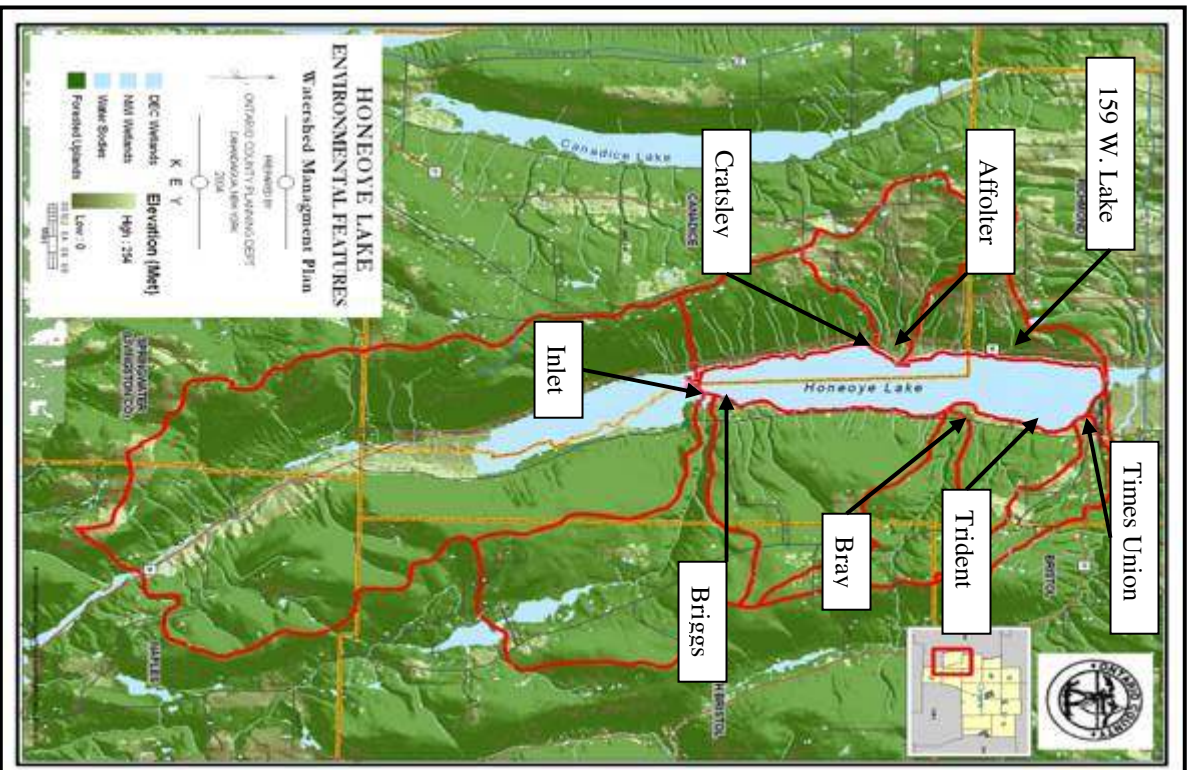
Historical Change in Trophic Indices

Parameter	1970's	1996-1998
Mean Phosphorus (ug/L)	19.0	24.2
Mean Chlorophyll-a (ug/L)	25.7	8.4
Mean Secchi Reading (m)	3.0	3.7

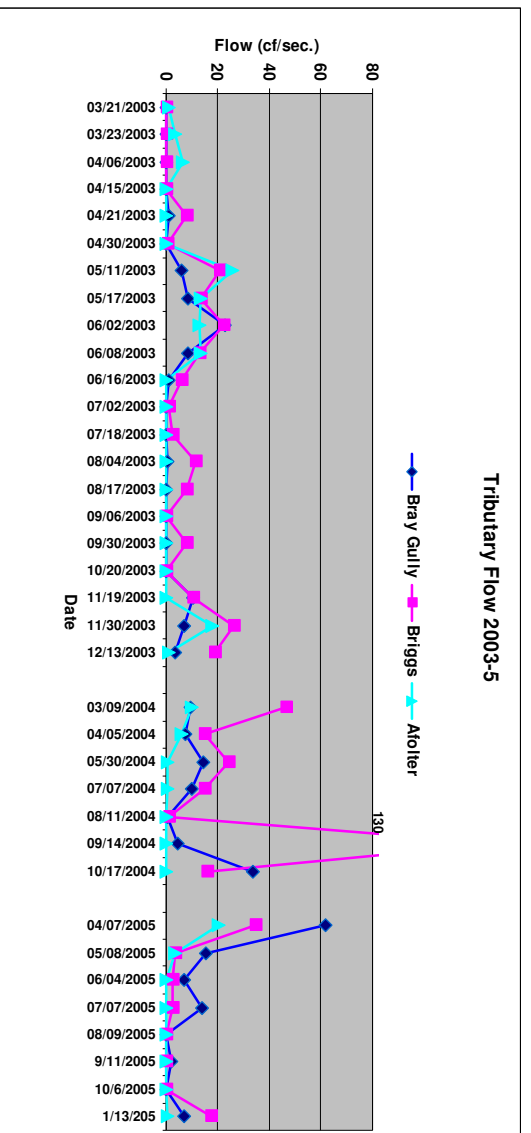
Historical Trophic Indicators



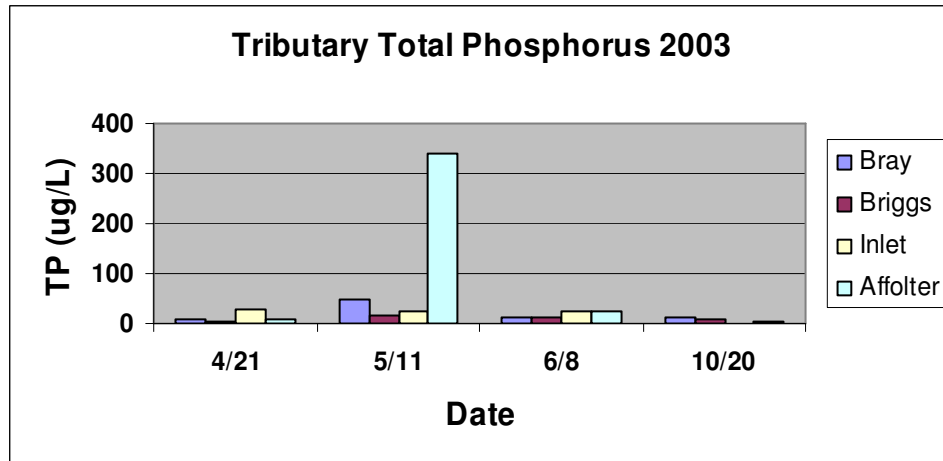
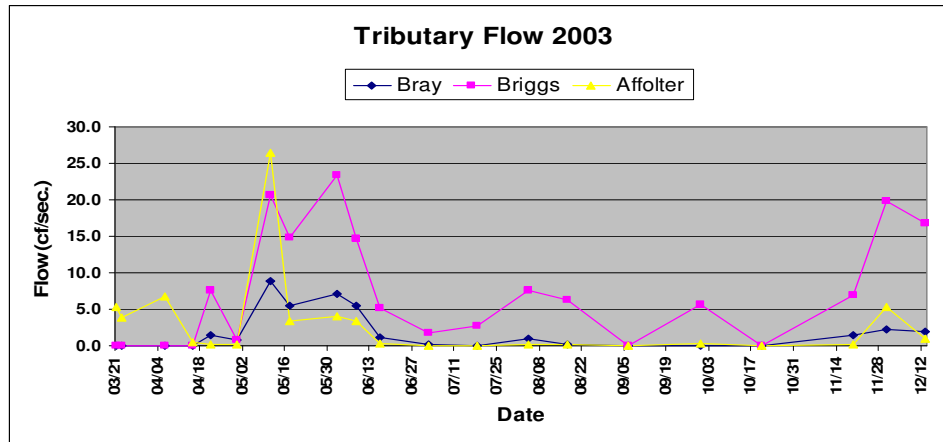
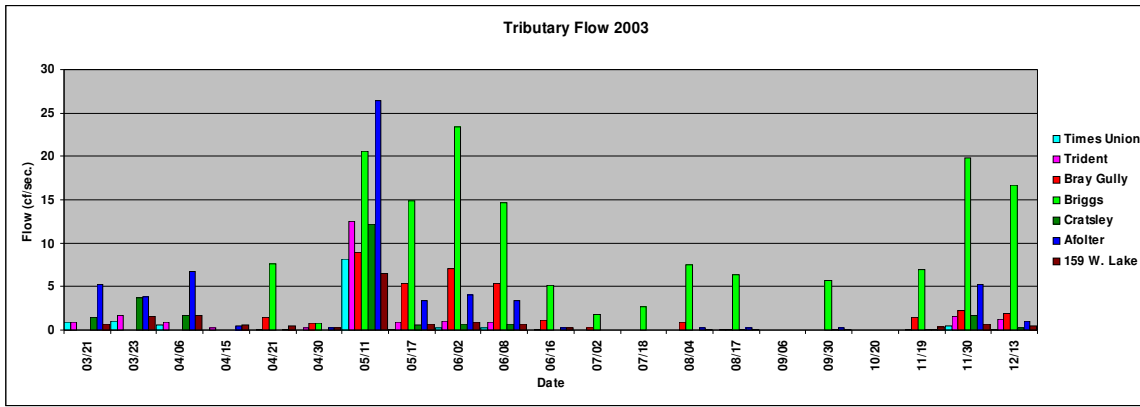
Sampled Streams

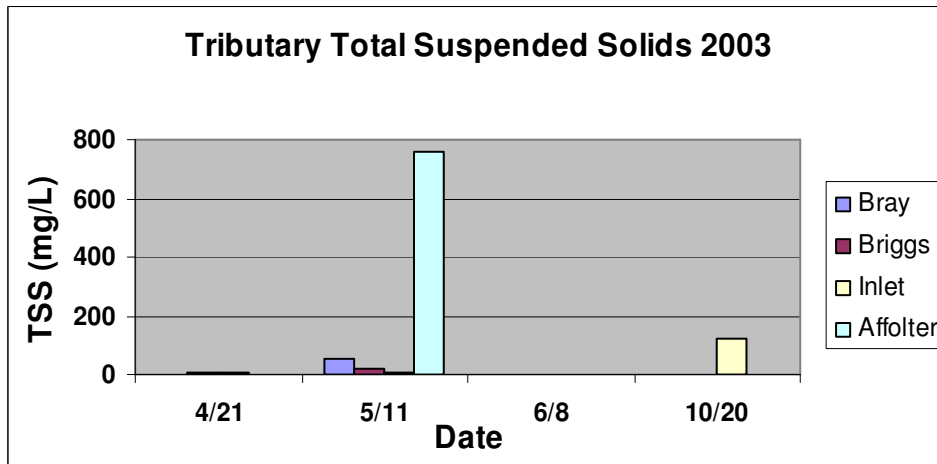
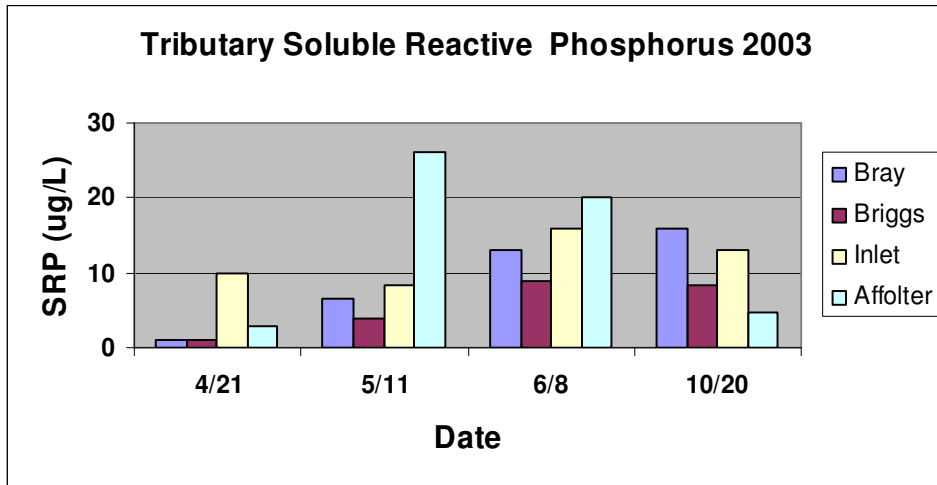


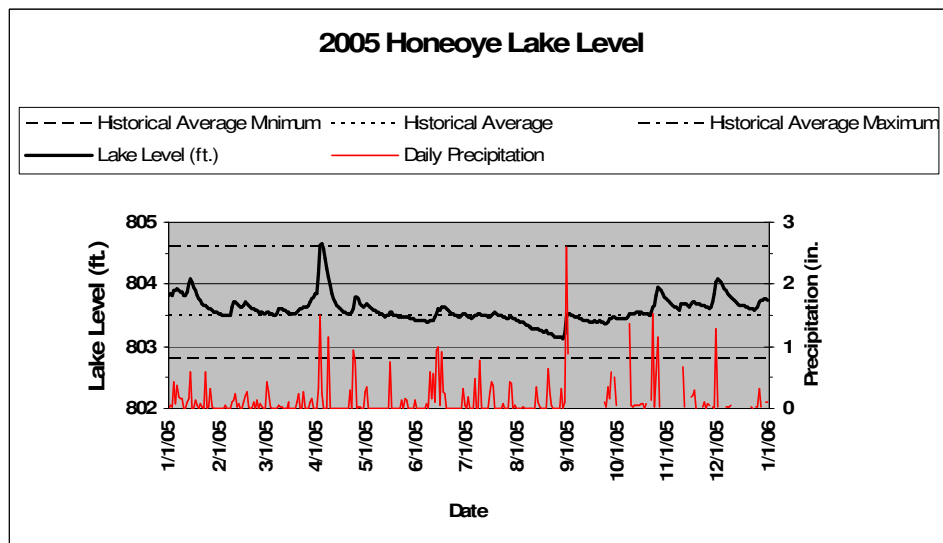
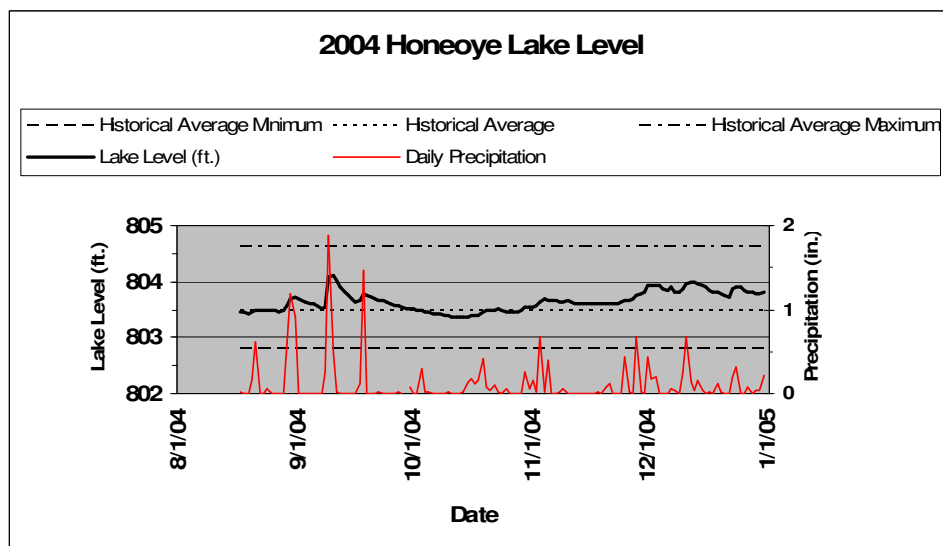
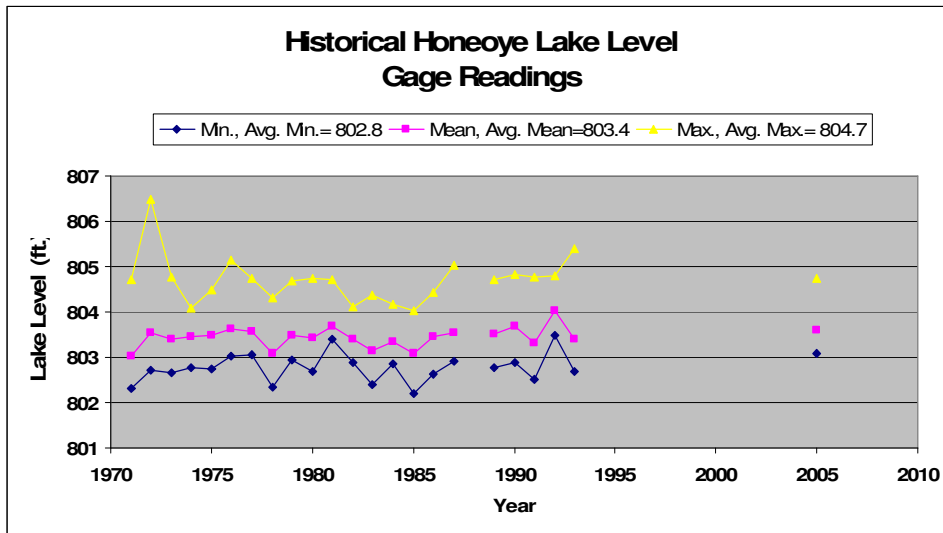
Tributary Flow 2003-5



2003 Tributary Sampling

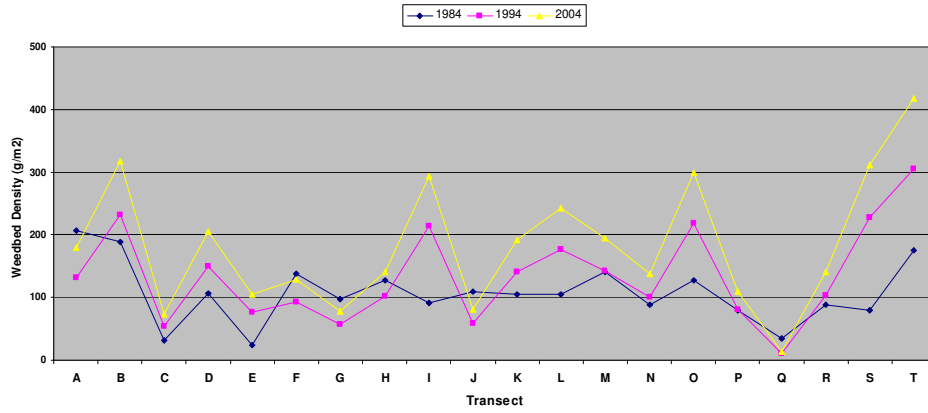




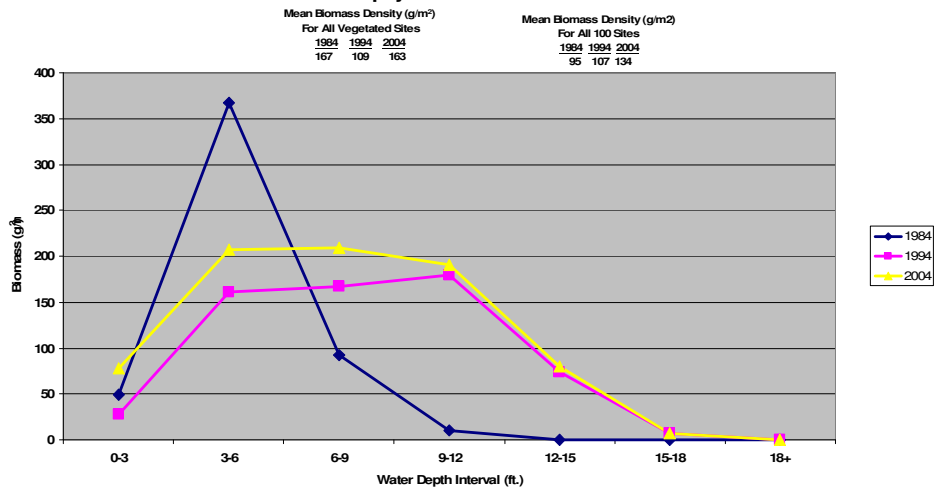


Weedbed Survey Summary

Spatial Variation in Weedbed Density



Macrophyte Biomass Distribution

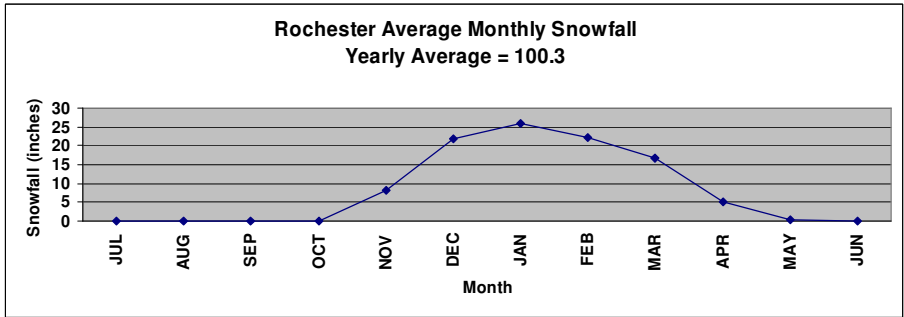
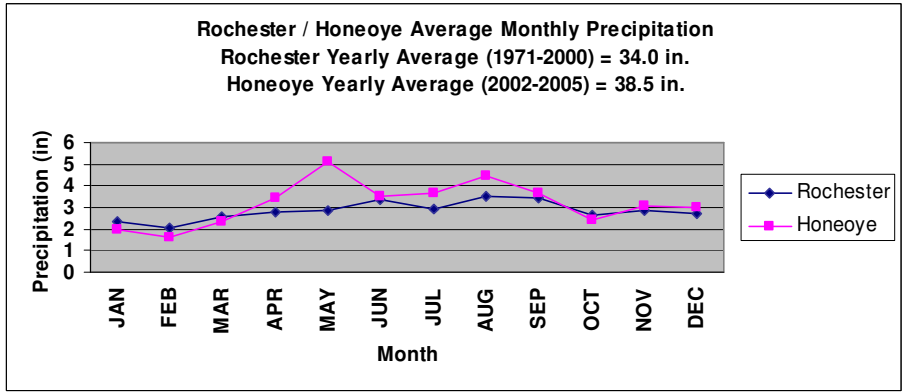
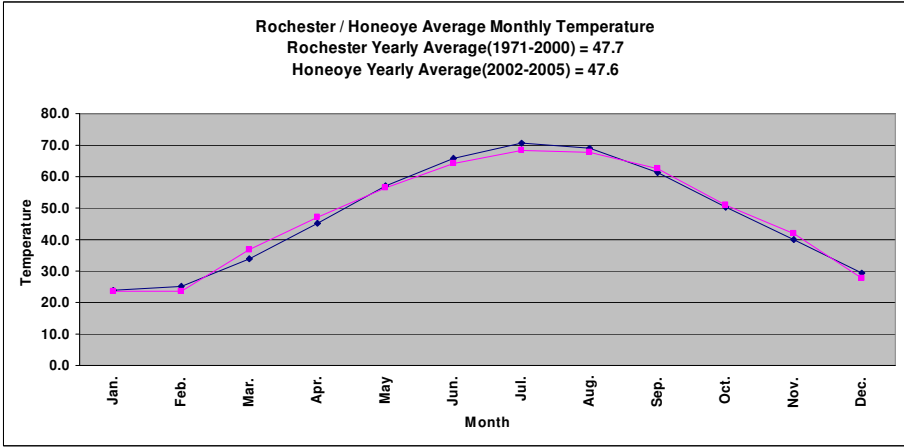
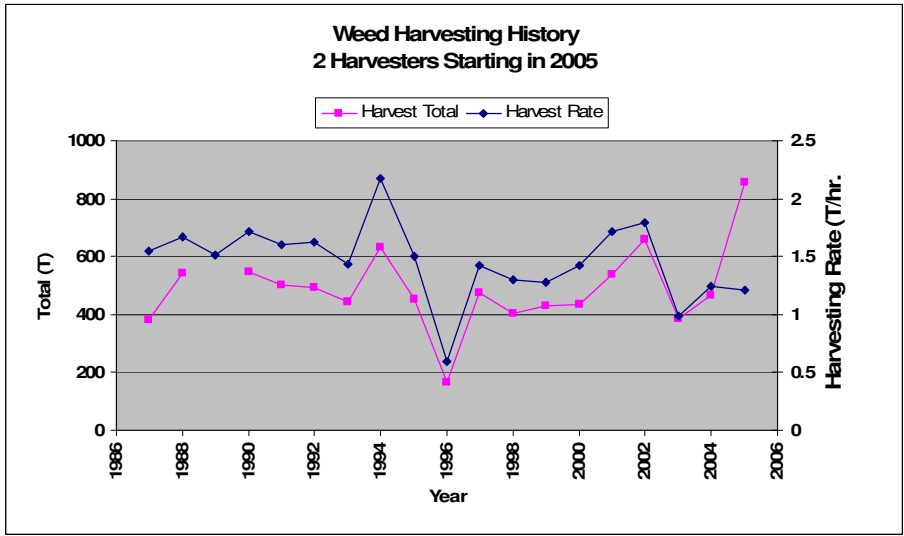


Honeoye Lake Macrophytes



Weedbed Survey Macrophyte Species Composition

Common Name	Species	1984					1994					2004				
		Average Density (g/m ²)	% of sites	Relative Dominance	Relative Frequency	Relative Importance	Average Density (g/m ²)	% of sites	Relative Dominance	Relative Frequency	Relative Importance	Average Density (g/m ²)	% of sites	Relative Dominance	Relative Frequency	Relative Importance
Coontail	<i>Ceratophyllum demersum</i>	9.0	15	9.4	7.9	8.6	10.5	57	9.8	10.0	9.9	39.2	68	29.3	14.8	22.1
Eelgrass	<i>Vallisneria americana</i>	60.8	47	63.8	24.6	44.2	16.3	58	15.2	10.1	12.7	23.7	56	17.8	12.2	15.0
Eurasian Milfoil	<i>Myriophyllum spicatum</i>	2.8	18	2.9	9.4	6.2	57.5	92	53.7	16.1	34.9	18.1	65	13.5	14.1	13.8
Water Stargrass	<i>Heteranthera dubia</i>	5.3	20	5.5	10.5	8.0	5.1	32	4.8	5.6	5.2	16.1	49	12.1	10.7	11.4
Large-leaved Pondweed	<i>Potamogeton amplifolius</i>	3.9	20	4.1	10.5	7.3	6.0	48	5.6	8.4	7.0	13.0	48	9.7	10.4	10.1
Elodea	<i>Elodea canadensis</i>	5.5	14	5.8	7.3	6.5	4.7	59	4.3	10.3	7.3	10.6	55	8.0	12.0	10.0
Flat-stem Pondweed	<i>Potamogeton zosteriformis</i>	0.1	6	0.1	3.1	1.6	1.8	57	1.7	10.0	5.8	3.6	31	2.7	6.7	4.7
Starleaved Duckweed	<i>Lemna trisulca</i>	0.3	14	0.3	7.3	3.8	0.4	37	0.4	6.5	3.4	1.9	26	1.4	5.7	3.5
Filamentous Algae	Algae	0.1	3	0.1	1.6	0.9	0.2	10	0.2	1.7	1.0	1.9	18	1.4	3.9	2.7
Water Marigold	<i>Bidens beckii</i>	4.0	15	4.2	7.9	6.0	1.3	10	1.2	1.7	1.5	1.4	10	1.1	2.2	1.6
Pickereel Weed	<i>Pontederia cordata</i>	2.9	1	3.0	0.5	1.8	0.6	1	0.6	0.2	0.4	1.1	1	0.8	0.2	0.5
Small Pondweed	<i>Potamogeton pusillus</i>	0.0	0	0.0	0.0	0.0	0.1	10	0.1	1.7	0.9	1.1	8	0.8	1.7	1.3
Water Buttercup	<i>Ranunculus longirostris</i>	0.0	0	0.0	0.0	0.0	0.0	4	0.0	0.7	0.4	0.8	4	0.6	0.9	0.8
Green Arrow Arum	<i>Peltandra virginica</i>	0.0	0	0.0	0.0	0.0	0.1	1	0.1	0.2	0.1	0.4	1	0.3	0.2	0.3
Curly Leafed Pondweed	<i>Potamogeton crispus</i>	0.2	11	0.2	5.8	3.0	0.5	44	0.5	7.7	4.1	0.3	5	0.2	1.1	0.7
Giant Bur-weed	<i>Sparganium eurycarpum</i>	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.2	1	0.2	0.2	0.2
Richardson's Pondweed	<i>Potamogeton richardsonii</i>	0.1	2	0.2	1.0	0.6	0.3	5	0.3	0.9	0.6	0.1	3	0.1	0.7	0.4
Ribbonleaf Pondweed	<i>Potamogeton ephedrus</i>	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	2	0.0	0.4	0.2
Slender Naiad	<i>Najas flexilis</i>	0.0	1	0.0	0.5	0.3	0.3	12	0.3	2.1	1.2	0.0	3	0.0	0.7	0.3
Water Naiad	<i>Najas guadalupensis</i>	0.0	0	0.0	0.0	0.0	1.0	17	0.9	3.0	1.9	0.0	3	0.0	0.7	0.3
Sago Pondweed	<i>Potamogeton pectinatus</i>	0.0	1	0.0	0.5	0.3	0.0	0	0.0	0.0	0.0	0.0	2	0.0	0.4	0.2
Duck weeds	<i>Lemna + Spirodela</i>	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	1	0.0	0.2	0.1
Nitella	<i>Nitella flexilis</i>	0.0	1	0.0	0.5	0.3	0.1	10	0.1	1.7	0.9	0.0	0	0.0	0.0	0.0
Whorl-leaf Watermilfoil	<i>Myriophyllum verticillatum</i>	0.0	0	0.0	0.0	0.0	0.3	3	0.3	0.5	0.4	0.0	0	0.0	0.0	0.0
Aquatic Moss	<i>Fontinalis spp.</i>	0.3	1	0.3	0.5	0.4	0.1	2	0.1	0.3	0.2	0.0	0	0.0	0.0	0.0
Green Algae	<i>Chara vulgaris</i>	0.0	0	0.0	0.0	0.0	0.0	2	0.0	0.3	0.2	0.0	0	0.0	0.0	0.0
Great Bladderwort	<i>Utricularia vulgaris</i>	0.0	1	0.0	0.5	0.3	0.0	1	0.0	0.2	0.1	0.0	0	0.0	0.0	0.0
	TOTAL	95.2	191	100	100	100	107.1	572	100	100	100	133.7	460	100	100	100



Relationship between DSV Factor and Total Phosphorus, Chlorophyll-a, and Secchi for NYS Finger Lakes

An Osgood Factor discussed in: Cooke, G. Dennis, et al, "Shallow and Deep Lake", NALMS-Lakeline Spring 2001 is an index that estimates the probability of lake mixing during the summer months. It is defined as follows: Osgood Factor=Mean Depth(m)/Square Root(Surface Area(km)). I defined a similar factor V-Factor=Depth(m)/Cube Root(Volume(km)).

For the Finger Lakes there appears to be a high degree of correlation between these simple factors and the lakes trophic indicators, Total Phosphorus and Chlorophyll-a. This indicates that the trophic state of a lake may in a large part be determined by its depth relative to its size (either area or volume). The correlation using the V-factor was better than for the Osgood Factor and is reported below.

The physical parameters and trophic indicators were taken from:
Callinan, Clifford W., "Water Quality Study of Finger Lakes", NYSDEC, July, 2001 pages 20, 38, 42, 45

