

# Big Blake Lake Planning Meeting

Meeting 2

Saturday, March 12, 2016

# History of Harvesting

- 1976 District formed
- 1980/1990 Contracted harvesting, herbicide
- 1998 First plant survey
- 1999 Plant management plan
- 2004 Plant survey and plan
- 2007 District begins harvesting



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## Curly-leaf pondweed harvesting information

	Harvesting start date	Harvesting end date	Loads of curly-leaf pondweed removed
<b>2013</b>	June 16	July 3	8
<b>2014</b>	June 8	July 14	30
<b>2015</b>	May 19	July 1	143

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## Coontail harvesting information

	Harvesting start date	Harvesting end date	Loads of coontail removed
<b>2013</b>	July 18	Sept 17	14
<b>2014</b>	Aug 14	Sept 18	6
<b>2015</b>	July 22	Sept 3	28

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**Rating**

**Coverage**

**Description**

**1**



A few plants on rake head

**2**

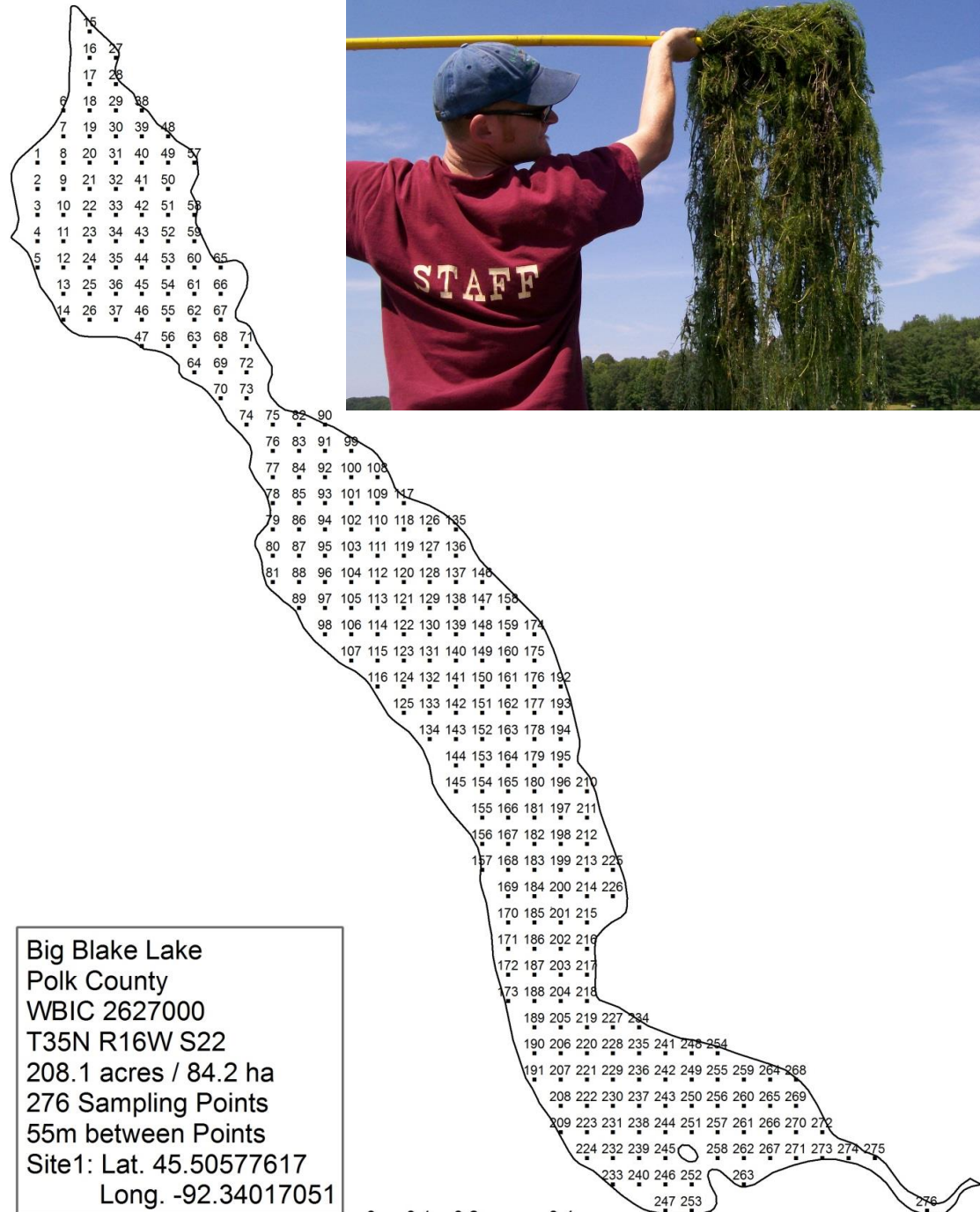


Rake head is about 1/2 full  
Can easily see top of rake head

**3**



Overflowing  
Cannot see top of rake head

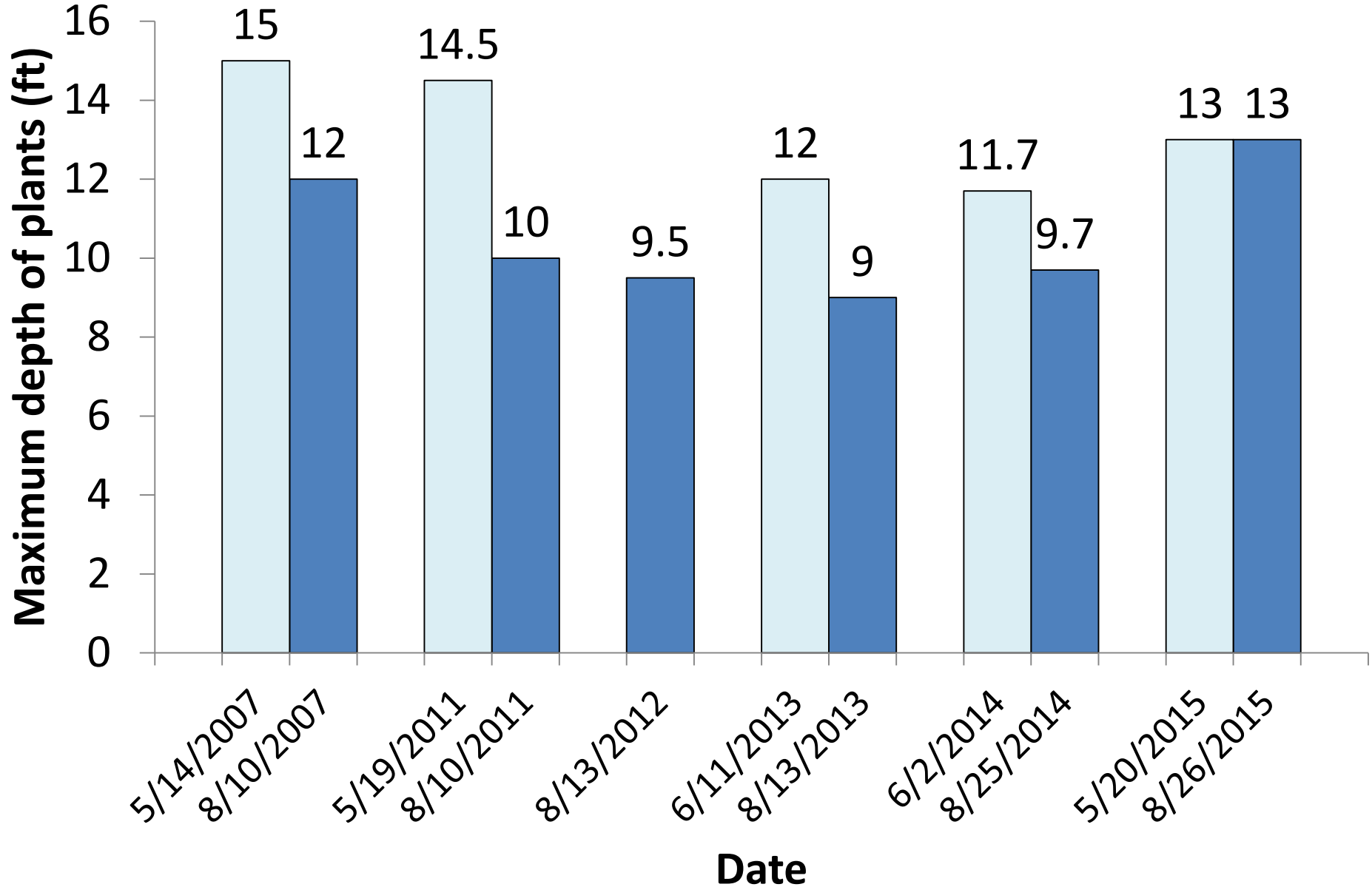


Big Blake Lake  
 Polk County  
 WBIC 2627000  
 T35N R16W S22  
 208.1 acres / 84.2 ha  
 276 Sampling Points  
 55m between Points  
 Site1: Lat. 45.50577617  
 Long. -92.34017051

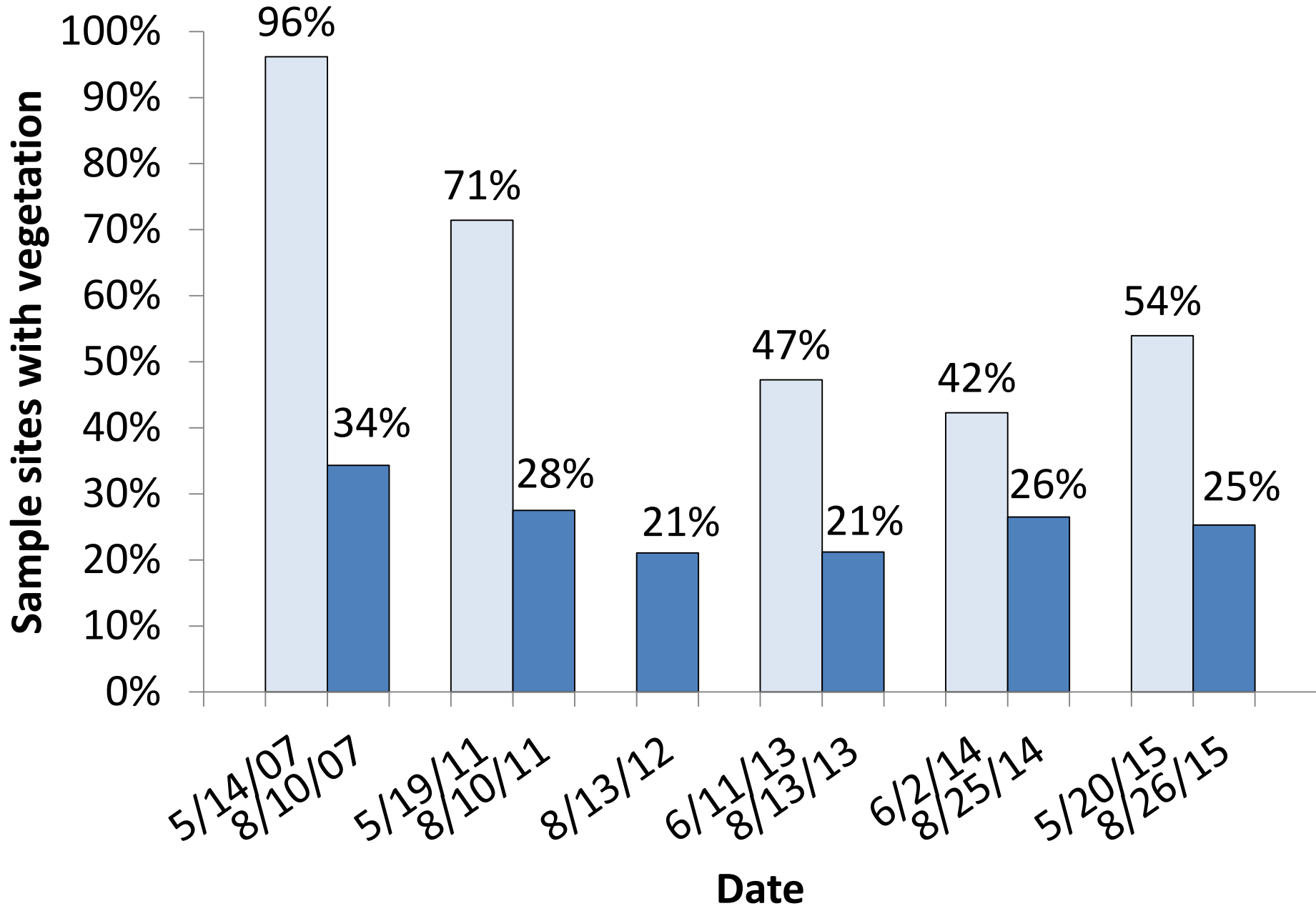
Created: 2006



# Big Blake Lake maximum depth of plants



# Big Blake Lake sample sites with vegetation



# What are the dominant species?



Relative  
frequency



Frequency of  
occurrence at sites  
shallower than  
maximum depth of  
plants



**FREQUENCY OF  
OCCURRENCE IN  
VEGETATED AREAS**



# CLP Frequency of Occurrence

<b>SPRING</b>	5/14/07	5/19/11	6/11/13	6/2/14	5/20/15
Vegetated areas	100%	93%	73%	59%	93%
Maximum depth of plants	97%	67%	53%	32%	51%

<b>FALL</b>	8/10/07	8/10/11	8/13/12	8/13/13	8/25/14	8/26/15
Vegetated areas	1.1%	1.4%	1.8%	1.8%	1.4%	1.5%
Maximum depth of plants	0.4%	0.8%	0.9%	1.1%	0.8%	0.4%



# Coontail Frequency of Occurrence

<b>SPRING</b>	5/14/07	5/19/11	6/11/13	6/2/14	5/20/15
Vegetated areas	20%	26%	34%	32%	19%
Maximum depth of plants	19%	18%	25%	17%	11%

<b>FALL</b>	8/10/07	8/10/11	8/13/12	8/13/13	8/25/14	8/26/15
Vegetated areas	86%	92%	86%	82%	73%	85%
Maximum depth of plants	31%	52%	44%	51%	42%	22%

# Relative Frequency

- How common a species is compared to all the species found
- Adds up to 100%

	5/14/07	5/19/11	6/11/13	6/2/14	5/20/15
CLP	75%	61%	38%	32%	60%
Coontail	15%	17%	18%	17%	13%

	8/10/07	8/10/11	8/13/12	8/13/13	8/25/14	8/26/15
CLP	0.7%	0.6%	1%	0.8%	0.7%	0.7%
Coontail	59%	41%	46%	36%	36%	38%



© Paul Skawinski

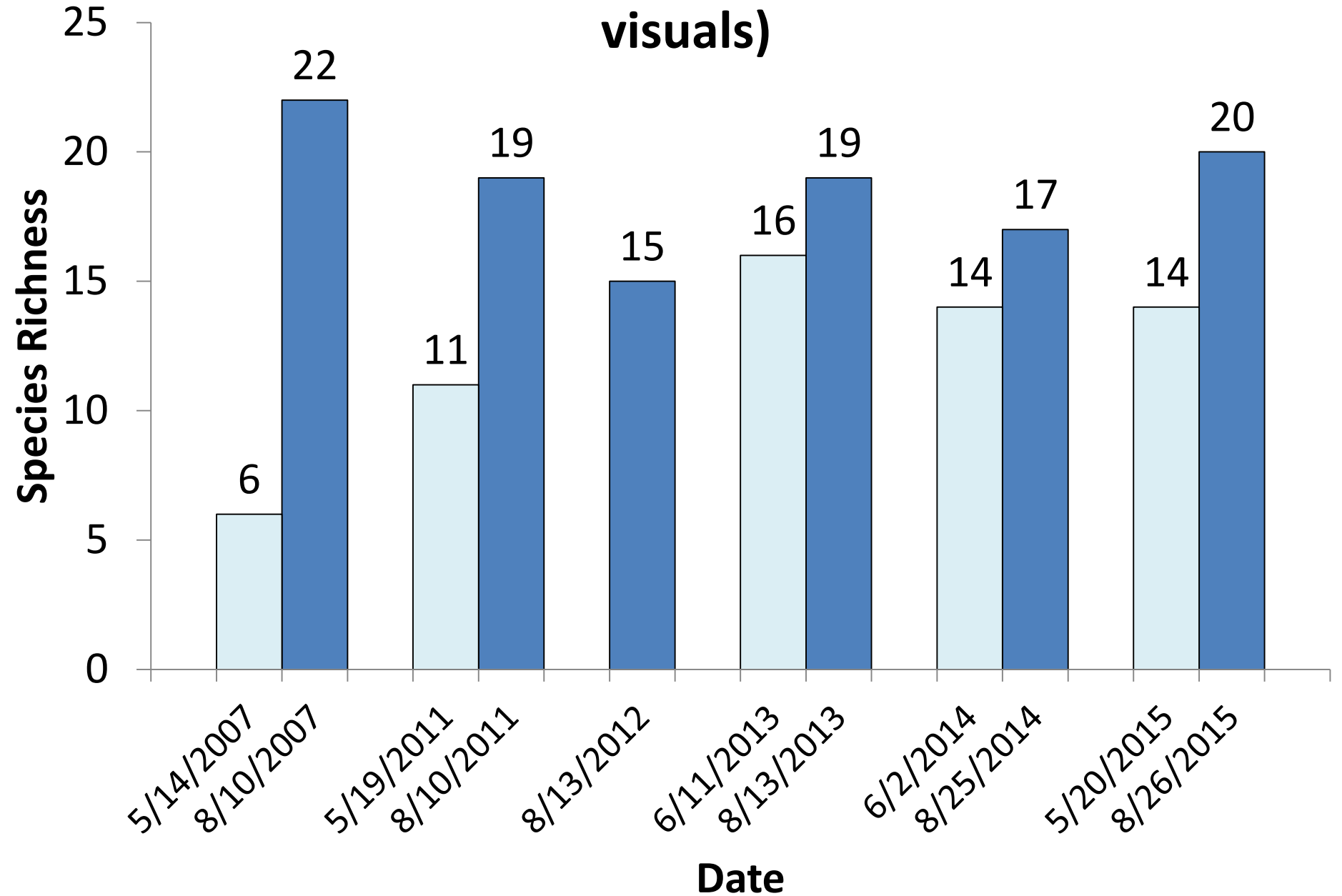
(C) Paul Skawinski, 2009

Spring relative frequency, 2007, 2011, and 2013-2015

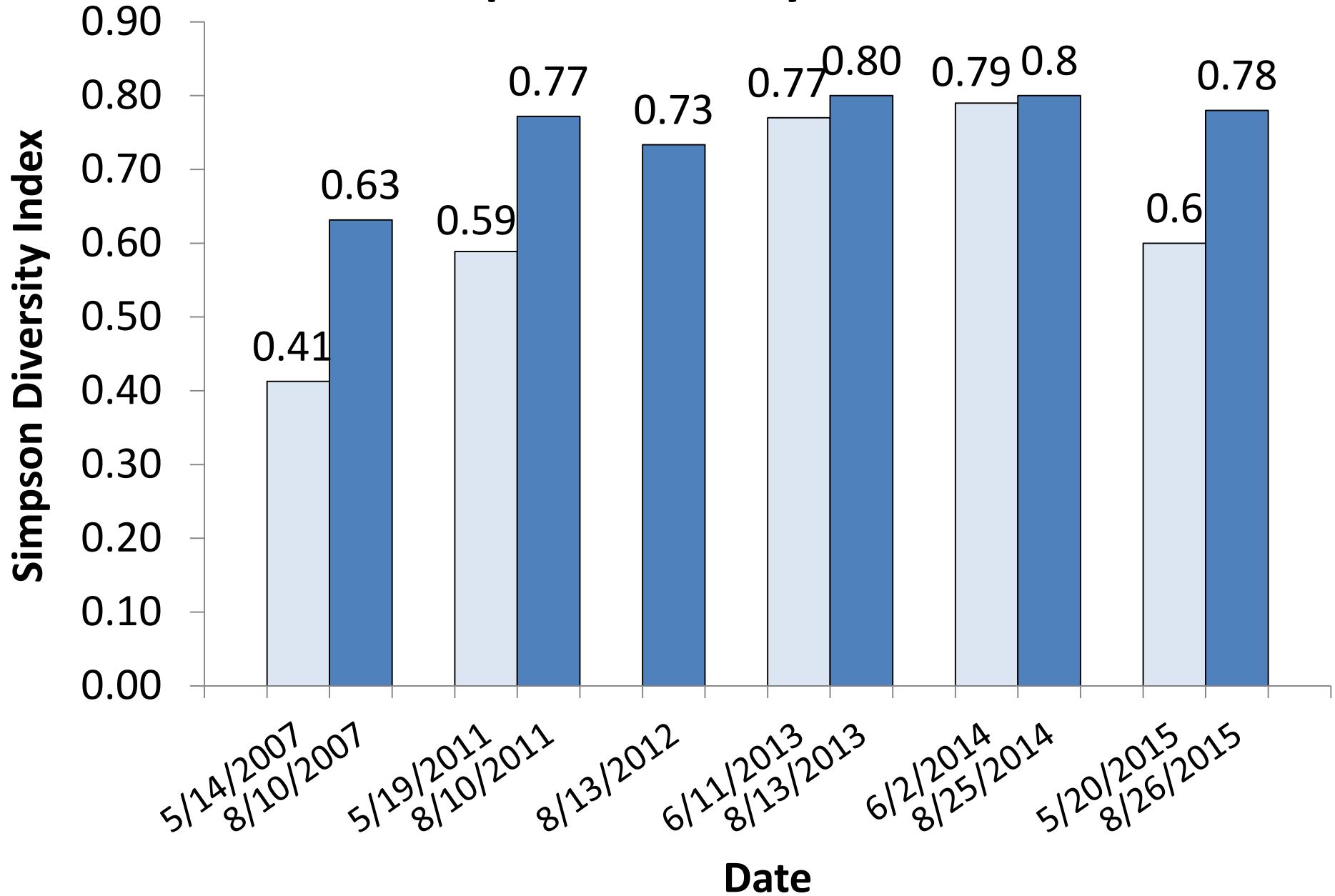
	5/14/07	5/19/11	6/11/13	6/2/14	5/20/15
<i>Ceratophyllum demersum</i> , coontail	14.6	16.7	17.8	17.1	12.6
Filamentous algae	6.3				
<i>Heteranthera dubia</i> , water star-grass			0.8		0.5
<i>Lemna minor</i> , small duckweed			1.2		
<i>Lemna trisulca</i> , forked duckweed	1.5	8.0	8.1	16.1	3.6
<i>Myriophyllum sibiricum</i> , northern water milfoil		1.3	0.4	1.4	2.7
<i>Nitella sp.</i> , nitella					0.5
<i>Nuphar variegata</i> , spatterdock		0.7	0.4	1.9	0.9
<i>Nymphaea odorata</i> , white water lily		0.3	1.2	0.9	0.5
<i>Potamogeton crispus</i> , curly-leaf pondweed	74.9	60.7	38.1	32.2	60.4
<i>Potamogeton praelongis</i> , white-stem pondweed		0.3	1.6	0.9	0.9
<i>Potamogeton pulcher</i> , spotted pondweed		0.3			
<i>Potamogeton pusillus</i> , small pondweed	0.9	9.0	18.6	21.3	12.2
<i>Potamogeton zosteriformis</i> , flat-stem pondweed	1.8	2.7	8.5	7.1	3.6
<i>Ranunculus aquatilis</i> , white water crowfoot			1.6		0.9
<i>Vallisneria americana</i> , wild celery			0.4		
<i>Wolffia columbiana</i> , common watermeal			0.8		
<i>Zizania palustris</i> , northern wild rice			0.4	0.9	0.9

Fall relative frequency, 2007, 2011, and 2013-2015						
	8/10/07	8/10/11	8/13/12	8/13/13	8/25/14	8/26/15
<i>Ceratophyllum demersum</i> , coontail	58.5	40.7	45.7	36.2	36.4	38.4
<i>Chara</i> sp., Muskgrasses						0.7
<i>Elodea canadensis</i> , common waterweed	0.7					2.0
Filamentous algae	5.9		2.9			
<i>Heteranthera dubia</i> , water star-grass	0.7	1.2		1.6	3.5	1.3
<i>Lemna minor</i> , small duckweed	2.2	3.0		0.8	2.8	2.0
<i>Lemna trisulca</i> , forked duckweed	9.6	19.2	16.2	12.6	18.9	19.9
<i>Myriophyllum sibiricum</i> , northern water milfoil	2.2	3.6	7.6	3.9	6.3	5.3
<i>Najas flexilis</i> , bushy pondweed	0.7	1.8		0.8	4.2	
<i>Nitella</i> sp., nitella	0.7					
<i>Nuphar variegata</i> , spatterdock		3.0	1.0		2.1	0.7
<i>Nymphaea odorata</i> , white water lily	1.5	1.8	3.8	3.9	2.8	3.3
<i>Potamogeton amplifolius</i> , large-leaf pondweed					0.7	
<i>Potamogeton crispus</i> , curly-leaf pondweed	0.7	0.6	1.0	0.8	0.7	0.7
<i>Potamogeton illinoensis</i> , Illinois pondweed	2.2					
<i>Potamogeton praelongis</i> , white-stem pondweed		1.2		1.6		2.0
<i>Potamogeton pusillus</i> , small pondweed	0.7	3.6		7.9	5.6	1.3
<i>Potamogeton richardsonii</i> , clasping-leaf pondweed	1.5	1.2	1.0	3.9	0.7	2.0
<i>Potamogeton zosteriformis</i> , flat-stem pondweed	10.4	13.8	14.3	21.3	14.0	15.9
<i>Ranunculus aquatilis</i> , white water crowfoot		0.6		0.8	0.7	1.3
<i>Sparganium angustifolium</i> , narrow-leaved burreed			4.8			
<i>Spirodela polyrhiza</i> , large duckweed	0.7	3.0		0.8		
<i>Stuckenia pectinata</i> , sago pondweed	0.7					
<i>Vallisneria americana</i> , wild celery		0.6	1.9	2.4		1.3
<i>Wolffia columbiana</i> , common watermeal		0.6		0.8	0.7	2.0
<i>Zizania palustris</i> , northern wild rice		0.6				

# Big Blake Lake species richness (including visuals)



# Simpson Diversity Index



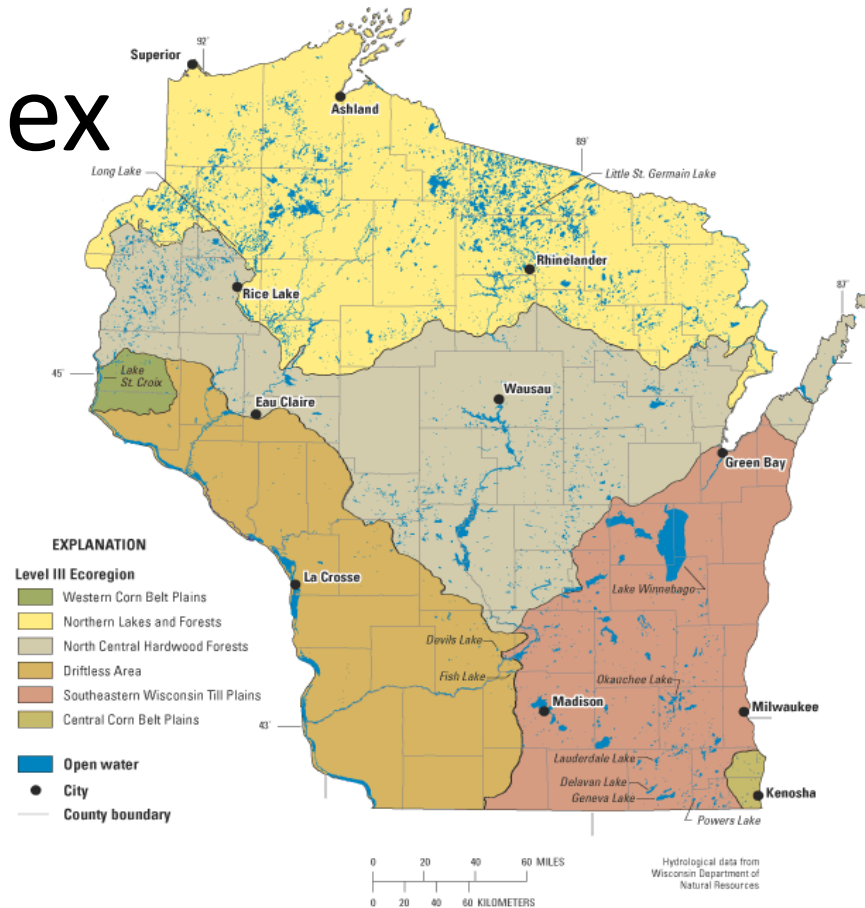
# Floristic Quality Index

Closeness of flora to an undisturbed condition

Mean species richness = 14

Mean average conservatism = 5.6

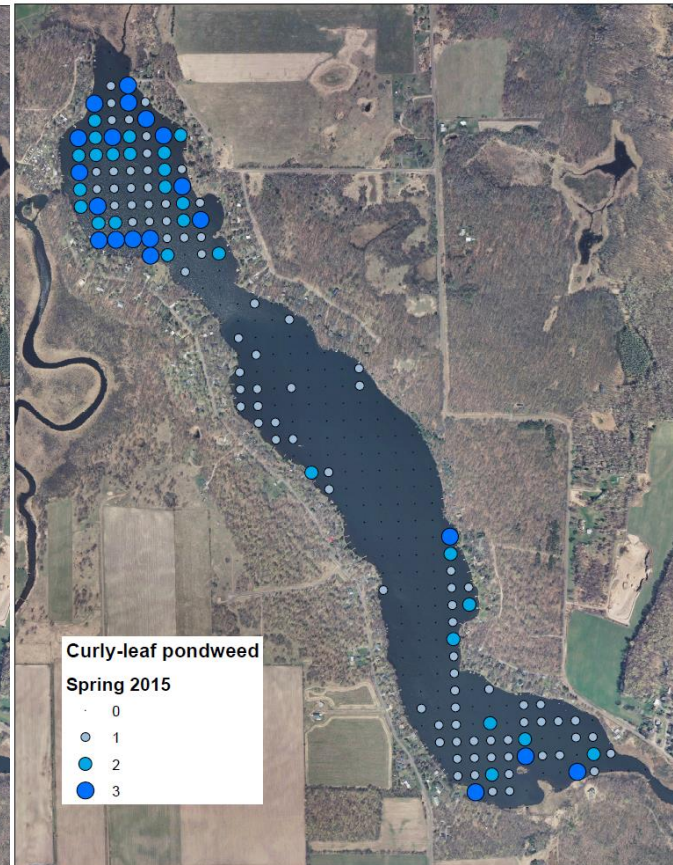
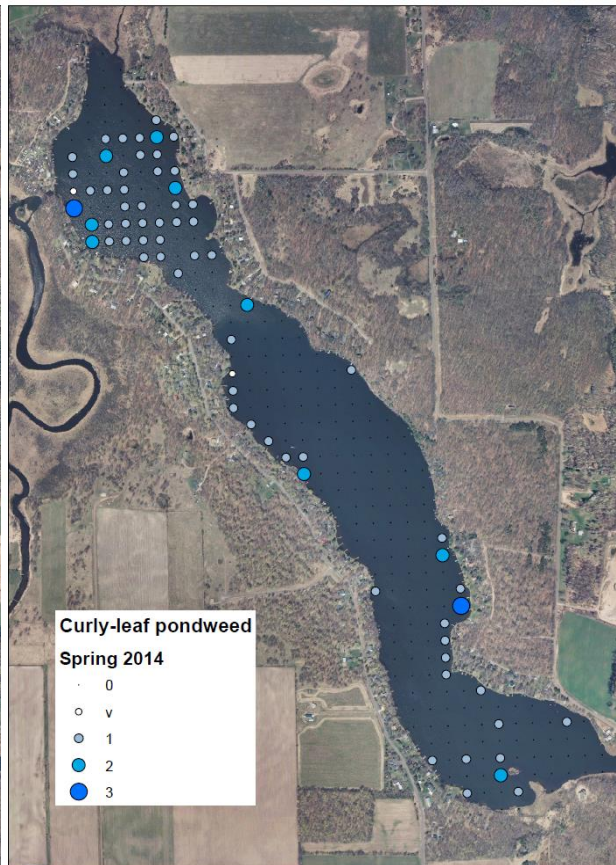
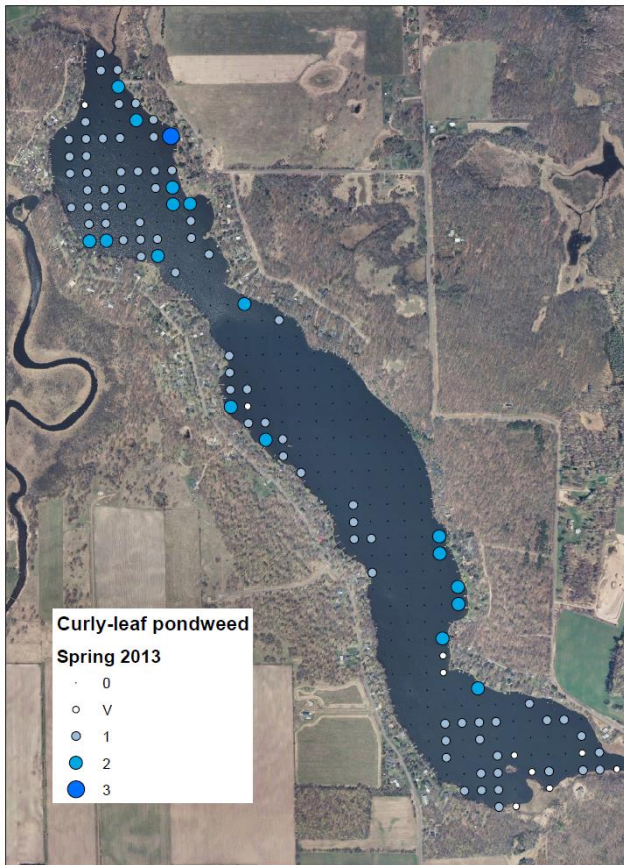
Mean Floristic Quality = 20.9



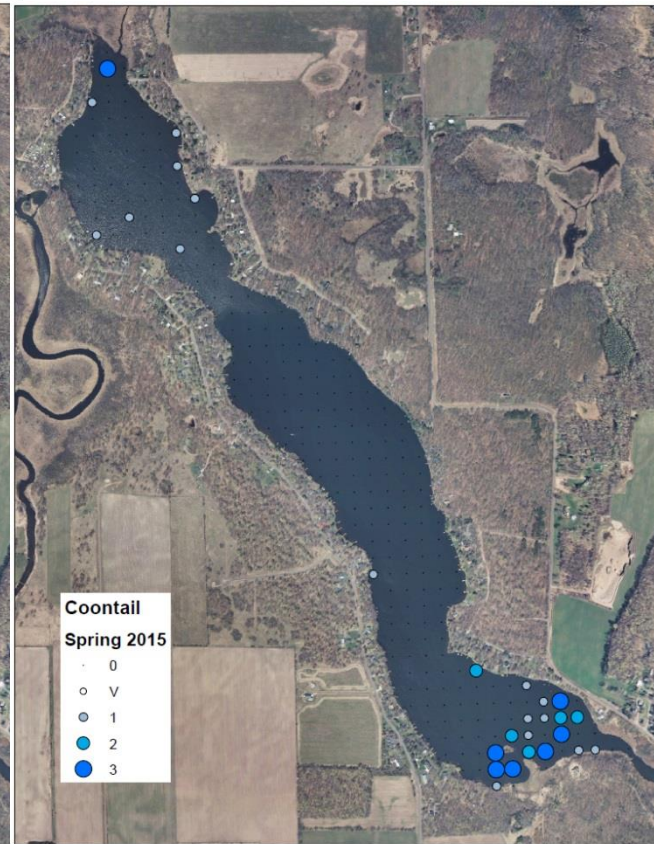
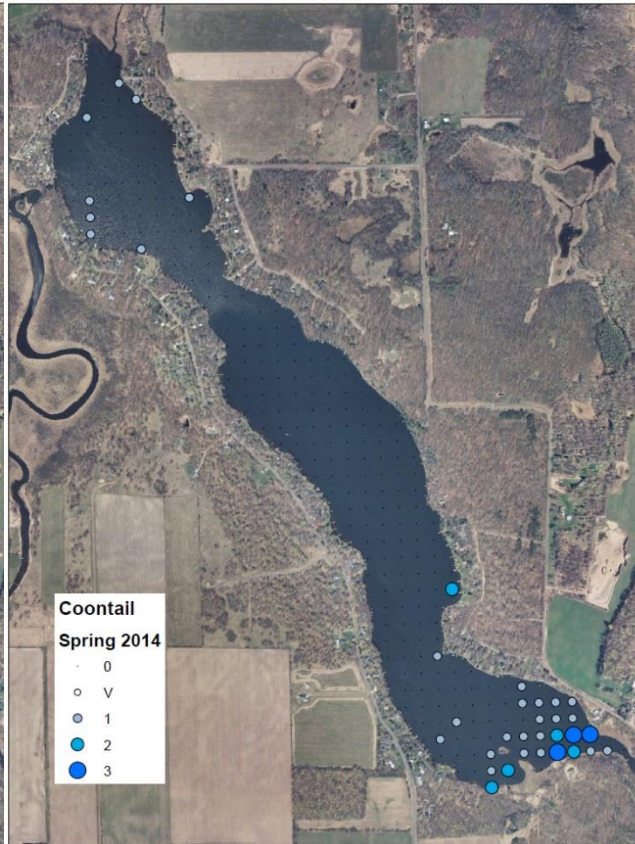
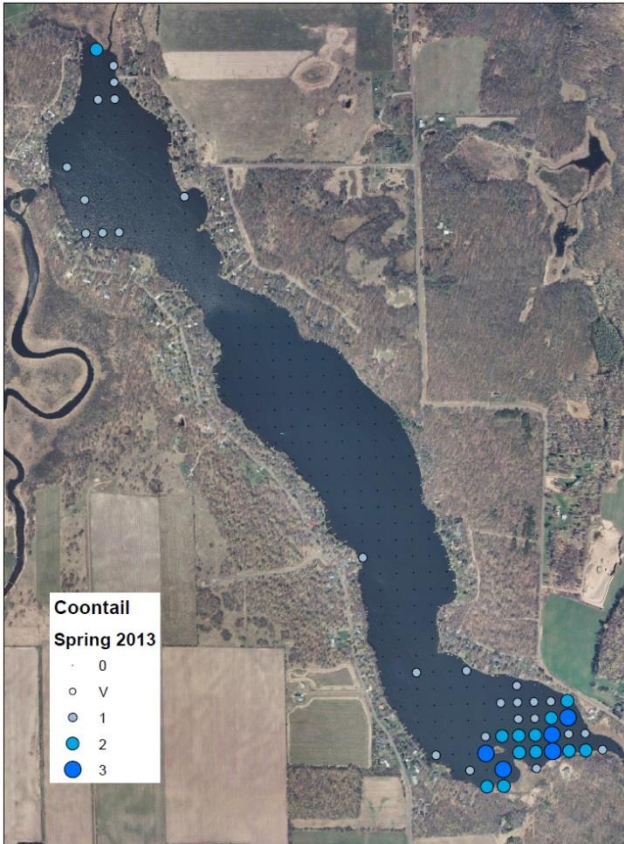
	5/14/07	8/9/07	5/19/11	8/10/11	8/13/12	6/11/13	8/13/13	6/2/14	8/25/14	5/20/15	8/26/15
Species Richness	4	15	9	17	9	14	15	9	14	12	16
Conservatism	5.5	5.3	6.4	5.9	6.0	6.1	5.9	6.2	5.8	6.4	5.8
FQI	11.0	20.4	19.3	24.5	18.0	22.7	22.7	18.7	21.6	22.2	23.0



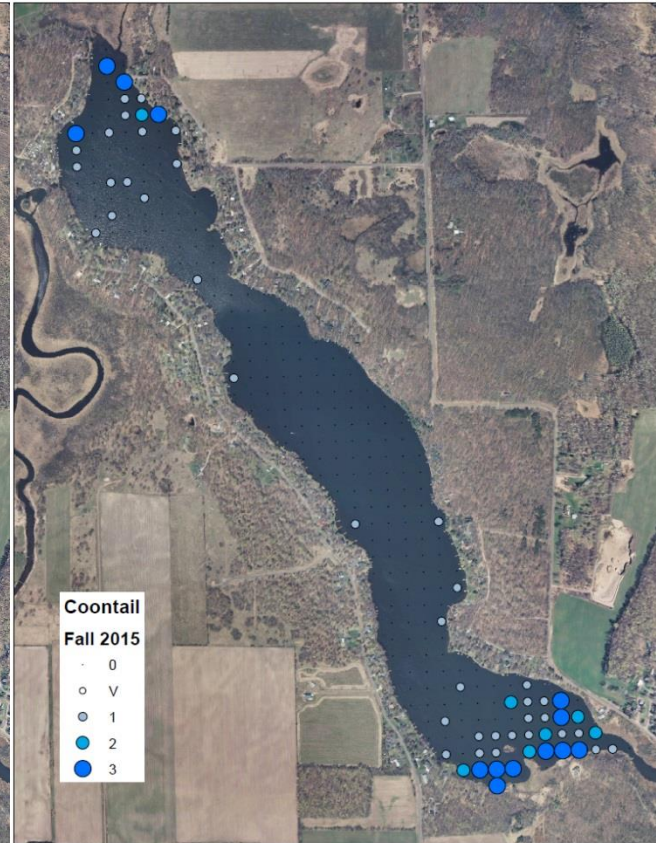
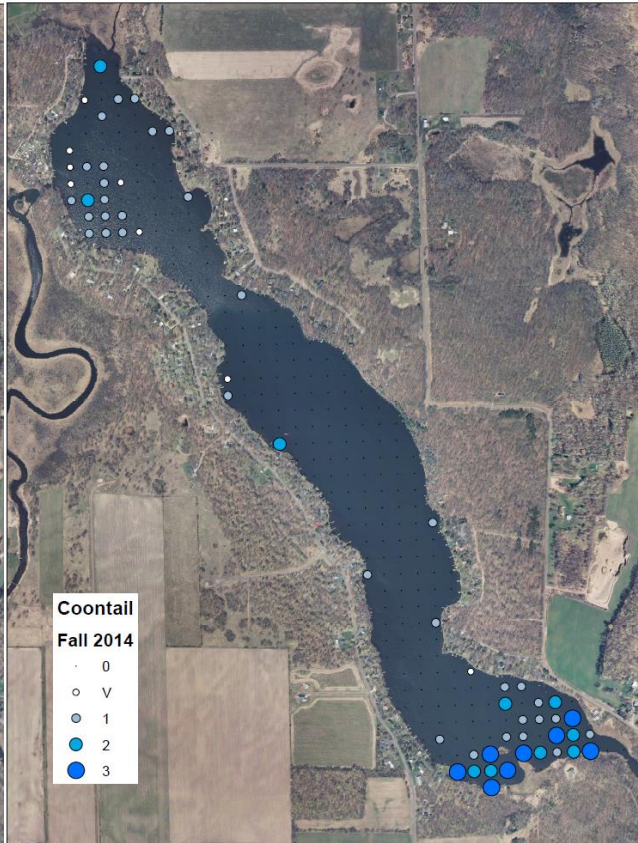
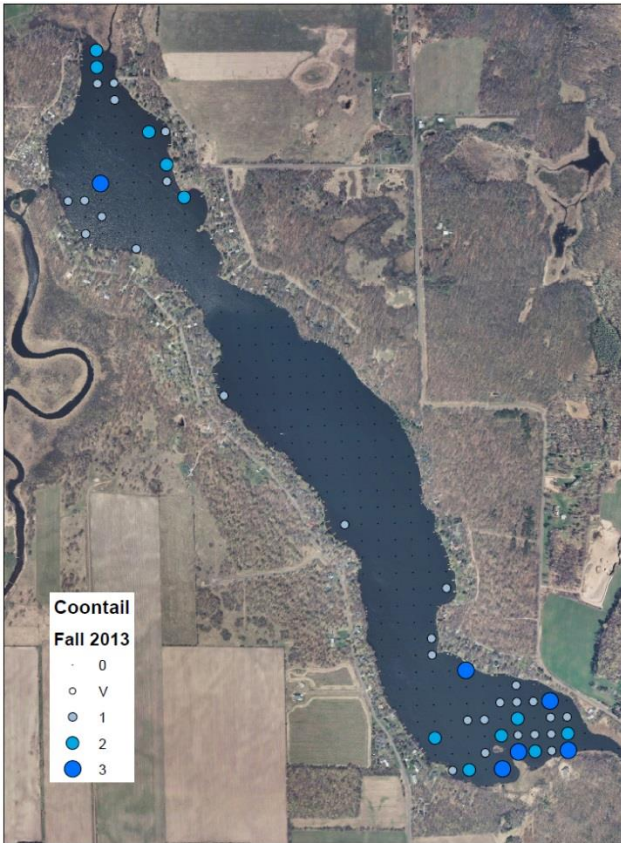
# Spring Curly-leaf Pondweed



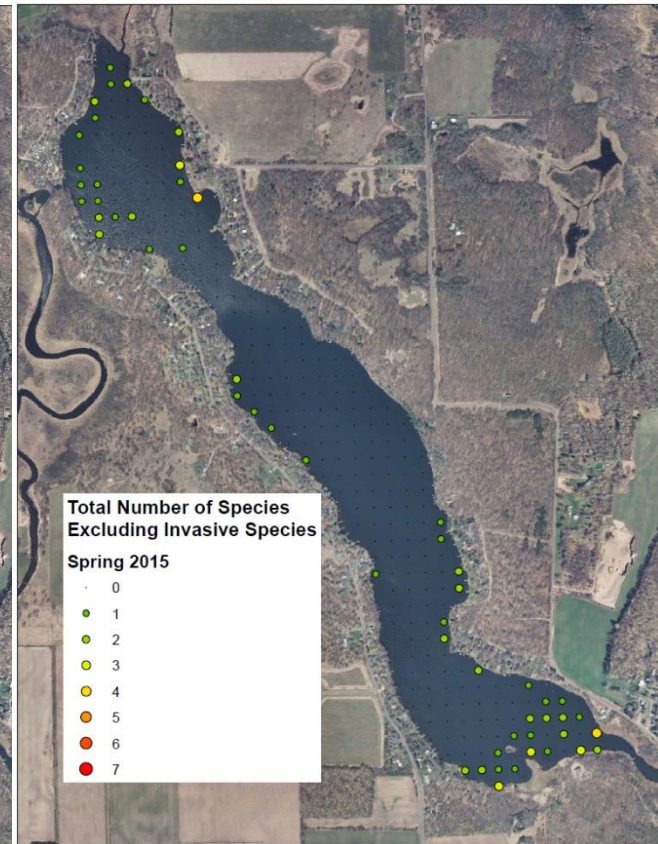
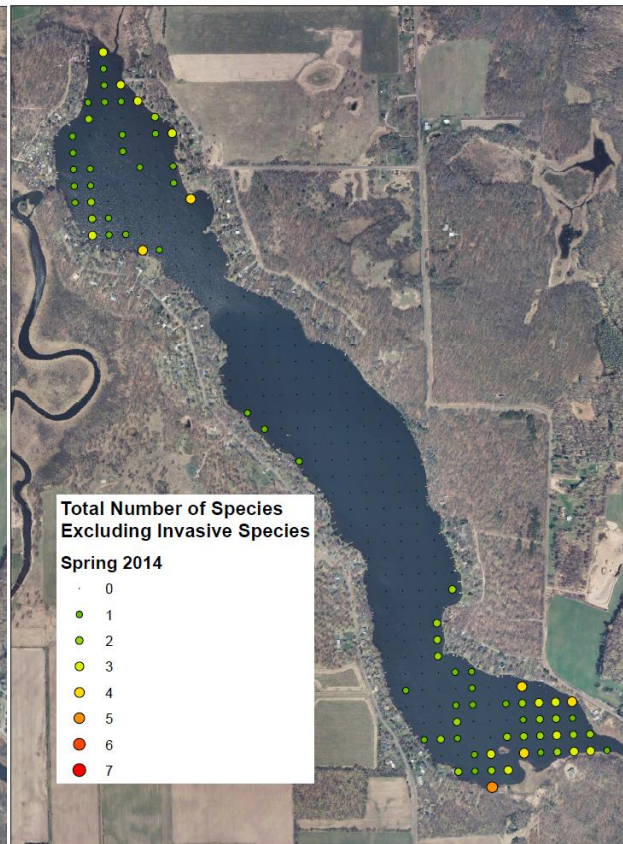
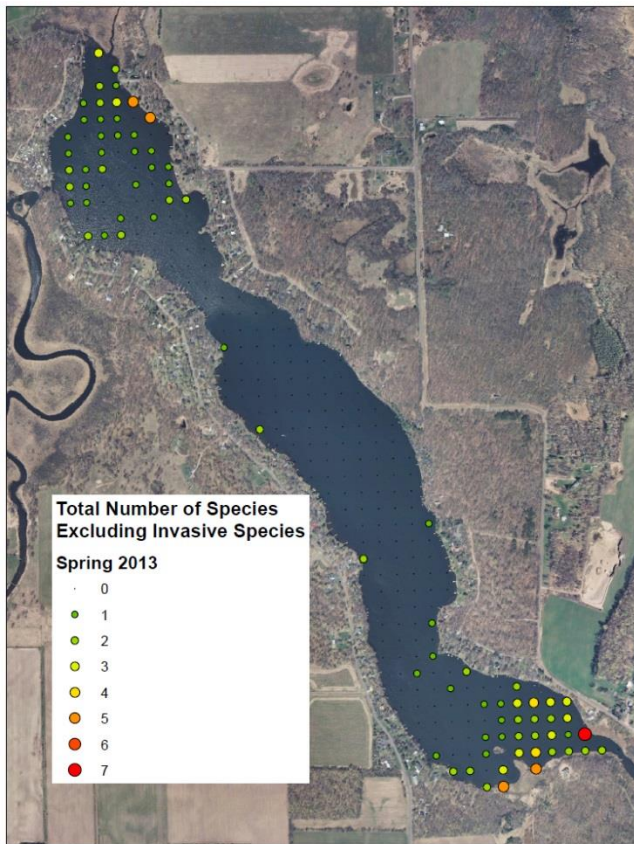
# Spring Coontail



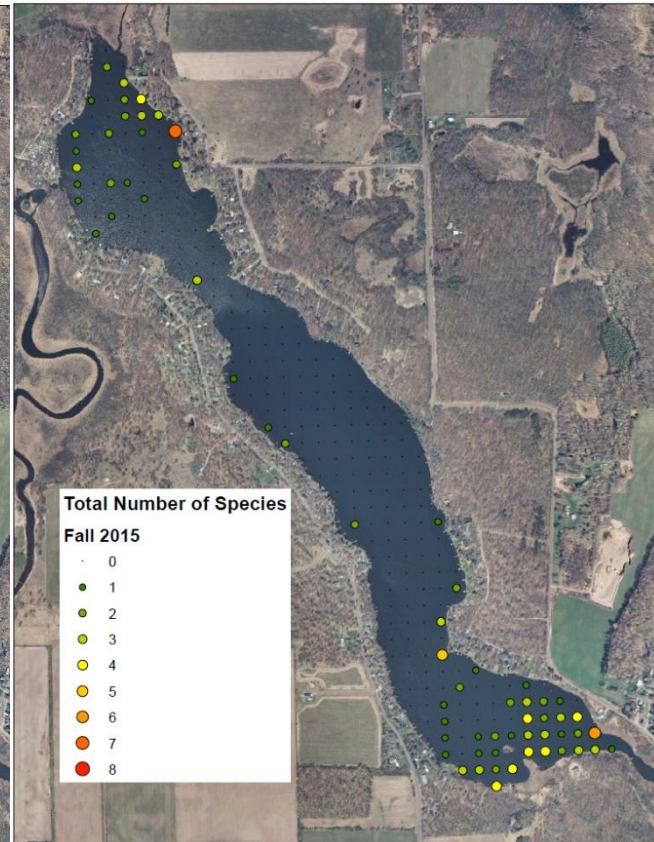
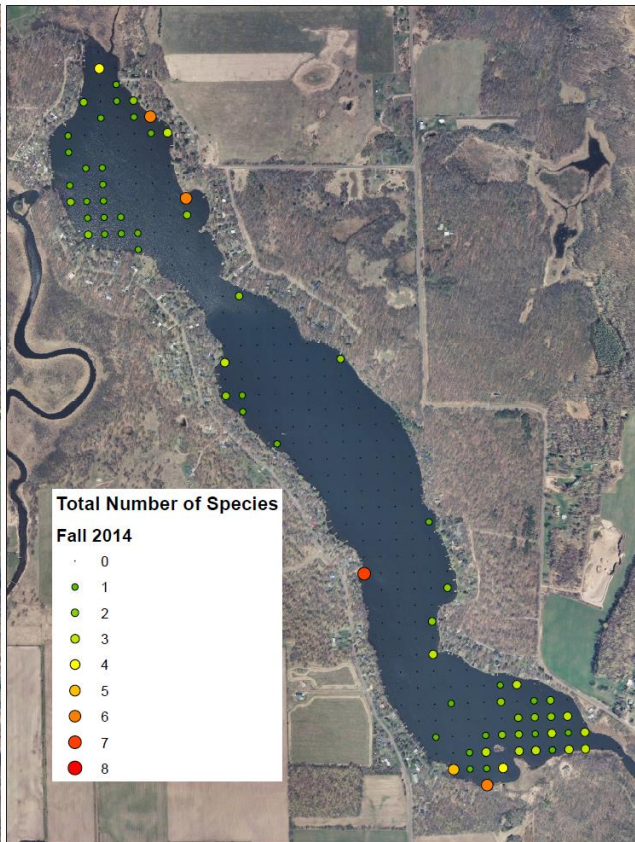
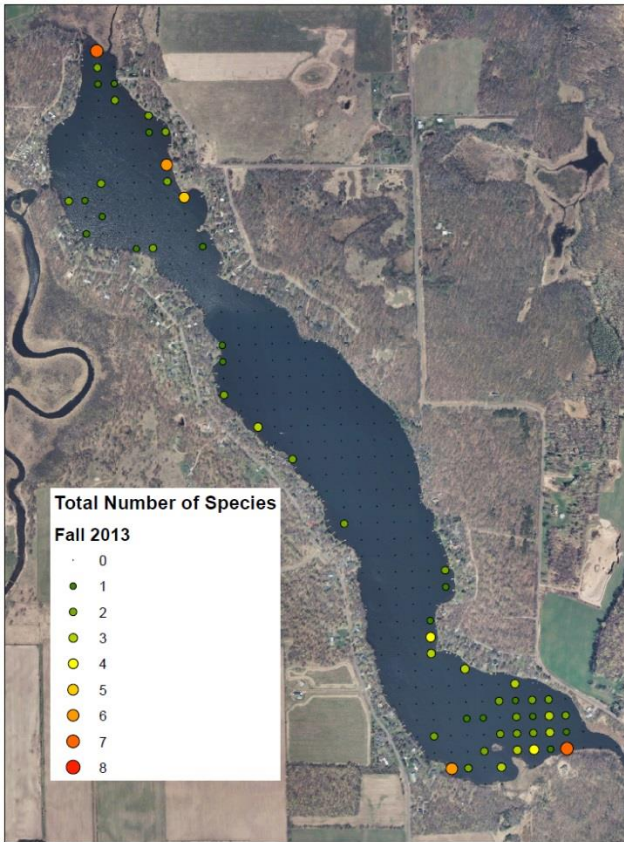
# Fall Coontail



# Spring All Species (Excluding AIS)



# Fall All Species



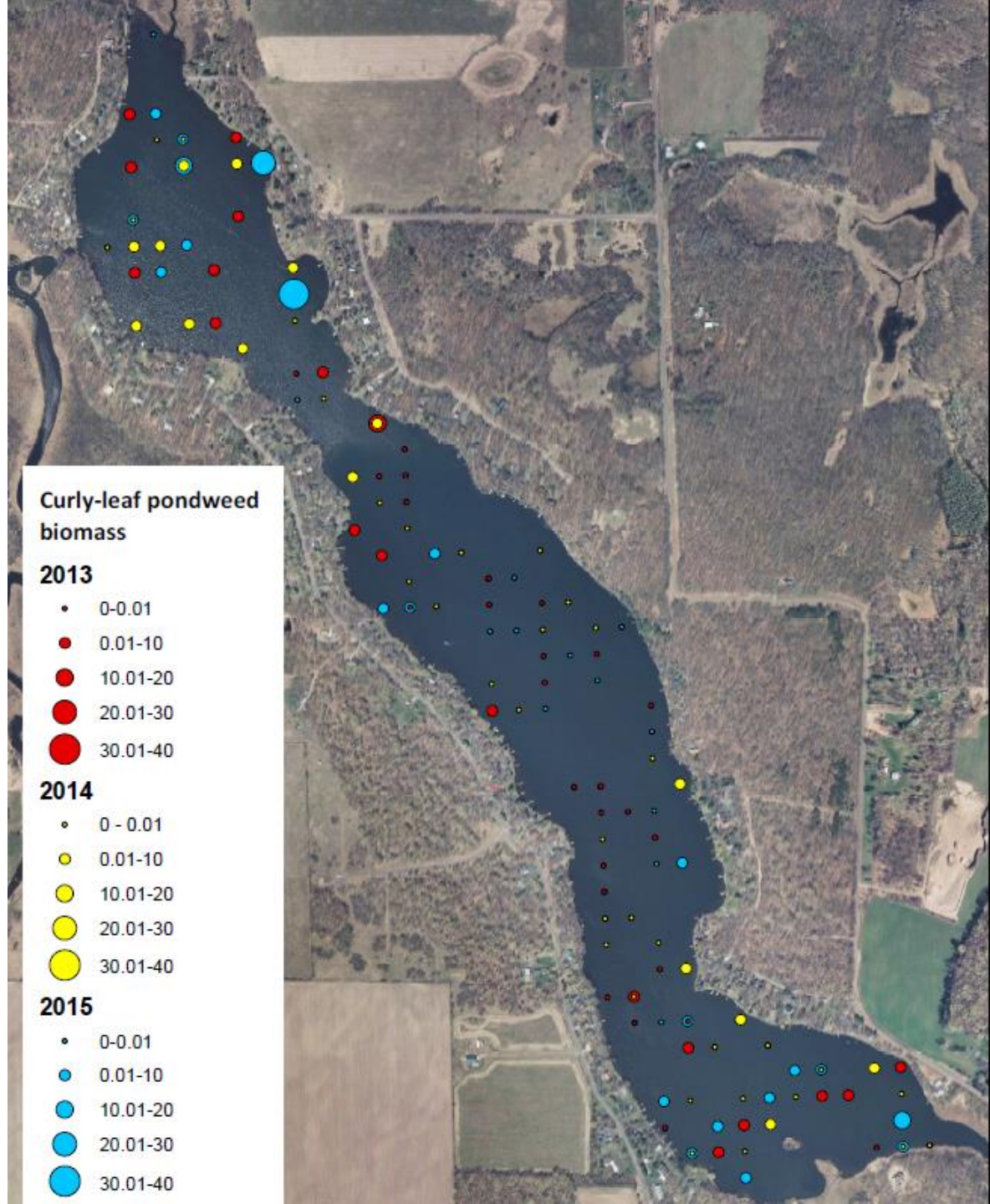
# CLP Biomass and Turion Sampling

Year	Turions per dredge sample	Turions per square meter	Curly-leaf pondweed biomass (grams)
2013	2.7	117	0.656
2014	1.9	83	0.768
2015	1.3	56	2.272

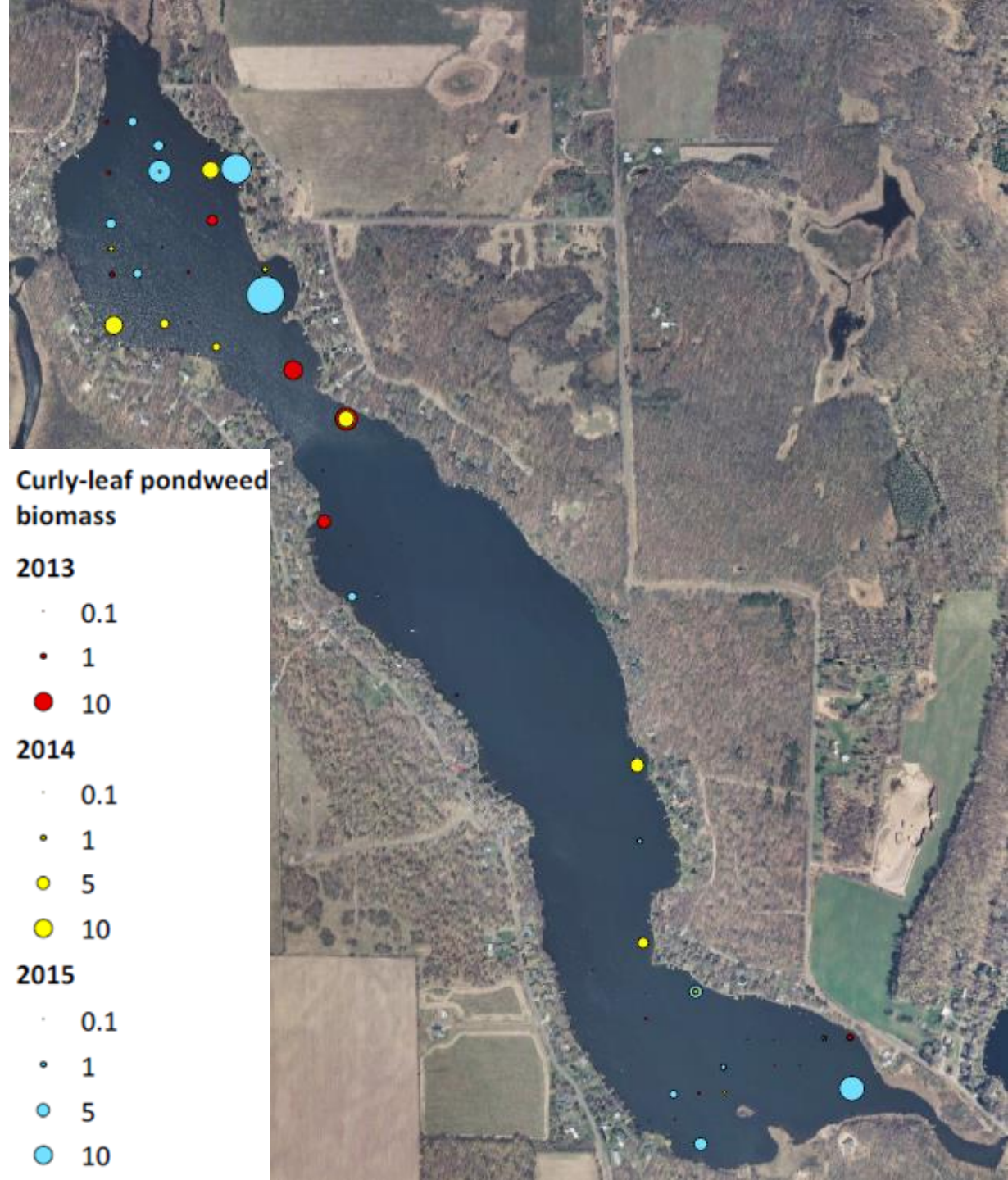


Big Blake Lake  
dry weight curly-  
leaf pondweed  
biomass (grams),  
2013-2015

*Shows a biomass  
of zero*



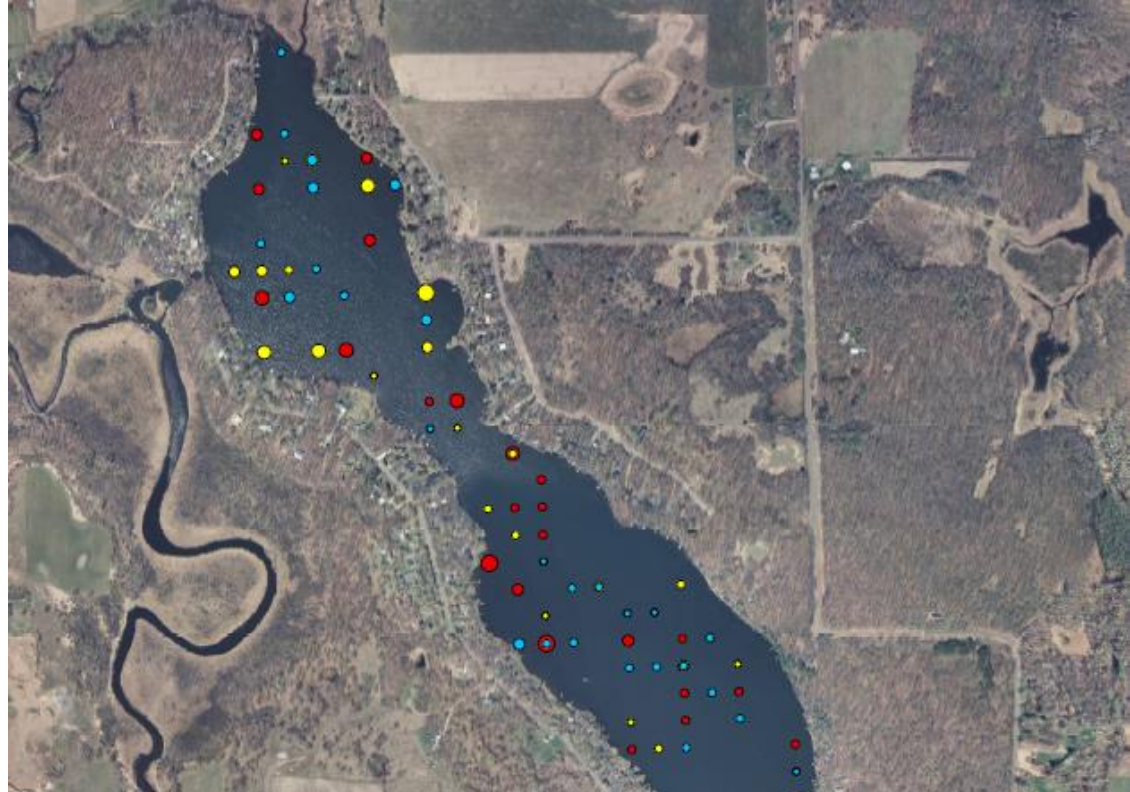
Big Blake Lake  
dry weight curly-  
leaf pondweed  
biomass (grams),  
2013-2015





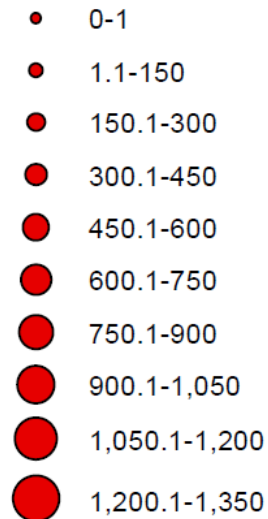
# Big Blake Lake turions per square meter, 2013-2015

*Shows a biomass  
of zero*

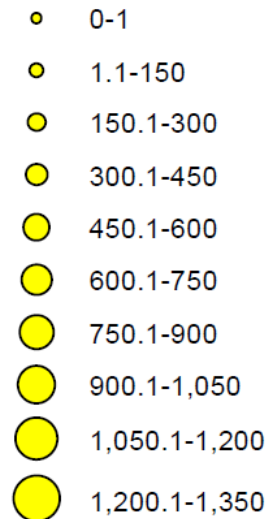


## Turions per square meter

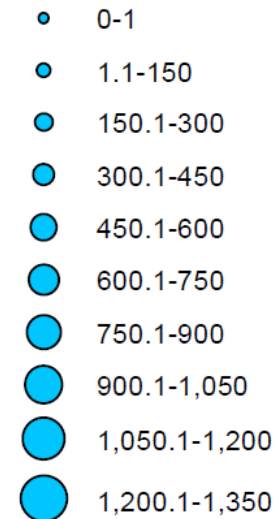
**2013**



**2014**



**2015**



# Big Blake Lake turions per square meter, 2013-2015

