

Minong Flowage 2022 Stakeholders Meeting October 27, 2022 Spooner, WI

Minong Flowage Association, Lake Education and Planning Services,
Wisconsin Department of Natural Resources





MINONG FLOWAGE ASSOCIATION

AGENDA

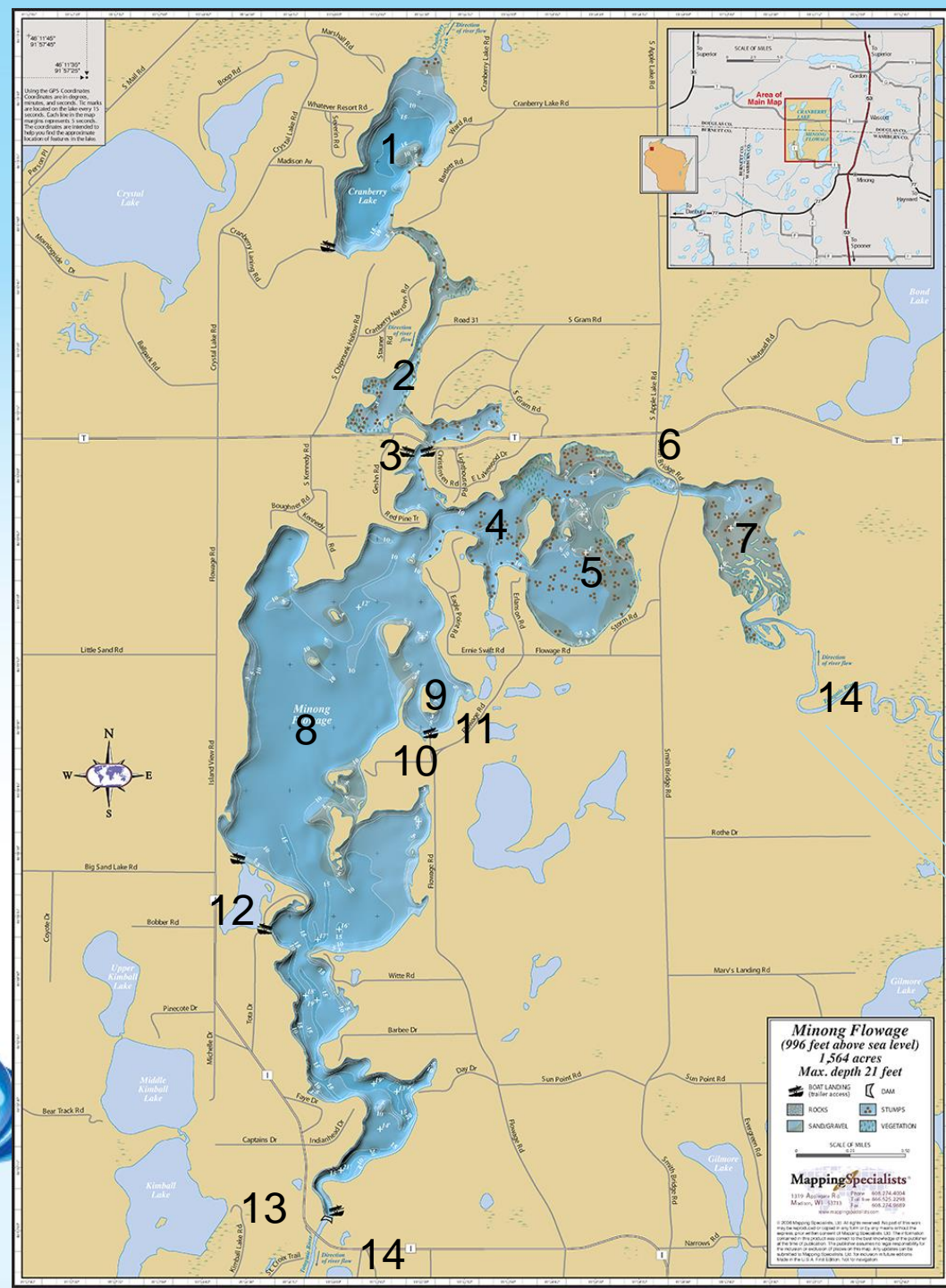
Minong Flowage Post-Drawdown Stakeholders Meeting

- Opening remarks
- Brief History of major events
- EWM Bed mapping review – October 2022
- Open discussion of topics pertinent to the development of the next 5-year Aquatic Plant Mgt plan
- Post meeting discussions as required



Welcome to the Minong Flowage

1. Cranberry Lake
2. Cranberry Flowage
3. Hwy T Bridge/Pogos Landing
4. Minong Flowage – North Basin
5. Serenity Bay (Stump Bay)
6. Smiths Bridge/Landing
7. East Basin
8. Central Basin
9. DNR Bay
10. DNR Boat Landing
11. Swift Nature Camp
12. Totogatic Park & Campground
13. Dam
14. Totogatic River



Brief History of Major Events

- 2002: EWM is first identified on the Minong Flowage.
- 2003: DNR completes an EWM survey (103 acres).
- 2007: EWM committee is formed.
- 2008: 1st Whole-lake, point-intercept (PI) survey by Endangered Resource Services (ERS)
- 2008: 330 acres of EWM.
- 2009: 1st 5-yr Aquatic Plant Management Plan (APM Plan) to cover the years 2010-2014.
- 2009: Clean-Boats/Clean-Waters program launches and has continued annually.
- 2009, 2010, 2011: Herbicide treatments retarded the initial EWM growth.
- 2012: 2nd Whole-lake, PI survey by ERS (spring and summer).
- 2013: 5.5-foot lake drawdown for dam reconstruction (May 2013 through February 2014).
- 2013: Multiple (3) EWM surveys throughout the drawdown period by ERS.
- 2014: 3rd Whole-lake, PI survey by ERS (spring and summer).
- 2014: October Dye study in Serenity Bay – DNR (J. Skogerboe).
- 2015: EWM chemical treatment of approximately 15.06 acres (five locations)
- 2015: EWM Hand-harvesting and DASH harvesting demonstration.
- 2015: 2nd 5-year APM plan completed to cover the years 2016-2020.
- 2016: 5-year APM Plan approved by DNR (February).
- 2016: DNR Bay EWM herbicide treatment (26.9 acres) with herbicide concentration testing.



Brief History of Major Events cont.

- 2016: Governor's Fishing Opener held on the Minong Flowage.
- 2016: 4-ft flood of the Minong Flowage began on July 14th.
- 2017: Shoreland Habitat and Woody Debris Assessment.
- 2018: 4th Whole-lake PI survey by ERS (summer only).
- 2018: MFA voted unanimously to pursue a winter drawdown to control EWM.
- 2018: Winter Drawdown Public Hearing moderated by the DNR.
- 2018: Wheeler Law advises of possible lost power-revenue refunding to RWE via a DNR grant.
- 2018-19: Winter drawdown put on hold due to limited EWM and more information needed.
- 2019: Pool Elevation drawdown permit is approved by the DNR.
- 2020: Grant for winter drawdown implementation w/out RWE reimbursement was not approved.
- 2020: Covid-19 affects all aspects of life around the world.
- 2020: 2016-2020 APM Plan extended through 2023.
- 2021: 5th Whole-lake, PI survey by ERS (spring and summer).
- 2021-22: 5-ft winter drawdown begins 9/20/2021. Completed by 11/1/2021. The fundamental process of the drawdown runs smoothly.
- 2022: Pool elevation returned to normal in time for the WI Fishing Opener.
- 2022: EWM was noted early in the season and steadily grew throughout 2022.
- **2023: 6th Whole-lake PI survey by ERS and 3rd APM Plan to be completed.**



Minong Flowage Grant Awards

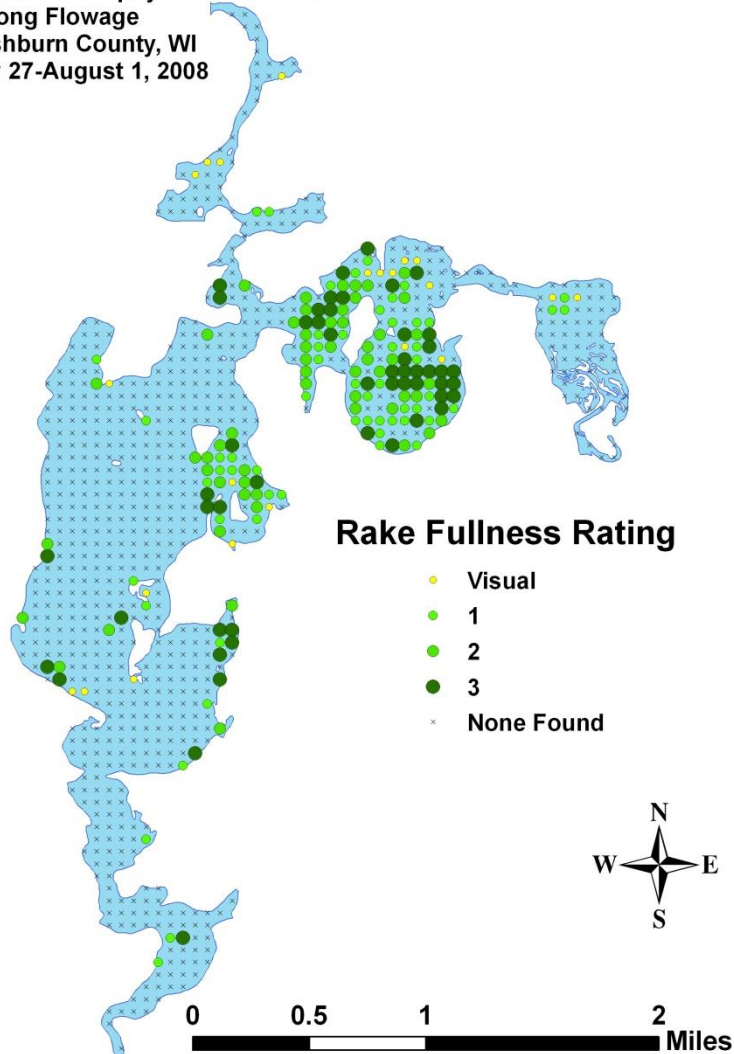
- **AEPP-099-08 (Sept 2007-June 2009)**
 - 1st Planning Project (1st APM Plan (2010-14))
- **ACEI-066-09 (Mar 2009-Dec 2011)**
 - 1st Implementation Project (EWM control – herbicide, herbicide residual testing, wild rice survey)
- **ACEI-072-10 (Sept 2009-June 2013)**
 - 2nd Implementation Project (EWM control – herbicide, EWM weevil monitoring, residual testing, wild rice survey)
- **AEPP-431-14 (Mar 2014-Dec 2015)**
 - 2nd Planning Project (2nd APM Plan (2016-20), Dye Study, Shoreland Habitat Assessment, Bathymetric Survey)
- **ACEI-186-16 (April 2016-June 2018)**
 - 3rd Implementation Project (EWM control - herbicide, Concentration Testing, EWM weevil rearing)
- **ACEI-213-18 (April 2018-June 2020)**
 - 4th Implementation Project (EWM control – proposed winter drawdown)
- ***ACEI-265-21 (Mar 2021-Dec 2023)**
 - Combined implementation and planning project (EWM control – winter drawdown, 3rd APM Plan (2024-28), purple loosestrife beetle rearing)



2008 Survey Results

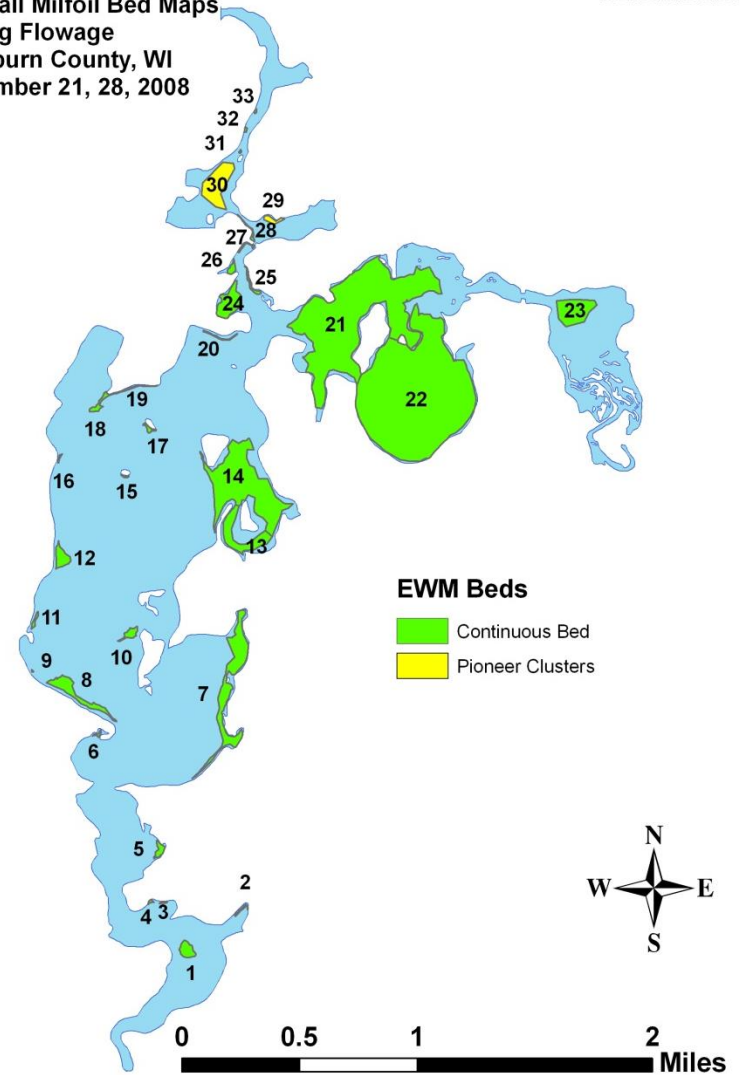
Eurasian water-milfoil (*Myriophyllum spicatum*)

Aquatic Macrophyte Distribution
Minong Flowage
Washburn County, WI
July 27-August 1, 2008



Eurasian water-milfoil (*Myriophyllum spicatum*)

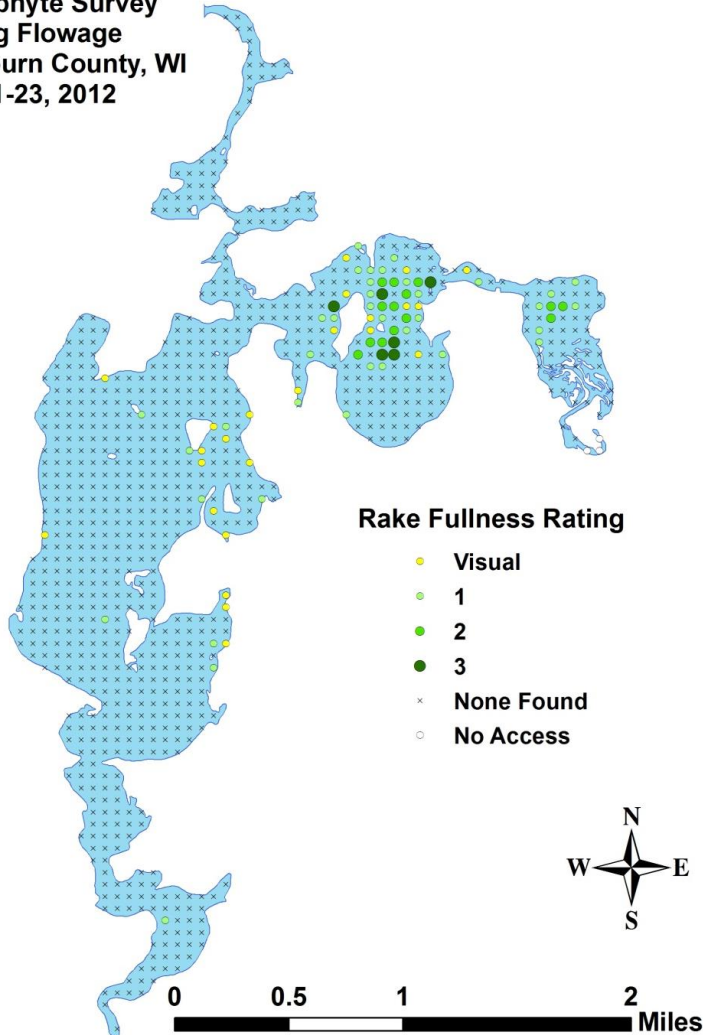
Late Fall Milfoil Bed Maps
Minong Flowage
Washburn County, WI
September 21, 28, 2008



2012 Survey Results

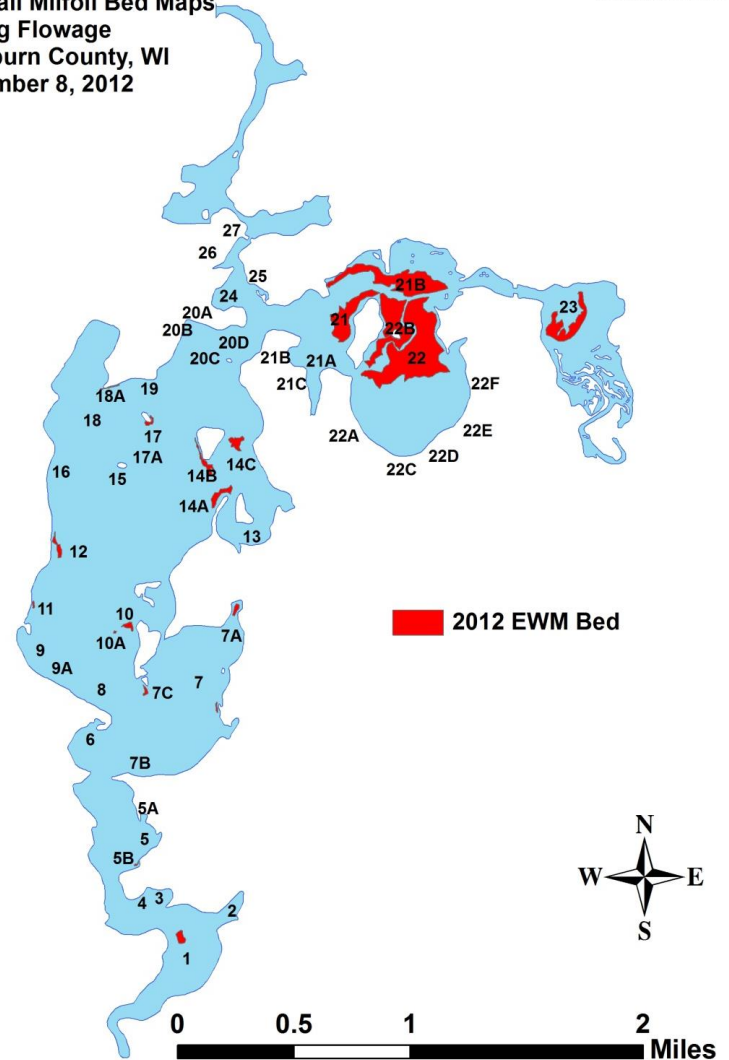
Eurasian water milfoil (*Myriophyllum spicatum*)

Exotic Species
Macrophyte Survey
Minong Flowage
Washburn County, WI
July 21-23, 2012



Eurasian water-milfoil (*Myriophyllum spicatum*)

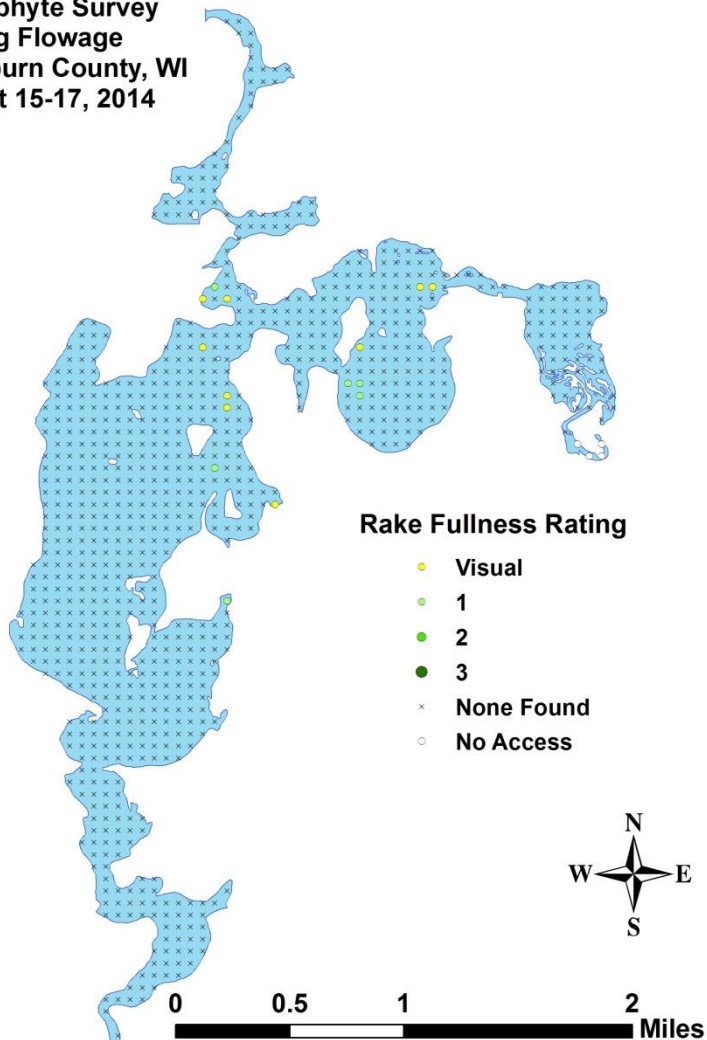
Late Fall Milfoil Bed Maps
Minong Flowage
Washburn County, WI
September 8, 2012



2014 Survey Results

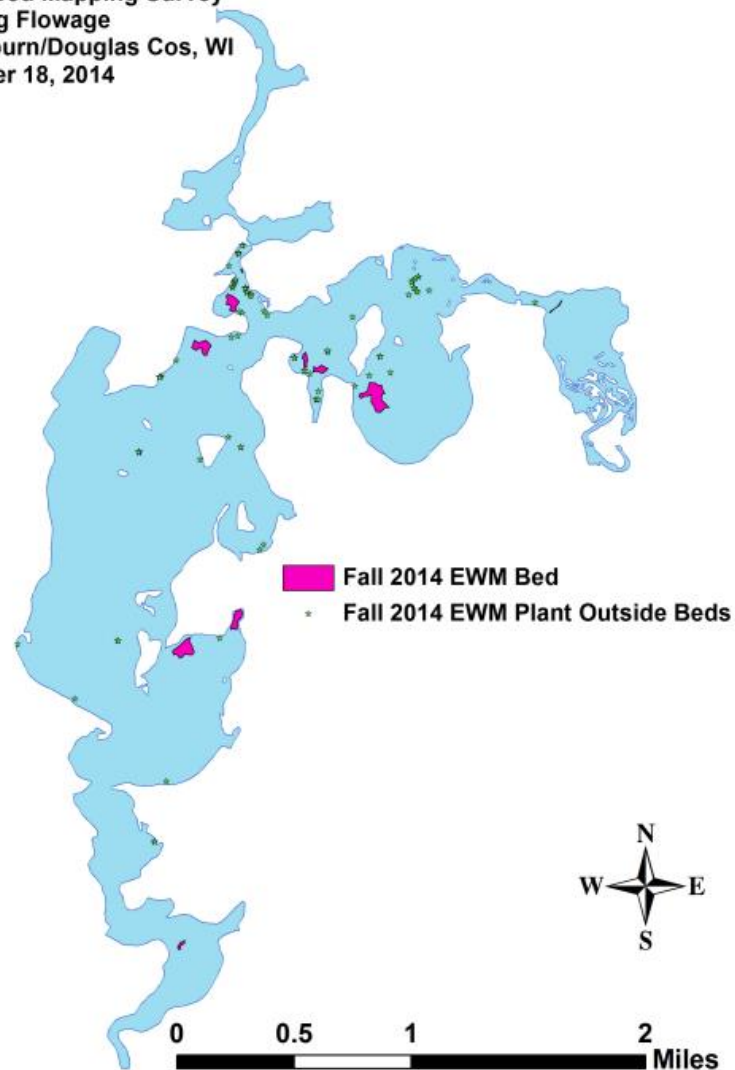
Eurasian water milfoil (*Myriophyllum spicatum*)

Exotic Species
Macrophyte Survey
Minong Flowage
Washburn County, WI
August 15-17, 2014



Eurasian water-milfoil (*Myriophyllum spicatum*)

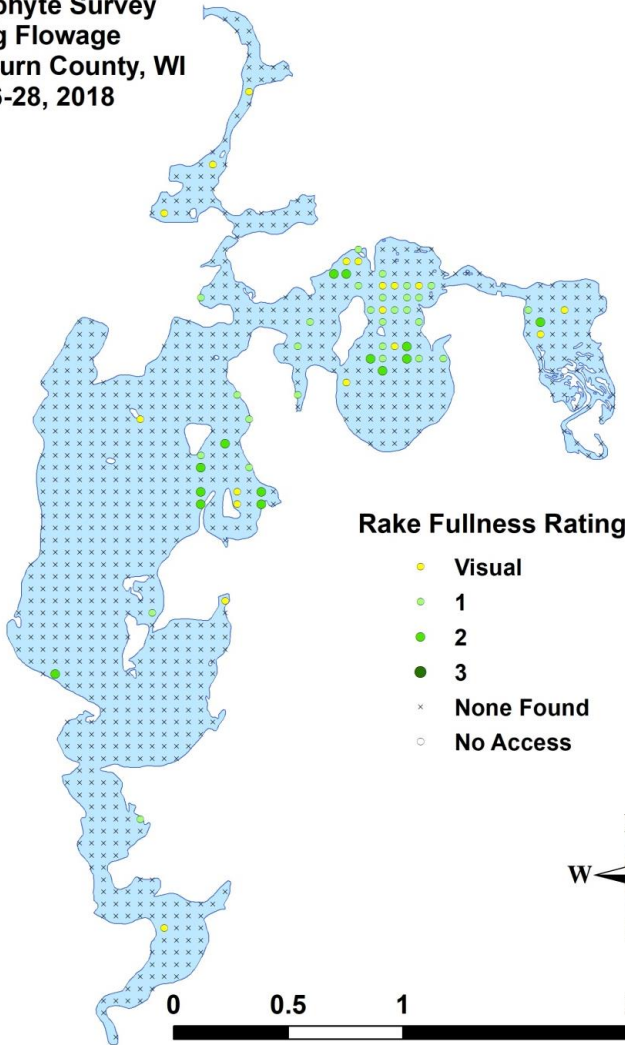
EWM Bed Mapping Survey
Minong Flowage
Washburn/Douglas Cos, WI
October 18, 2014



2018 Survey Results

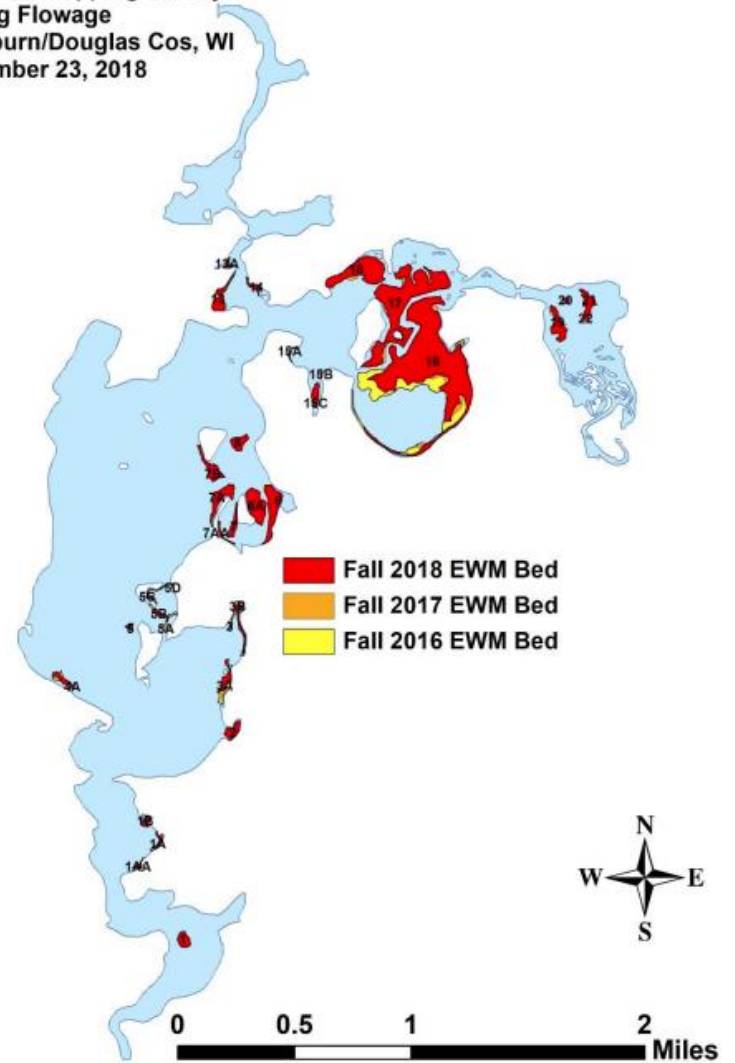
Eurasian water-milfoil (*Myriophyllum spicatum*)

Exotic Species
Macrophyte Survey
Minong Flowage
Washburn County, WI
July 26-28, 2018



Eurasian water-milfoil (*Myriophyllum spicatum*)

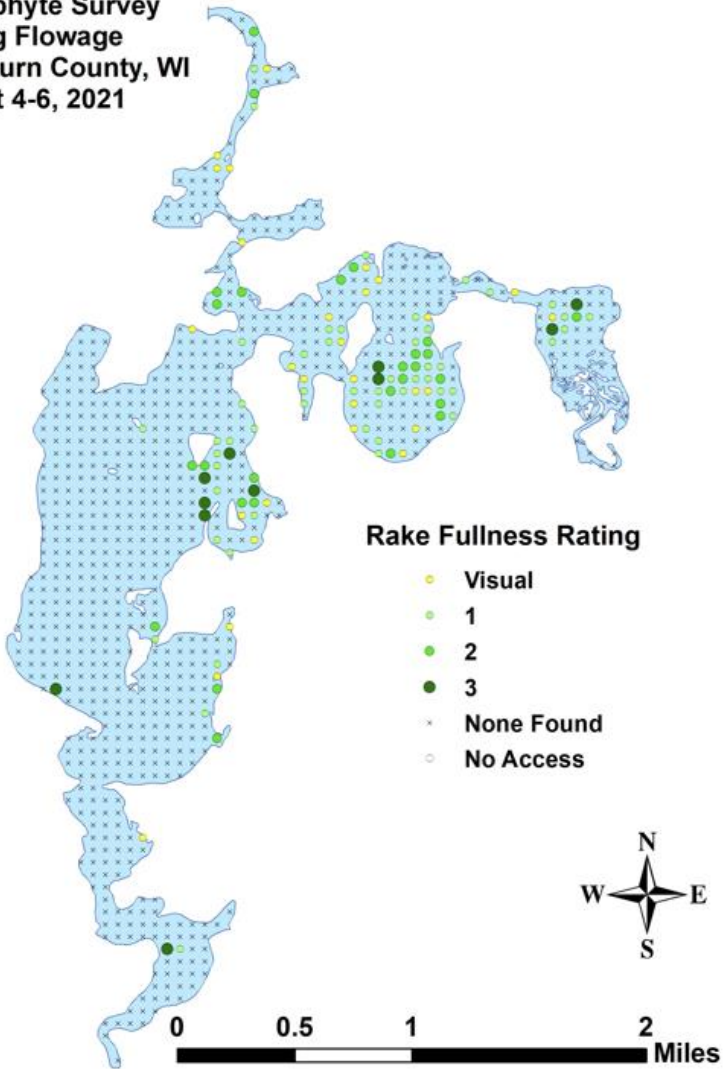
EWM Bed Mapping Survey
Minong Flowage
Washburn/Douglas Cos, WI
September 23, 2018



2021 Survey Results

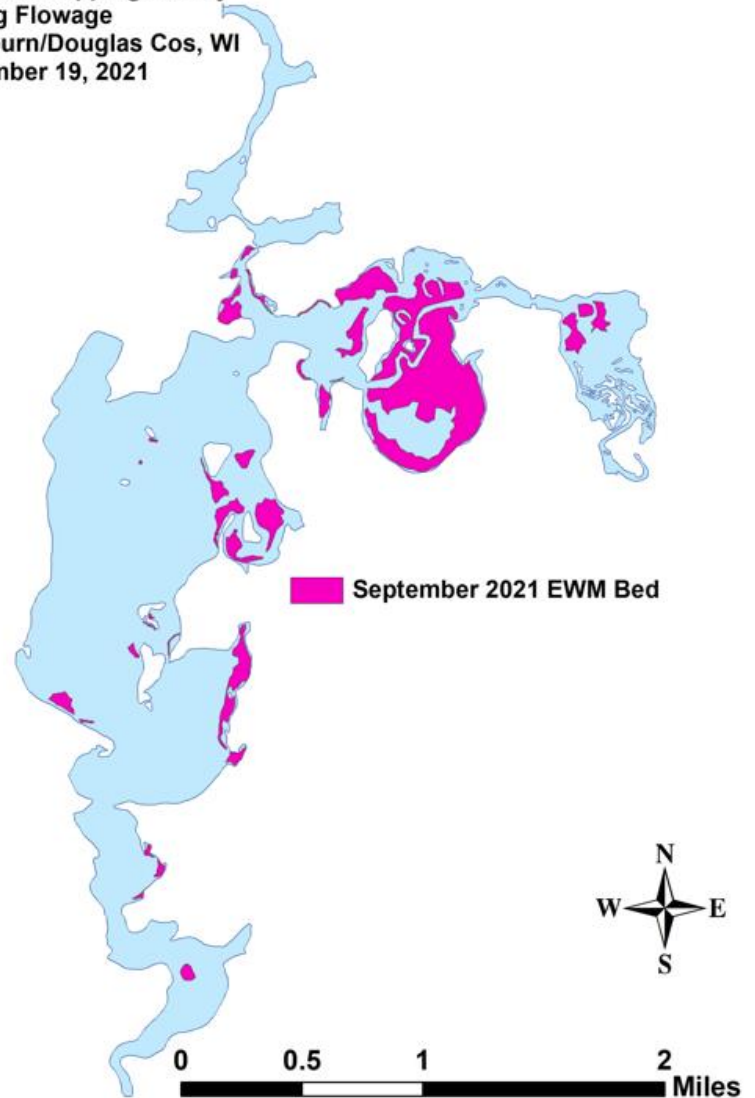
Eurasian water-milfoil (*Myriophyllum spicatum*)

Exotic Species
Macrophyte Survey
Minong Flowage
Washburn County, WI
August 4-6, 2021

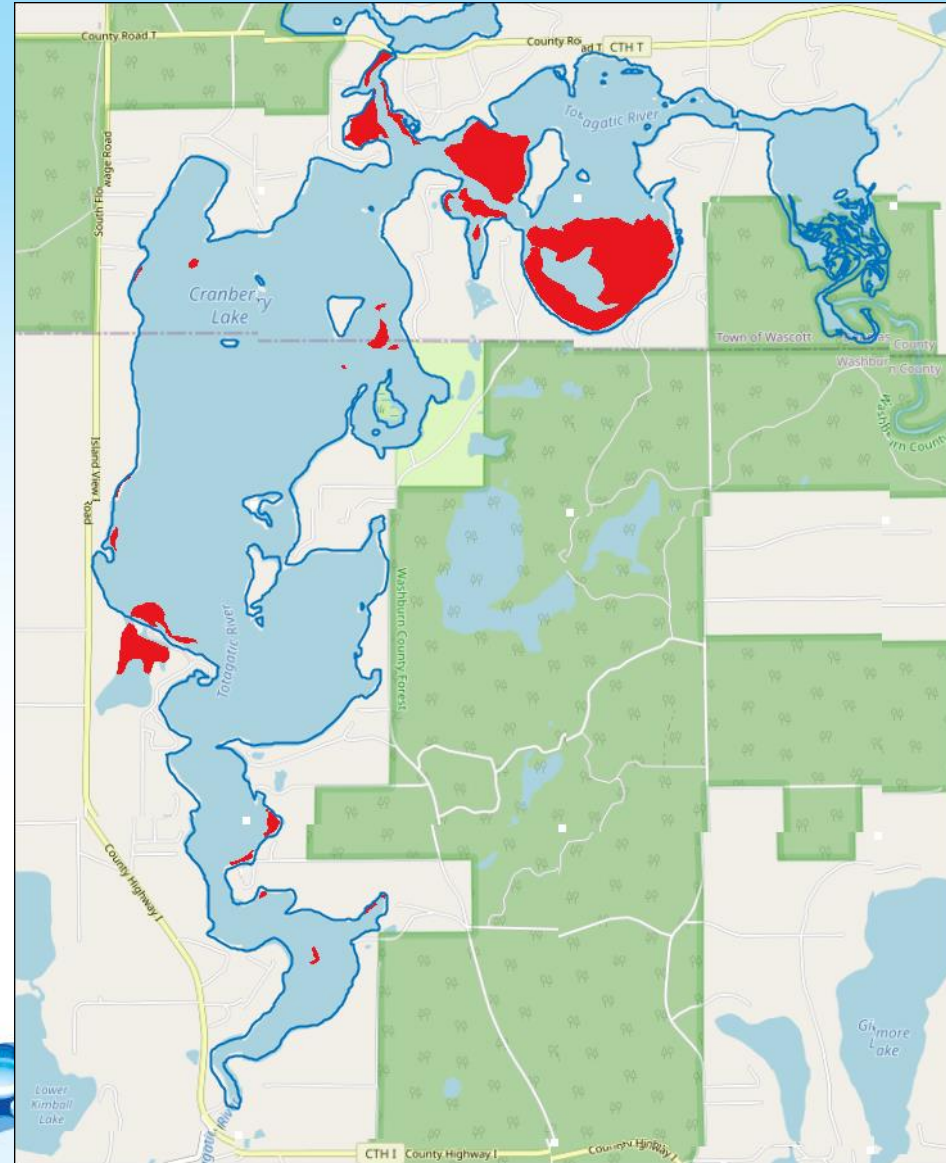
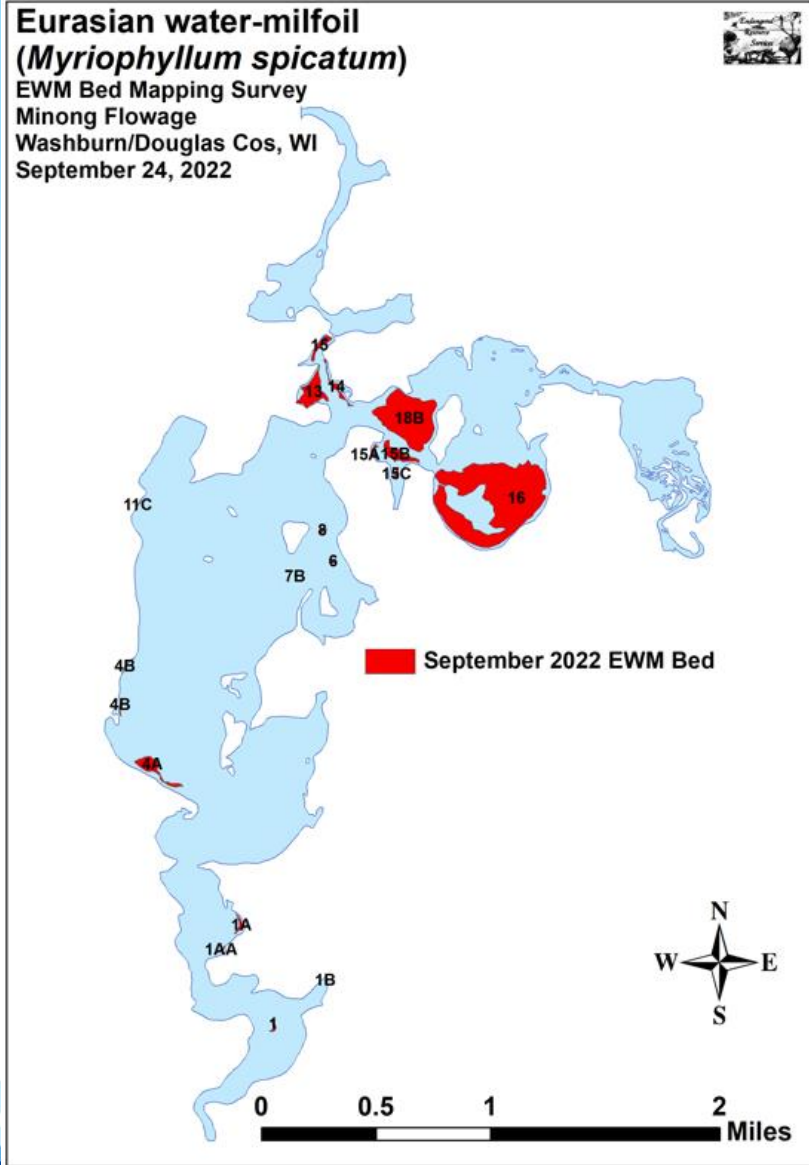


Eurasian water-milfoil (*Myriophyllum spicatum*)

EWM Bed Mapping Survey
Minong Flowage
Washburn/Douglas Cos, WI
September 19, 2021

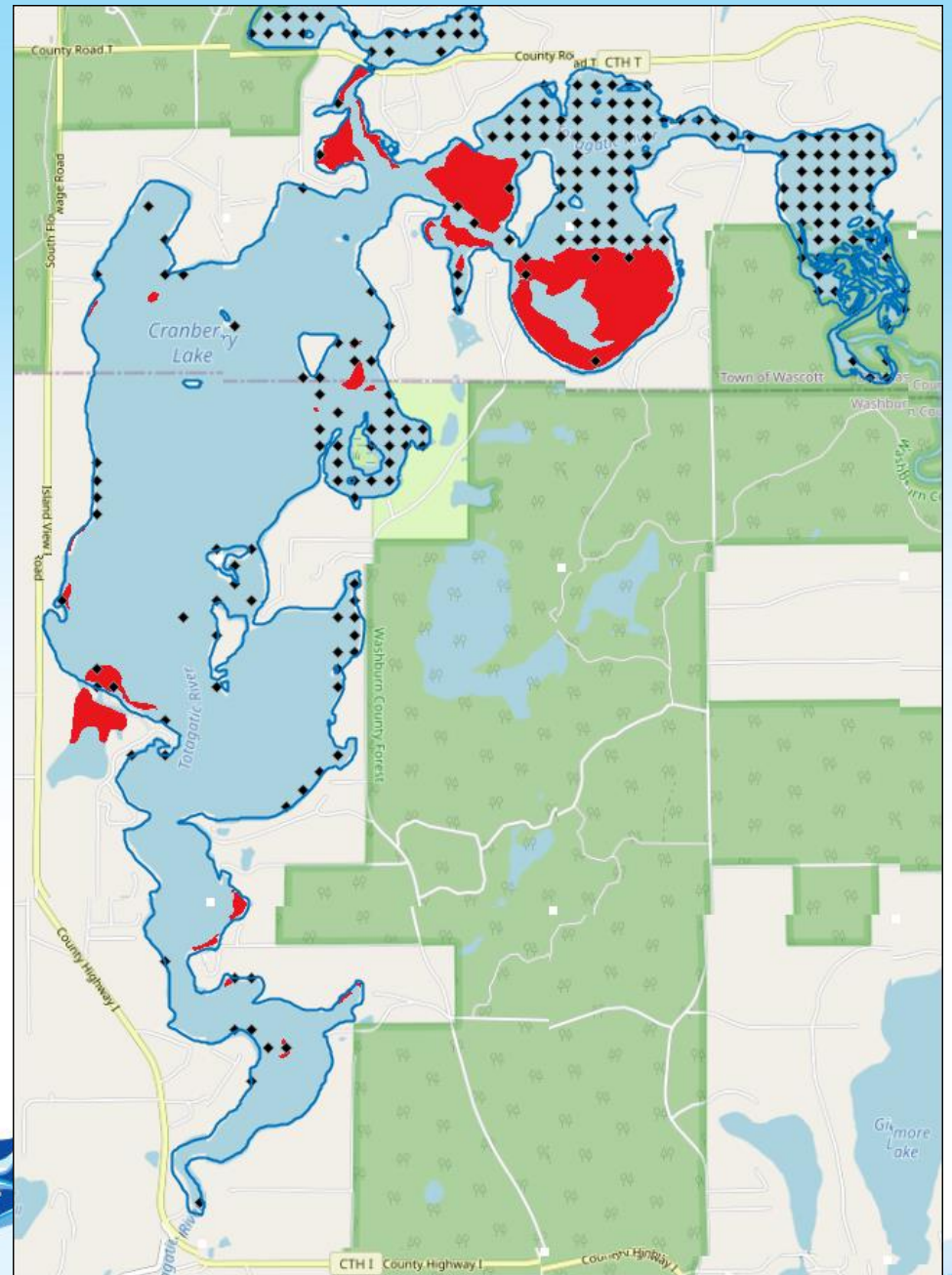


2022 Survey Results (no PI)



2022 Fall EWM Bed Mapping

PI points
w/depths ≤ 5.0
feet (black
points)

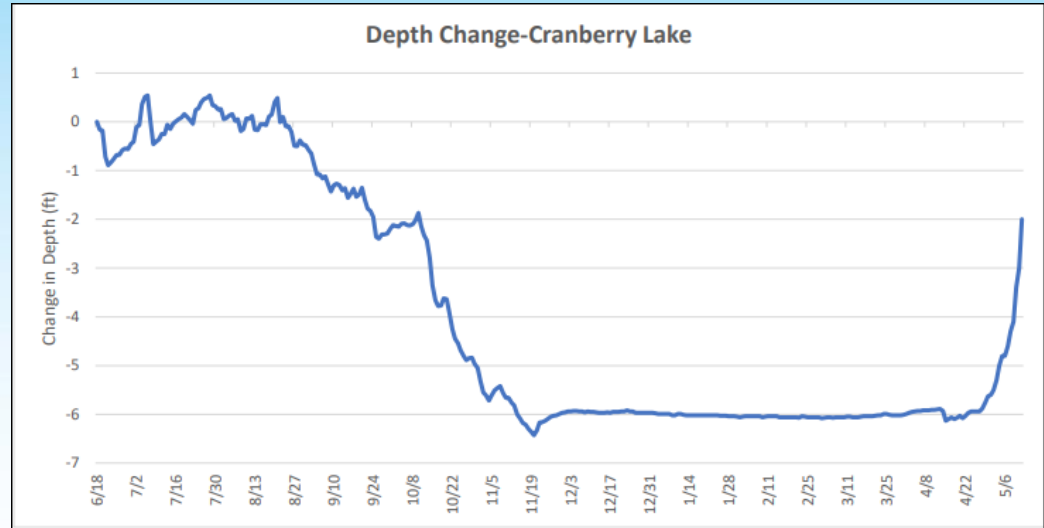


Fall EWM Bed Mapping 2014 to 2022

Bed Number	2022 Area in Acres	2021 Area in Acres	2020 Area in Acres	2019 Area in Acres	2018 Area in Acres	2017 Area in Acres	2016 Area in Acres	2015 Area in Acres	2014 Area in Acres
1			1.69	1.71	1.72	1.62	1.40	0.50	0.32
1AAA			0	0.07	0	0	0	0	0
1AA			0.28	0.31	0.32	0.23	0.33	0	0
1A			0.79	0.50	0.56	0.22	0.81	0.58	0
1B			0.43	0.47	0.68	0.47	0.48	0.31	0
2			0.90	0.63	1.77	1.66	1.80	1.40	0
3 and 3B			1.16	0.97	1.27	1.27	2.55	1.96	4.10
3A and 3AA			1.75	1.84	1.47	1.93	2.06	0	0
4			0	0	0	0	0	0	0
4A			1.39	0.62	1.14	0.09	1.05	0	0
5			0.05	0.30	0.42	0.15	0.30	0	0
5A, B, C, D			0.14	0.29	0.66	0.27	1.49	0	0
6 and 6A			5.79	6.84	11.50	1.06	0	16.39	0
7 and 7AA			1.95	1.34	2.19	0	0	1.23	0
7A			3.23	2.38	3.48	2.41	0.75	0	0
7B			2.98	2.48	2.73	1.50	1.46	0	0
8			2.31	2.13	2.10	1.55	0.76	0.18	0
9, 10, and 11			0	0	0	0	0	0	0
12			0	0	0	0	0	0	1.90
13			2.62	1.53	2.56	3.11	0.85	0	1.57
13A			0.45	0	0.31	0.45	0	0	0
14			0.29	0	0.67	0.47	0.31	0	0.05
15			0	0	0	0	0	0	0
15A			0	0	0.22	0.18	0.10	0	0.57
15B and 15C			0.86	0.56	1.49	0.88	0.09	0	0.85
16 and 16A/B			51.30	32.80	58.54	54.45	75.32	43.08	4.58
17			25.08	21.99	29.05	26.05	24.27	19.43	0
18 and 18A			5.36	4.68	10.73	8.00	7.61	5.30	0
19			0.20	0.12	3.21	3.51	1.80	-----	0.10
20			0	0	0.31	0.14	0	0	0
21 and 22			1.12	0.70	2.79	1.23	0	0	0
Total	116.09	205.70	112.13	85.27	141.88	112.88	125.58	90.36	14.02

2021-22 Winter Drawdown Depth Monitoring

Steve Schieffer – Ecological Integrity Services

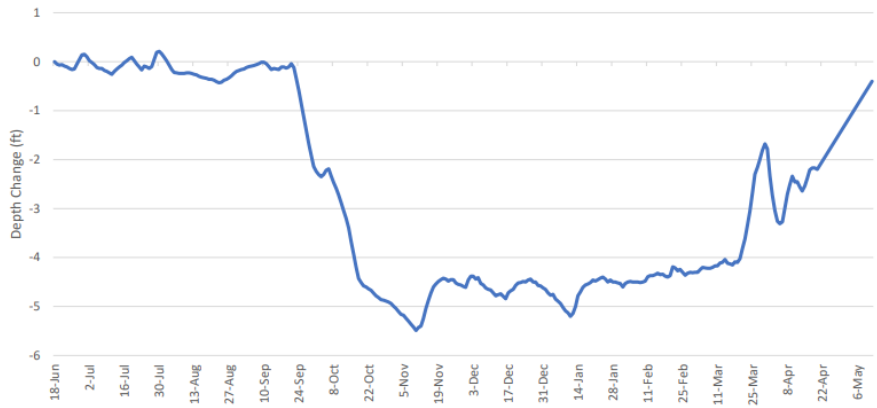


≈November 14, 2021

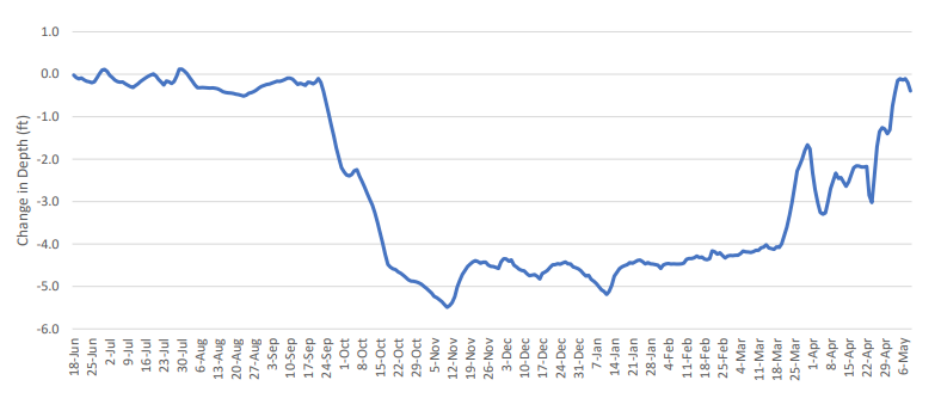


More Depth Results

Depth Change-Pogos Pier



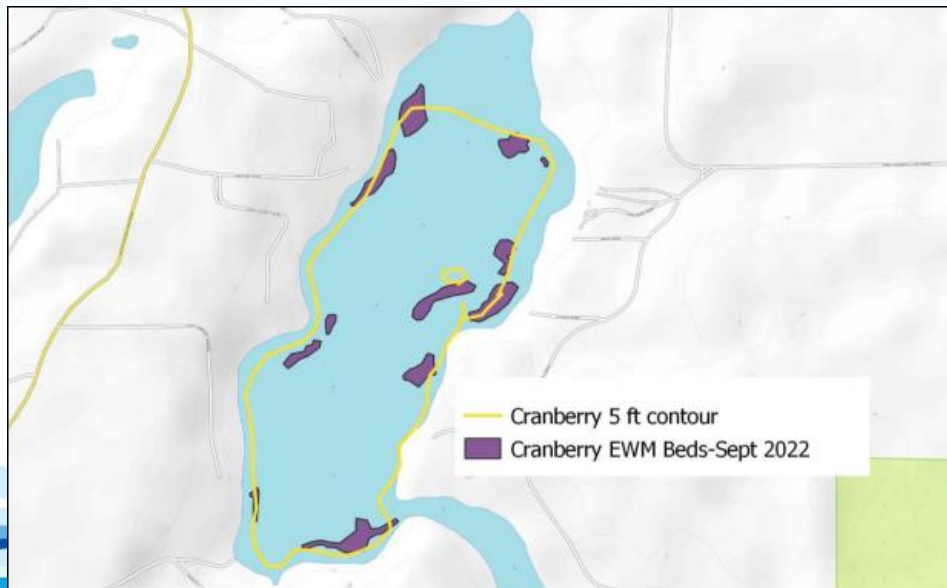
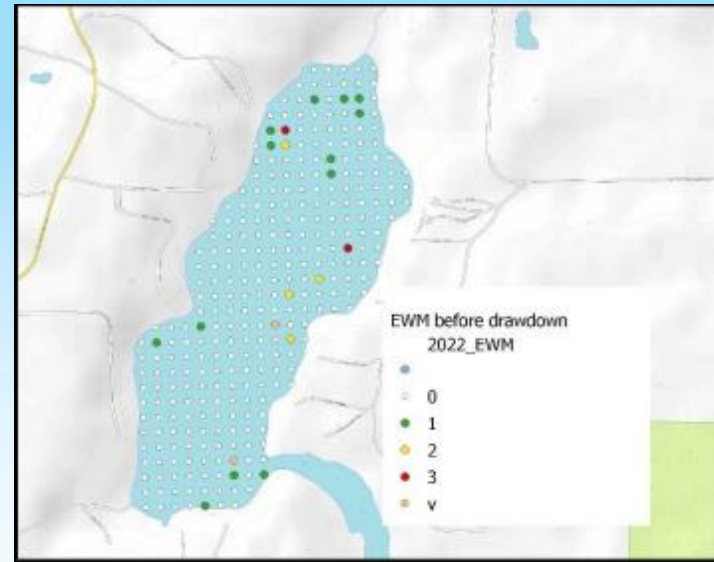
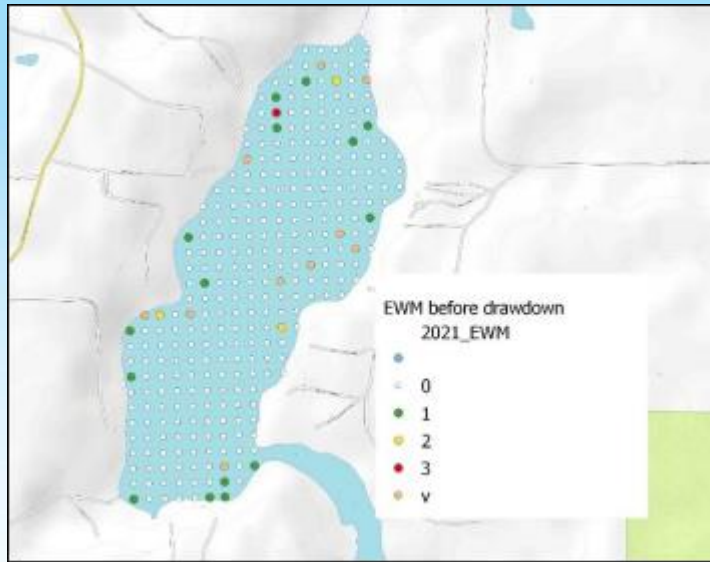
Depth Change-Flowage Dam



Smith Bridget Stream Level-2021-22



Cranberry Lake EWM



June 2021 Herbicide Application

-Post-herbicide=0.9 ac

September 2022

-Post-winter drawdown=15.65 ac

-Increase of 14.75 ac

-Most EWM in water >5.0 ft

Steve Schieffer –
Ecological Integrity
Services

2008,12,14,18,& 21 PI Survey Statistics

SUMMARY STATS:	2008	2009 to 2011	2012	2013	2014	2015 to 2017	2018	2021	2022	2023
Total number of sites visited	875	Herbicide Application in 2009 (68.0 ac), 2010 (Spring 119 ac/Fall 6.3 ac), and 2011 (87 ac) Navigate (granular 2,4D), DMA4 (liquid 2,4D)	876	May 2013 to February 2014 Drawdown of 5.5-ft	875	Herbicide Application in 2015 (15.06 ac) and 2016 (26.9 ac) DMA4 (liquid 2,4D) & Tribune (diquat)	878	878	September 2021 to April 2022 Winter Drawdown of 5.0-ft	?
Total number of sites with vegetation	377		242		228		220	325		?
Total number of sites shallower than maximum depth of plants	517		374		461		433	510		?
Frequency of occurrence at sites shallower than maximum depth of plants	72.92		64.71		49.46		50.81	63.73		?
Simpson Diversity Index	0.94		0.95		0.96		0.95	0.96		?
Maximum depth of plants (ft)**	9.50		7.50		9.00		8.50	9.50		?
Number of sites sampled using rake on Rope (R)	0		0		0		0	0		?
Number of sites sampled using rake on Pole (P)	437		652		636		646	646		?
Average number of all species per site (shallower than max depth)	2.77		2.31		1.36		1.76	2.30		?
Average number of all species per site (veg. sites only)	3.80		3.57		2.75		3.46	3.61		?
Average number of native species per site (shallower than max depth)	2.44		2.15		1.33		1.66	2.10		?
Average number of native species per site (veg. sites only)	3.48		3.48		2.75		3.28	3.36		?
Species Richness	58		55		52		60	68		?
Species Richness (including visuals)	60		59		55		62	72		?
Species Richness (including visuals and boat survey)	65	68	64	69	78	?				
Mean depth of plants (ft)	4.01	3.08	3.21	3.04	3.85	?				
Median depth of plants (ft)	4.00	3.00	3.00	3.00	4.00	?				
Mean rake fullness (veg. sites only)	2.69	2.19	2.10	2.08	2.33	?				



PI Survey EWM Statistics (876 points)

Year of PI Survey	Most Abundant	Points w/EWM	EWM Visuals	Freq. of Occ. (% of littoral zone)	Ave. Rake Density (1 to 3)
2023	?	?	?	?	?
2021	3rd	88	29	17.25	1.56
2018	4th	42	18	9.70	1.33
2014	30th	6	9	1.30	1.00
2012	3rd	57	24	15.24	1.46
2008	2nd	166	22	32.11	1.93

Floristic Quality Index and Mean Coefficient of Conservatism

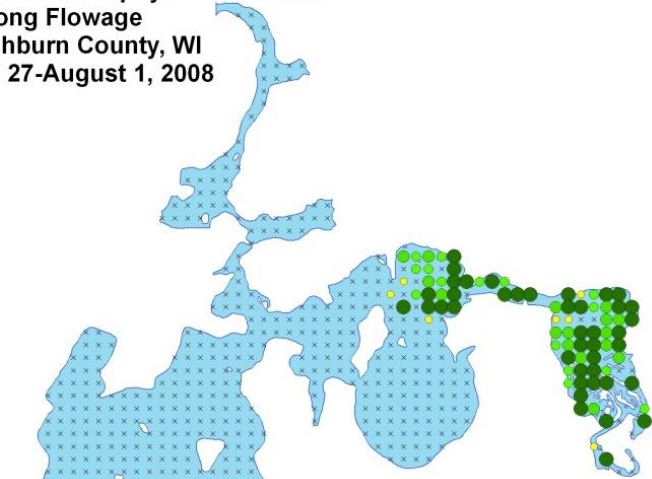
Year of PI Survey	# of Species	Mean C	FQI
2023	?	?	?
2021	59	6.5	49.6
2018	55	6.4	47.7
2014	45	6.4	42.9
2012	52	6.6	47.3
2008	53	6.6	48.1



2008 and 2012 Wild Rice (PI Survey)

Northern wild rice (*Zizania palustris*)

Aquatic Macrophyte Distribution
Minong Flowage
Washburn County, WI
July 27-August 1, 2008



Rake Fullness Rating

- Visual
- 1
- 2
- 3
- × None Found



Northern wild rice (*Zizania palustris*)

Coefficient of Conservatism = 8
Macrophyte Survey
Minong Flowage
Washburn County, WI
July 21-23, 2012

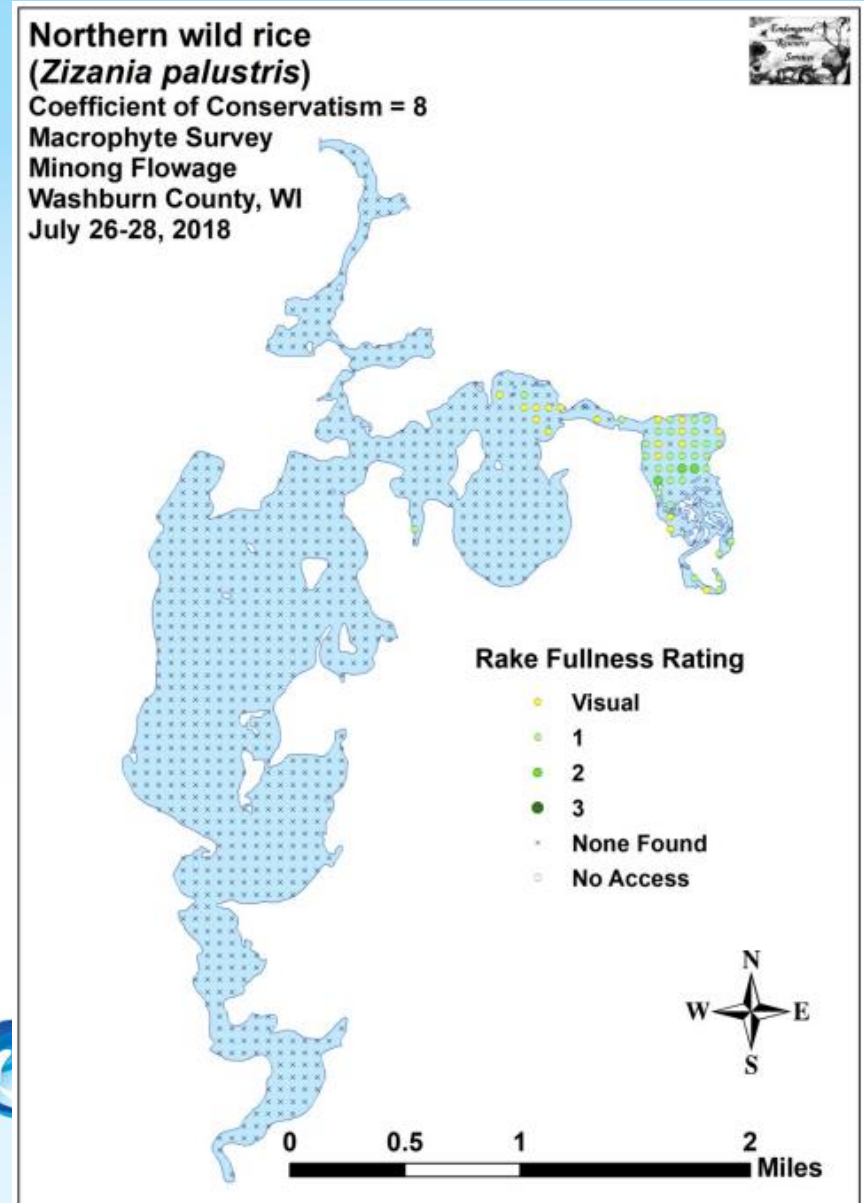
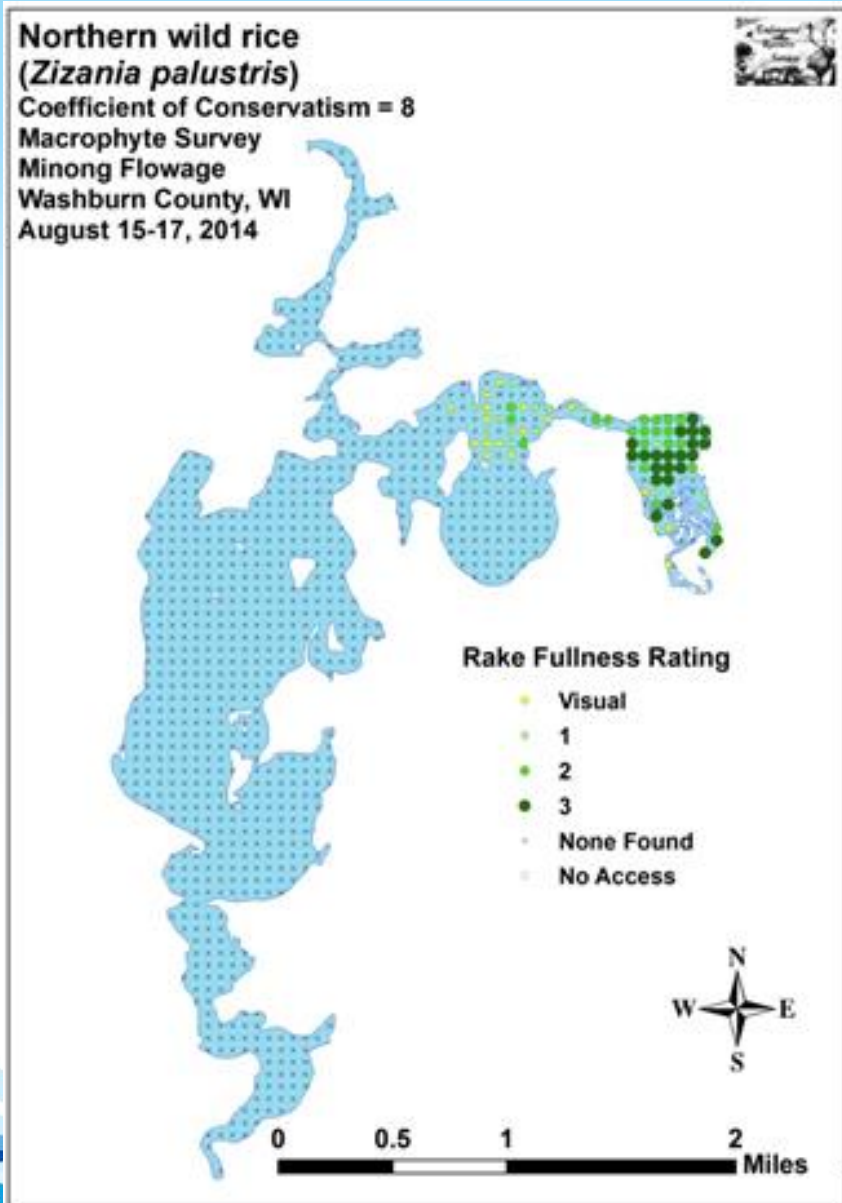


Rake Fullness Rating

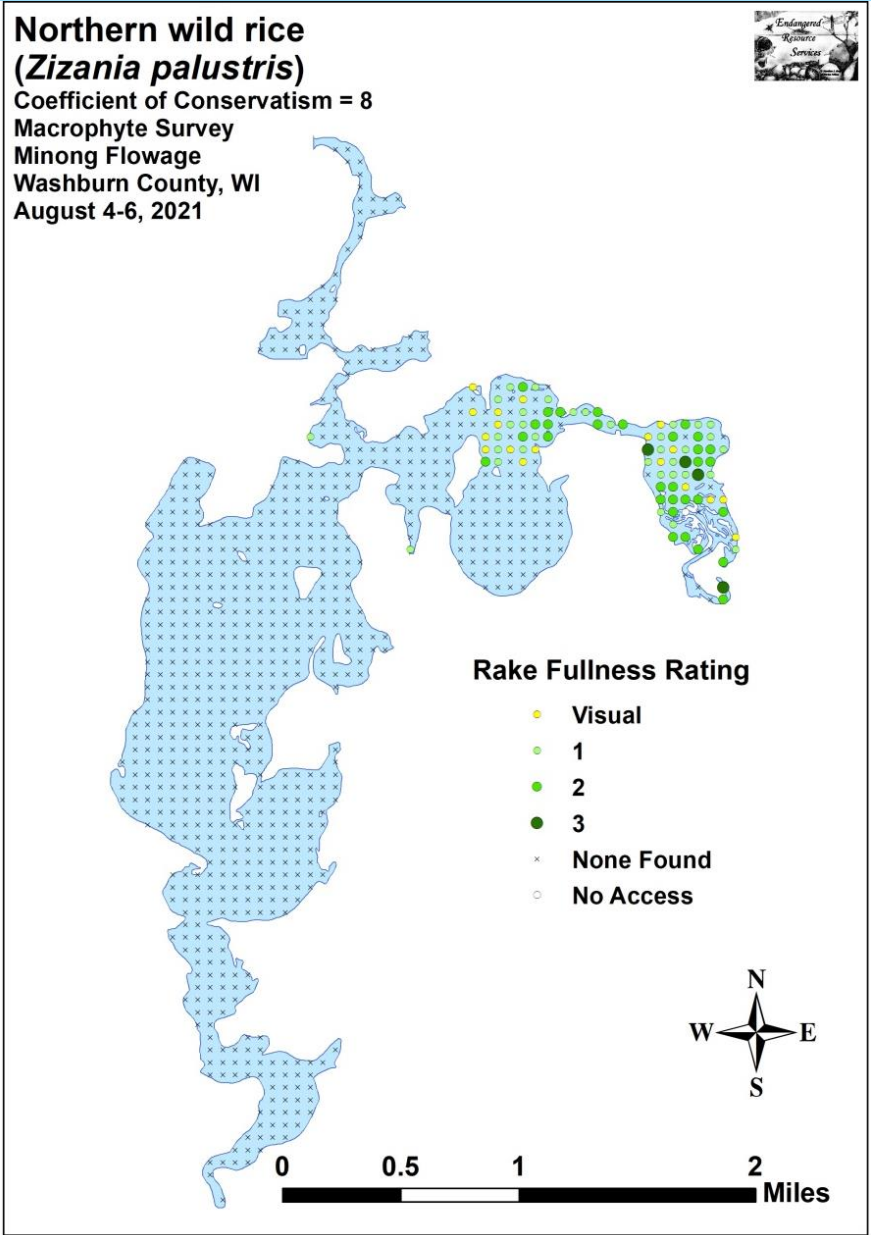
- Visual
- 1
- 2
- 3
- × None Found
- No Access



2014 and 2018 Wild Rice (PI Survey)



2021 and 2023 Wild Rice (PI Survey)



2023



PI Survey Wild Rice Statistics

Year of PI Survey	Most Abundant	Points w/Wild Rice	Wild Rice Visuals	Freq. of Occ. (% of littoral zone)	Ave. Rake Density (1 to 3)
2023	?	?	?	?	?
2021	4th	69	18	13.53	1.57
2018	7th	33	18	7.62	1.09
2014	2nd	58	16	12.58	2.10
2012	6th	47	15	12.57	1.66
2008	7th	72	7	13.93	2.36



Eurasian water milfoil invading Northern wild rice bed in Totagatic Inlet (Berg 2012)



Terrestrial EWM and Wild Rice – July 2013



EWM reestablishing among the rice in the Totagatic Inlet 8/30/20





2022 Wild Rice North End Serenity Bay
(GLIFWC)



2022 Wild Rice East Basin (GLIFWC)

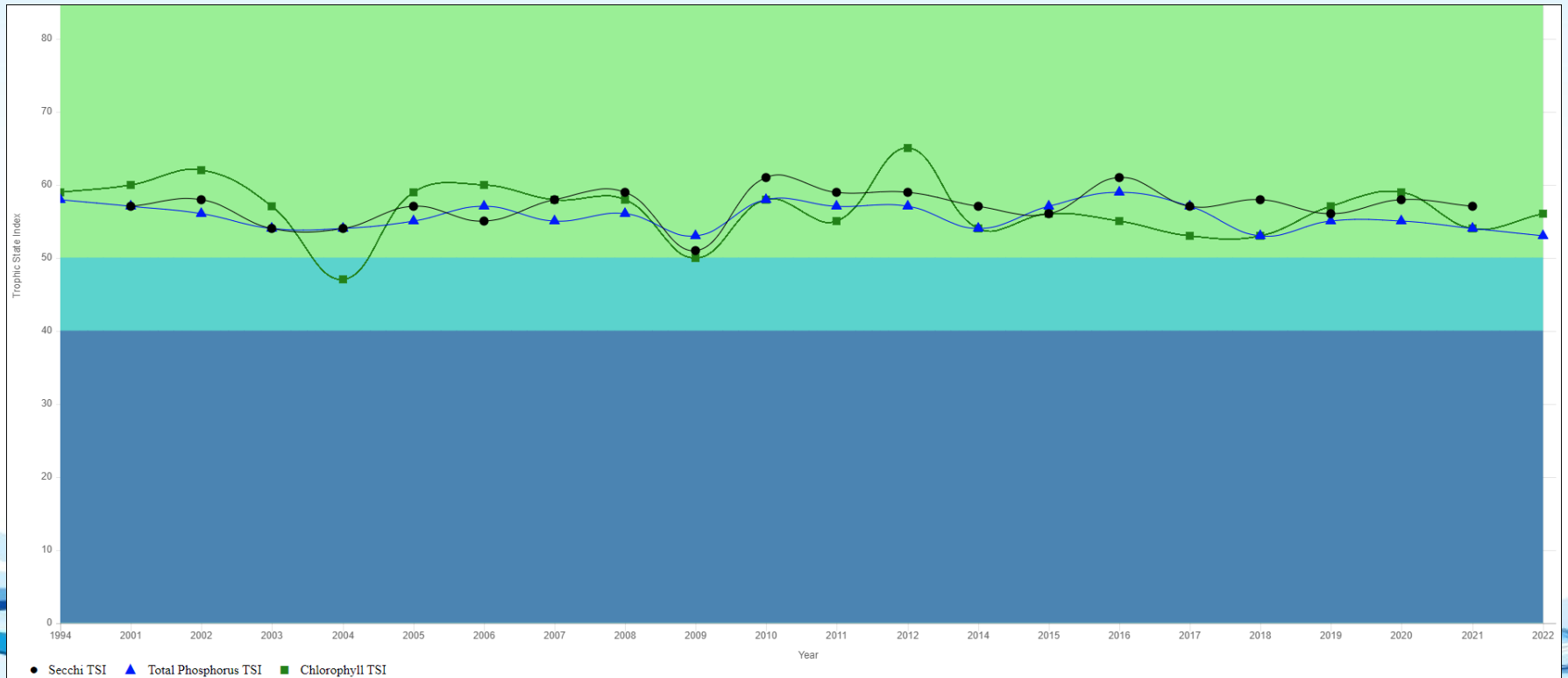
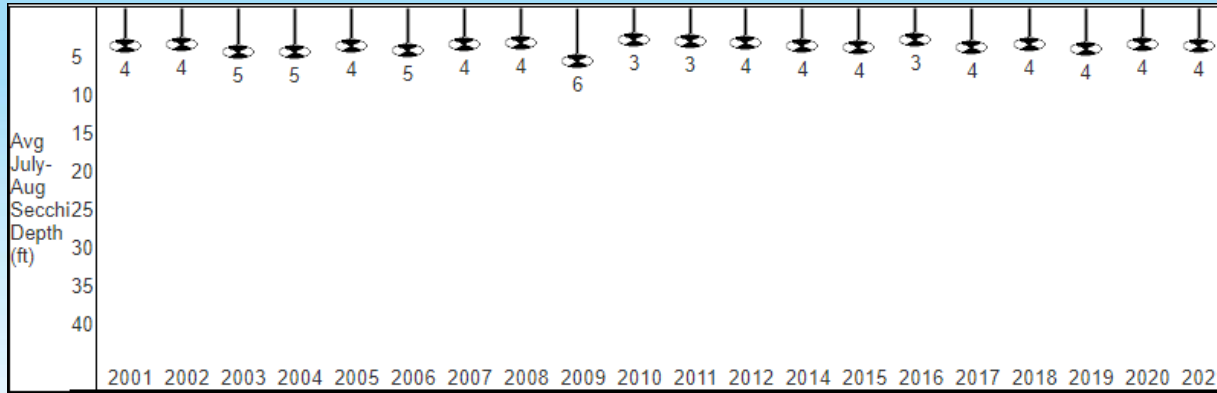
An aerial photograph showing a large, irregularly shaped blue pond in the upper center. The pond is surrounded by dense green forest. To the right of the pond, a narrow, winding waterway flows through the forest. In the foreground, there is a large, flat, green area that appears to be a wetland or marsh, with some darker patches. The overall scene is a mix of water, forest, and open wetland areas.

2007 Wild Rice (GLIFWC)

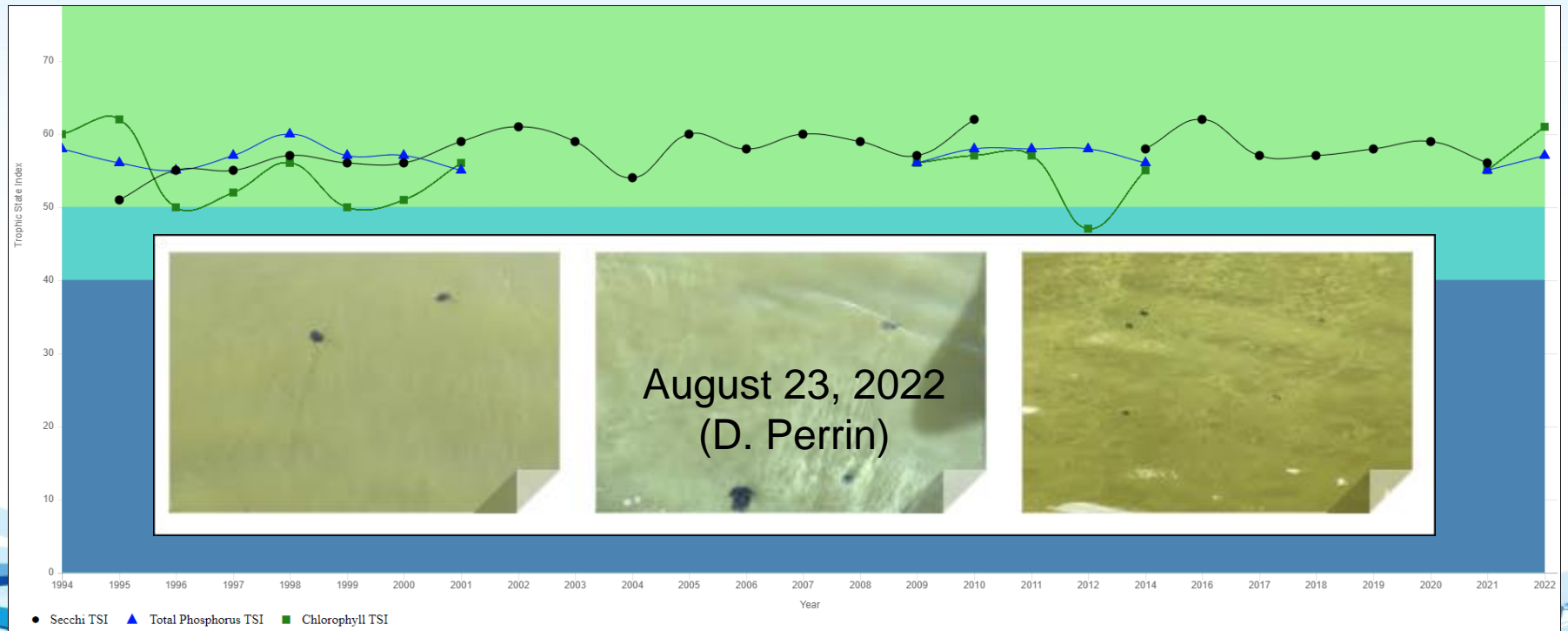
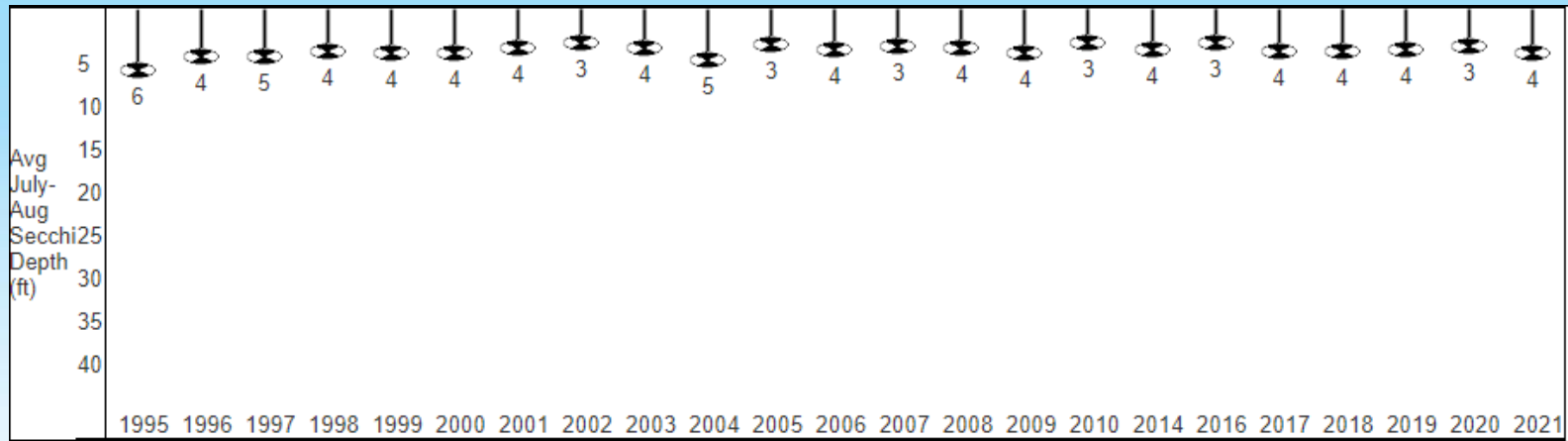
An aerial photograph showing a dense forest of green trees. In the upper right, there is a small, dark pond. A winding waterway flows through the forest, starting from the pond and moving towards the bottom left. The forest is very thick and covers most of the area.

2022 Wild Rice East Basin (GLIFWC)

CLMN Water Quality – Deep Hole Near Dam



CLMN Water Quality – Central Basin



- **2024-2028 APM Plan**
 - **EWM management options**
 - Winter drawdown
 - Aquatic herbicides
 - Physical removal/DASH
 - Let it grow
 - Other?

- **Other Concerns**
 - **Other AIS management**
 - **AIS prevention**
 - **Native plants/wild rice**
 - **Fisheries/wildlife**
 - **Water quality**
 - **Lake usability**

- **Financing management recommendations**
- **Other discussion topics/questions**

Discussion Time

