

**SAUK RIVER CHAIN OF LAKES
STEARNS COUNTY,
MINNESOTA**



**HYDROACOUSTIC SURVEY
2021**

Sauk River Chain of Lakes Hydroacoustic Survey

Prepared for Sauk River Chain of Lakes Association

2021



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Cite as

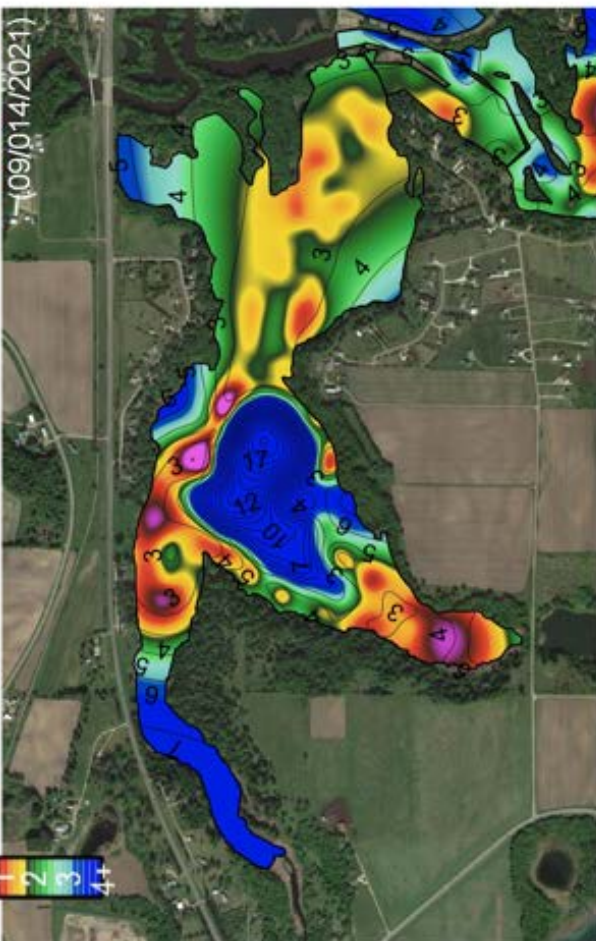
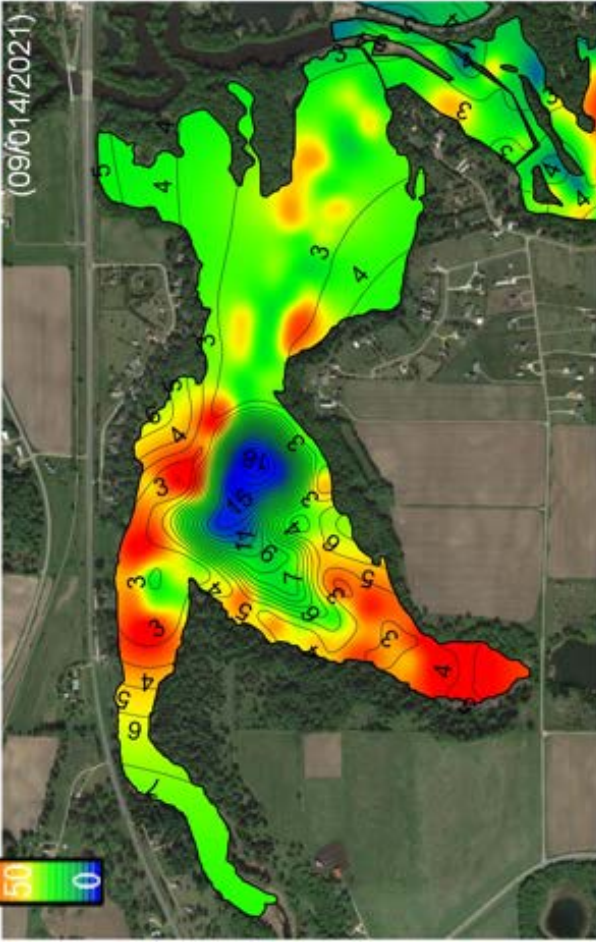
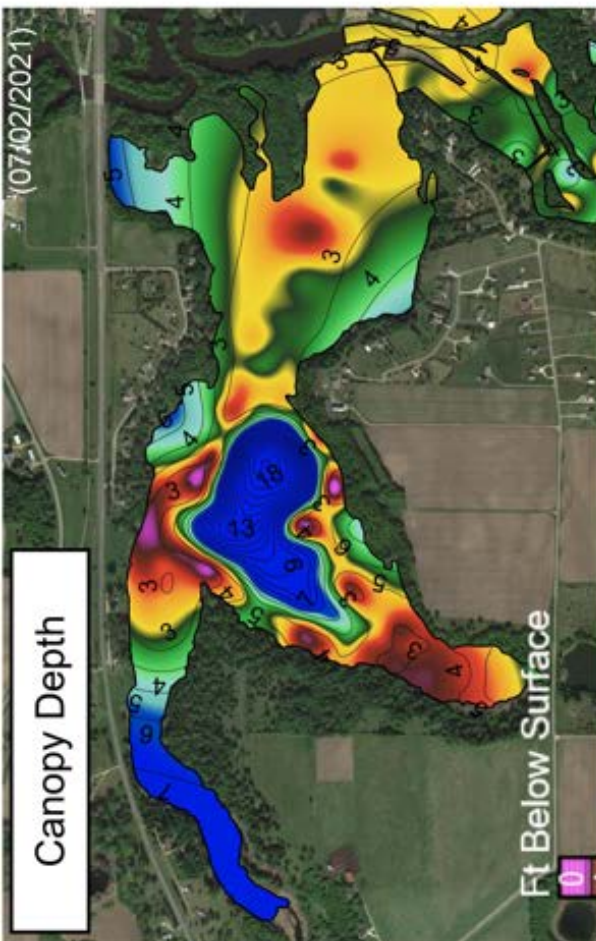
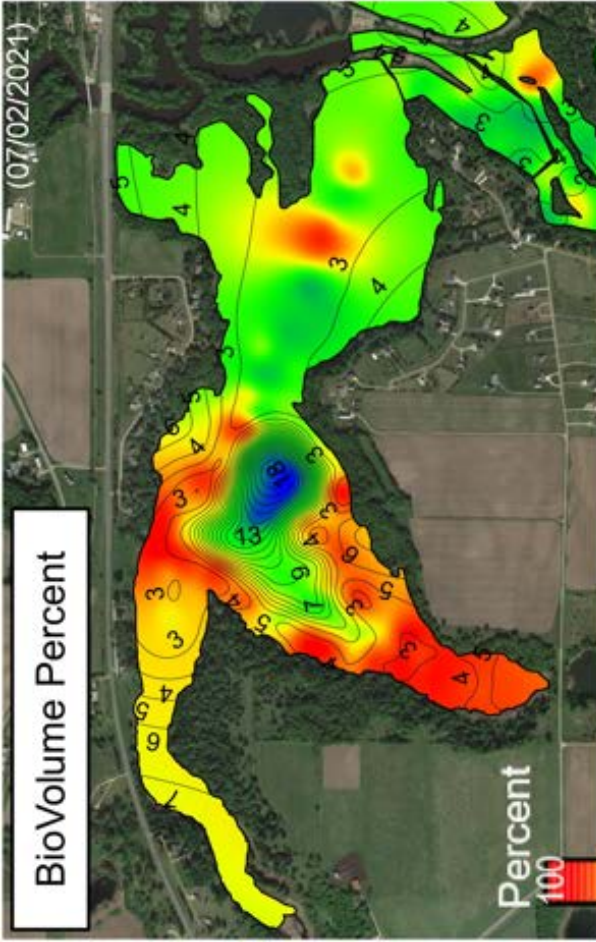
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BECKER LAKE

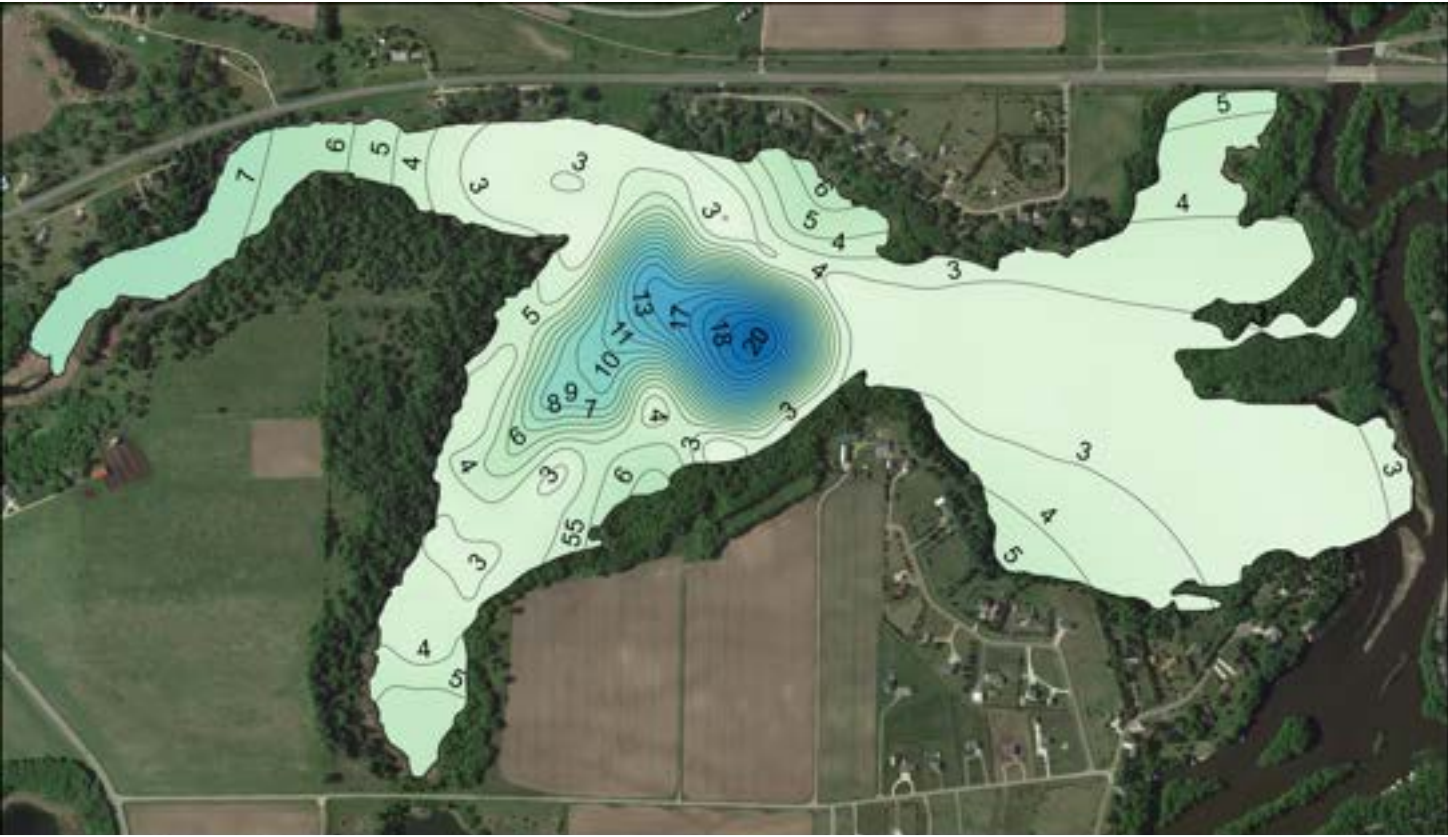
Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD < 2.5 ft)
July	95%	42%	5.23	33%
September	79%	28%	4.25	33%



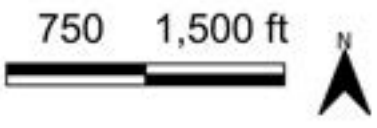
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Becker Lake (73015600)
Prepared for the Sauk River
Chain of Lakes Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
221	5.9	21.1	4.8	63%	37%	0%



Sediment Composition
 ■ Muddy/Muck
 ■ Silty/Organic
 ■ Sandy/Gravel

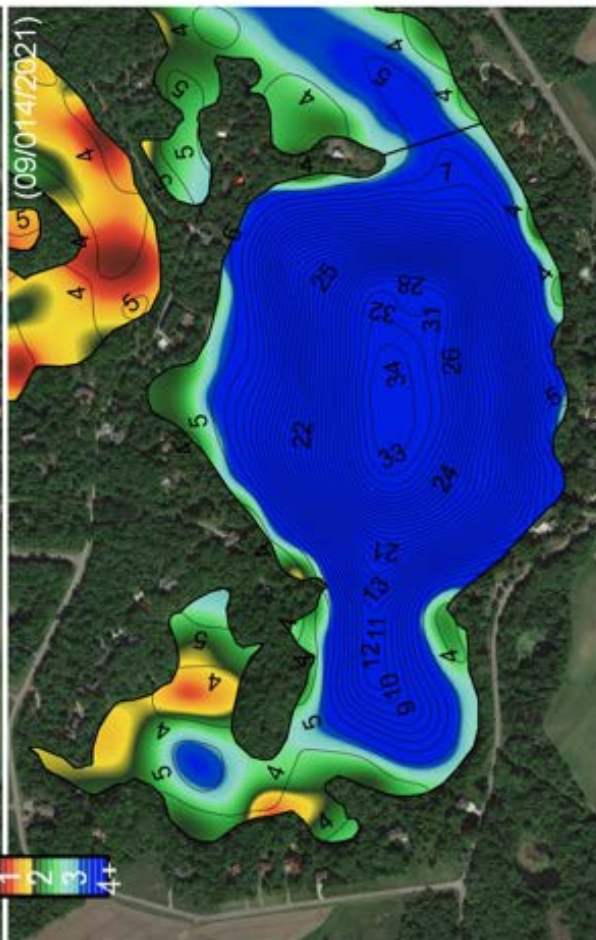
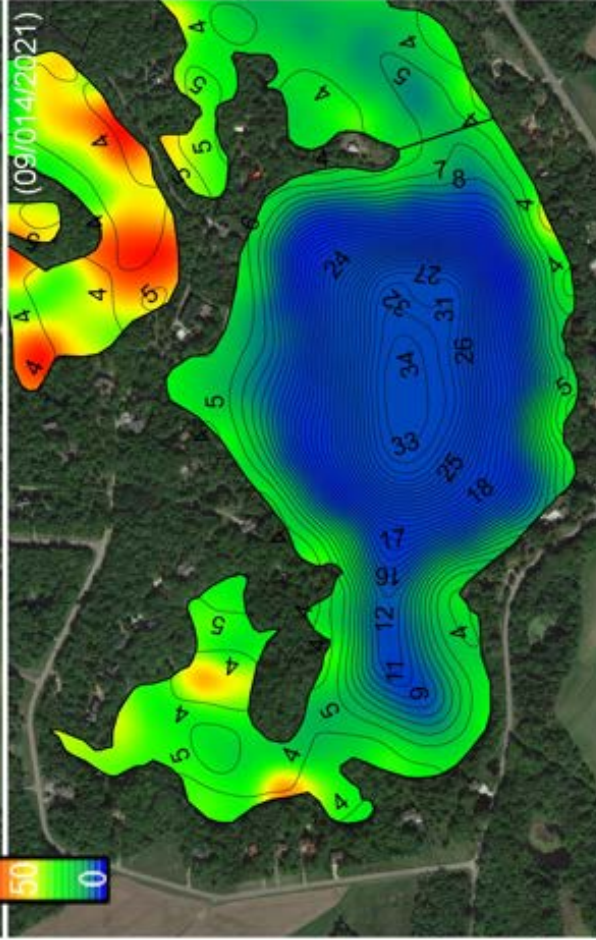
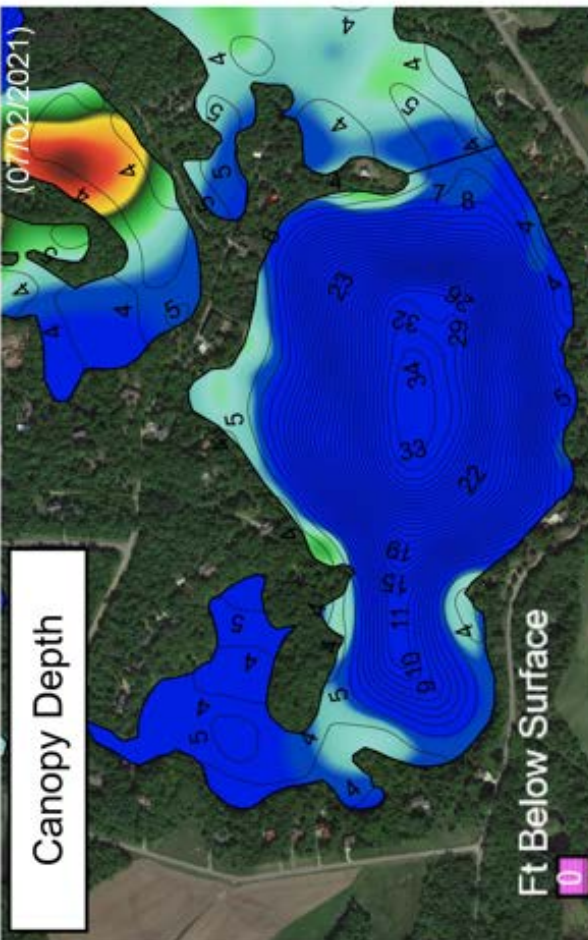
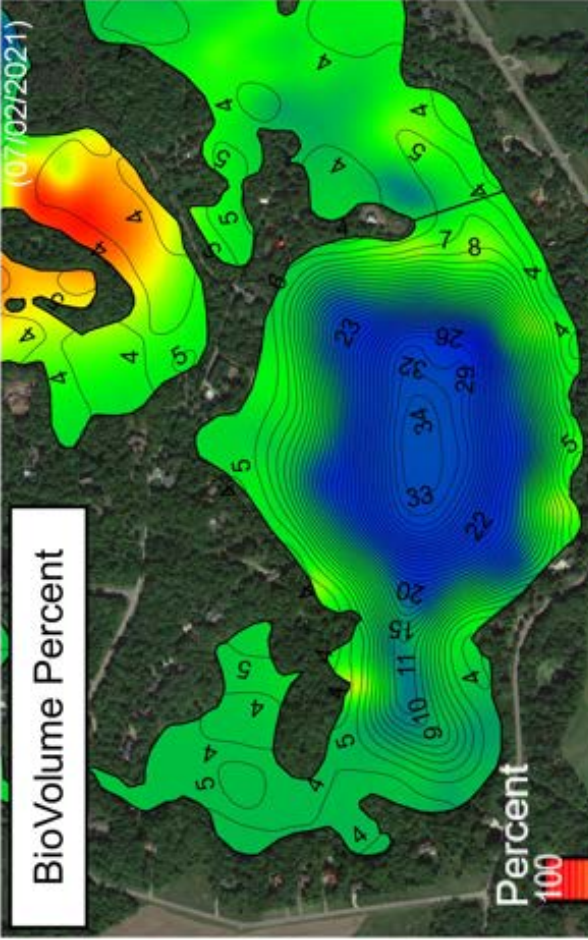


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Becker Lake (73015600)
 Sonar Interpolation Maps
 Prepared for Sauk River Chain
 of Lakes Association

BOLFING LAKE

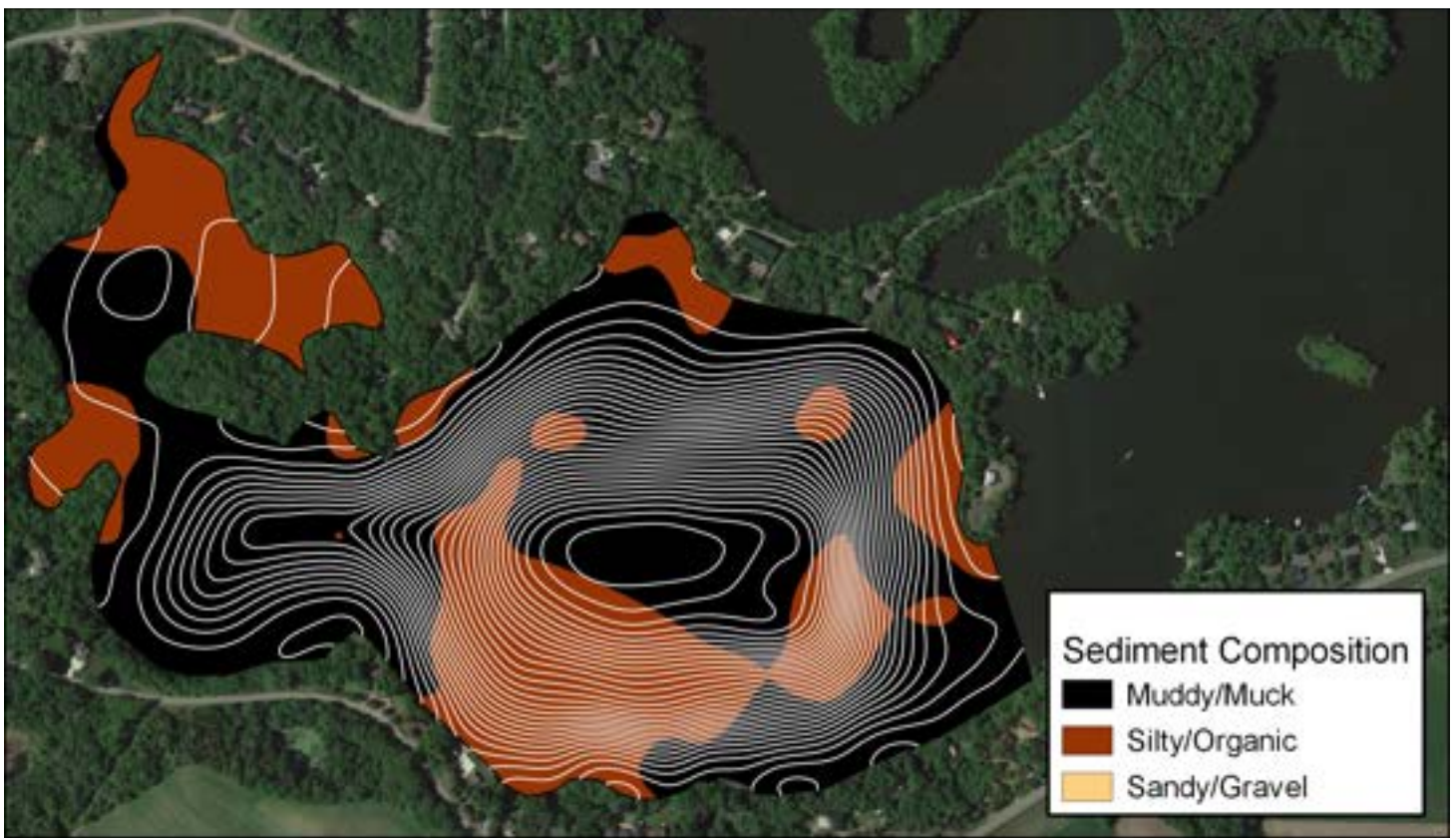
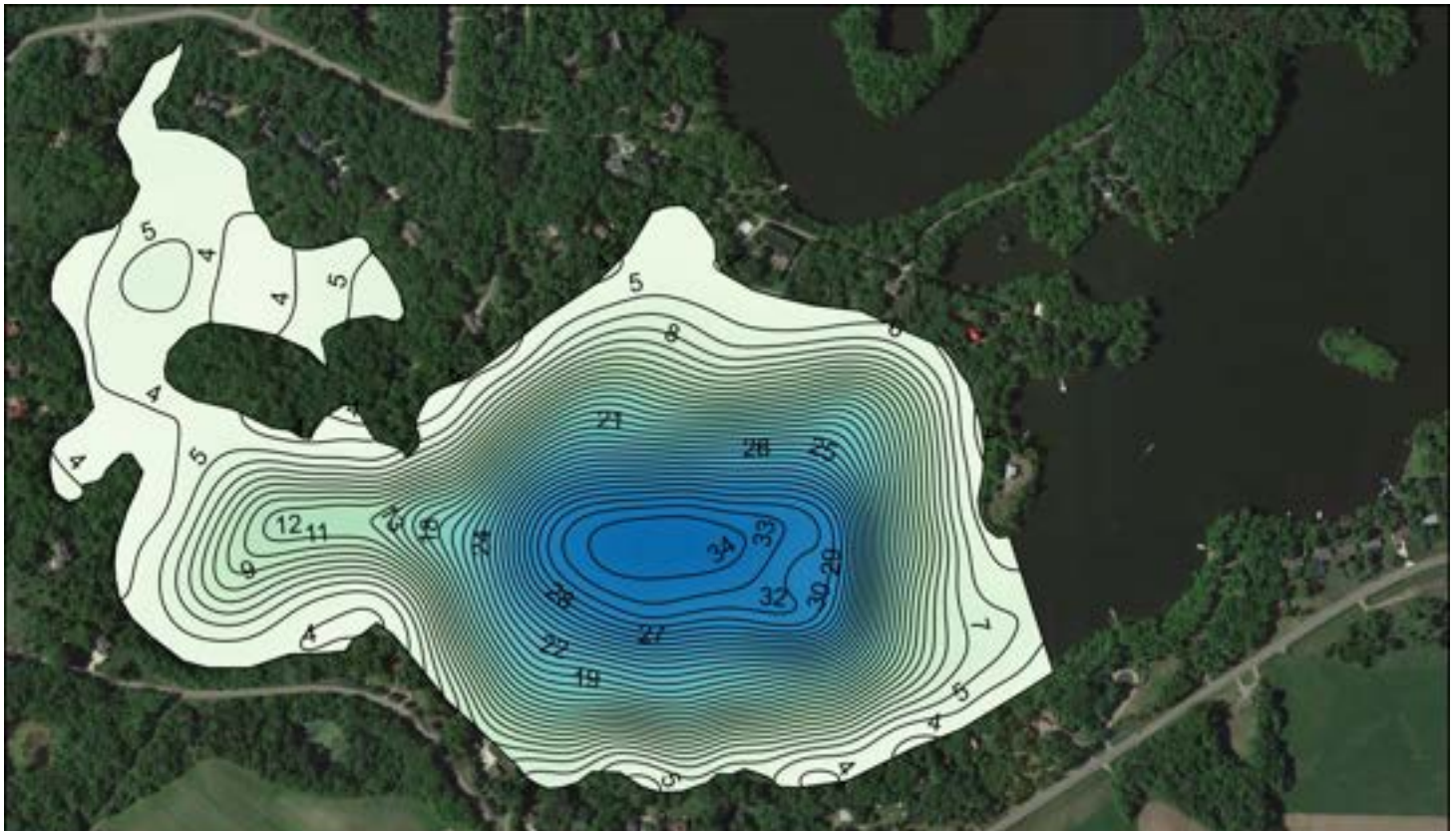
Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD<2.5 ft)
July	38%	16%	5.29	4%
September	46%	10%	3.94	18%



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Bolfling Lake (73008800)
Prepared for the Sauk River
Chain of Lakes Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
109	2.7	34.9	13.0	62%	38%	0%



500 1,000 ft

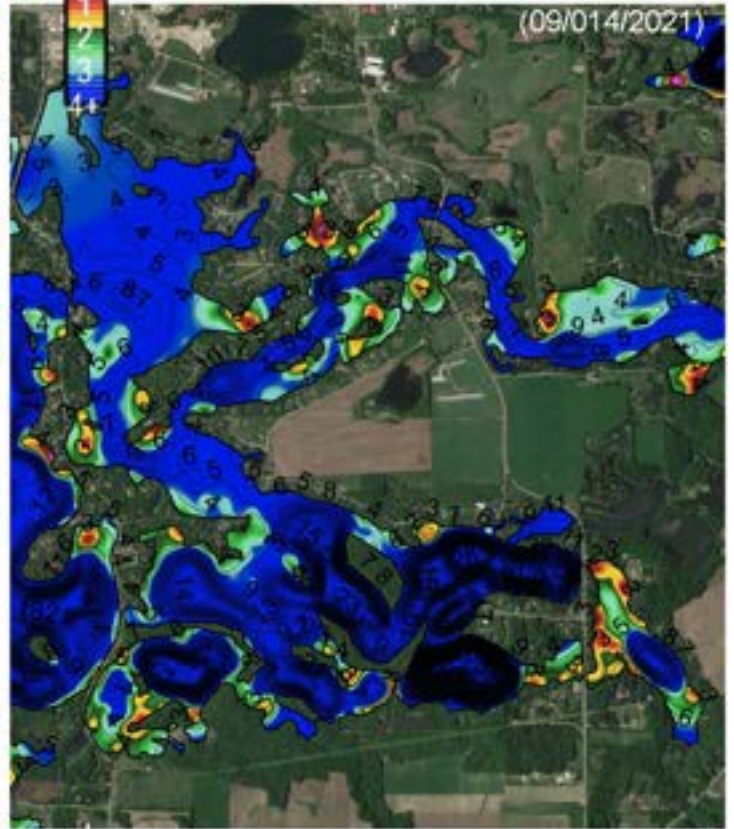
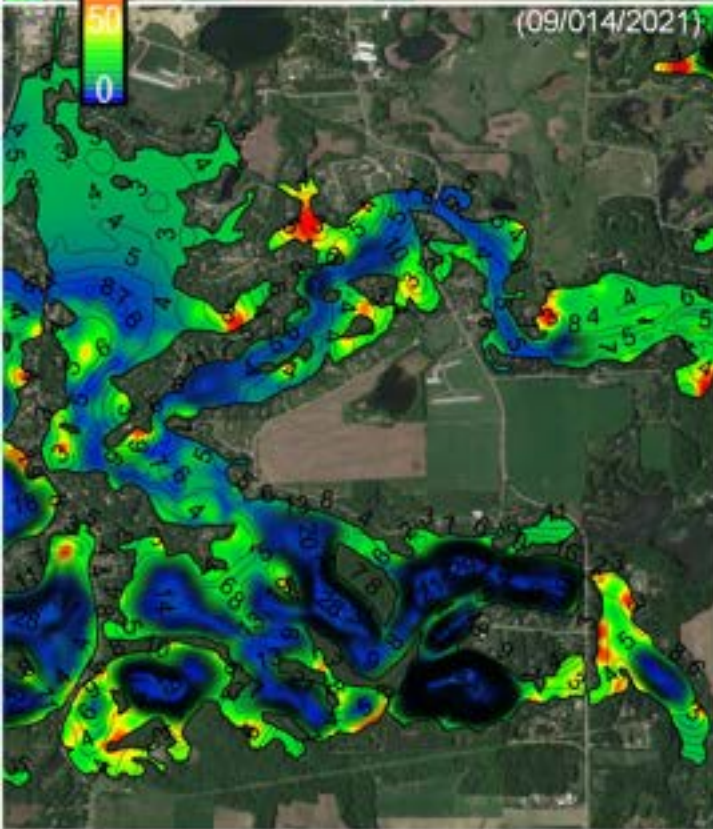
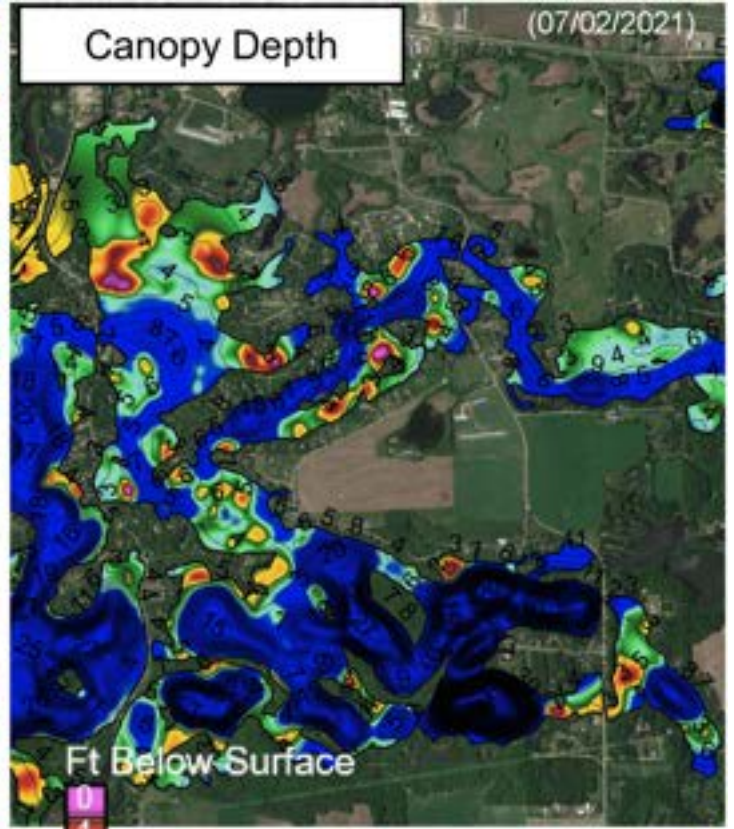
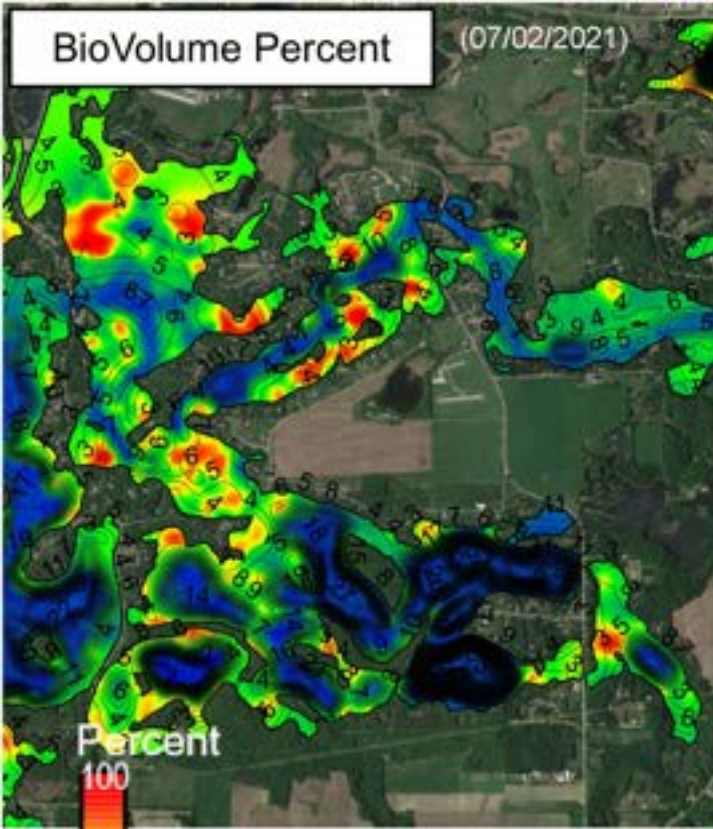


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Bolfig Lake (73008800)
Sonar Interpolation Maps
Prepared for Sauk River Chain
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CEDAR ISLAND LAKE

Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD<2.5 ft)
July	63%	21%	3.84	25%
September	46%	10%	3.98	17%



4,000 ft

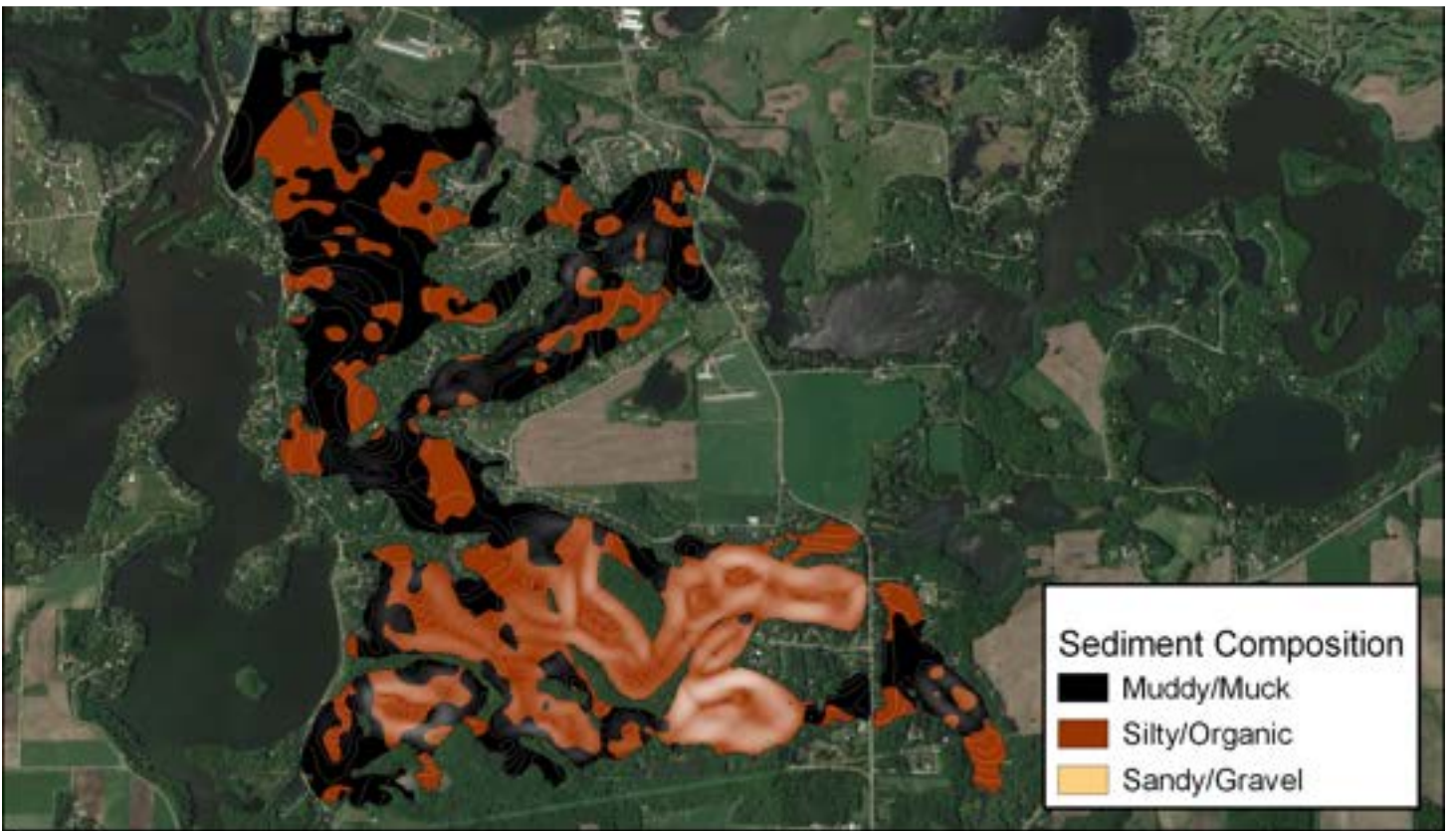


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Cedar Island Lake
(73013300)

Prepared for: Sauk River
Chain of Lakes Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
954	27.2	72.3	9.6	53%	47%	1%



Sediment Composition
 ■ Muddy/Muck
 ■ Silty/Organic
 ■ Sandy/Gravel

2,000 4,000 ft

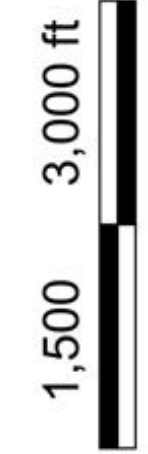
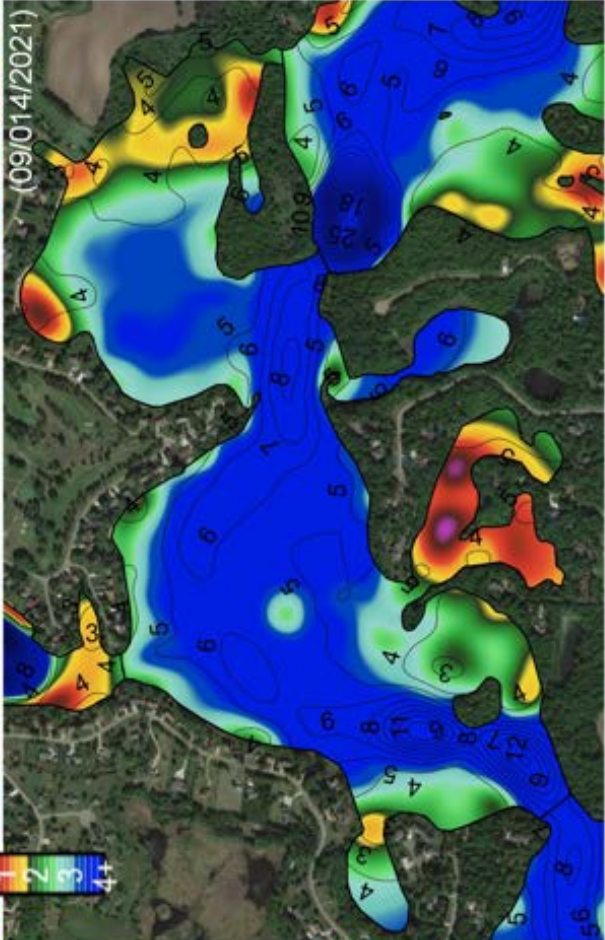
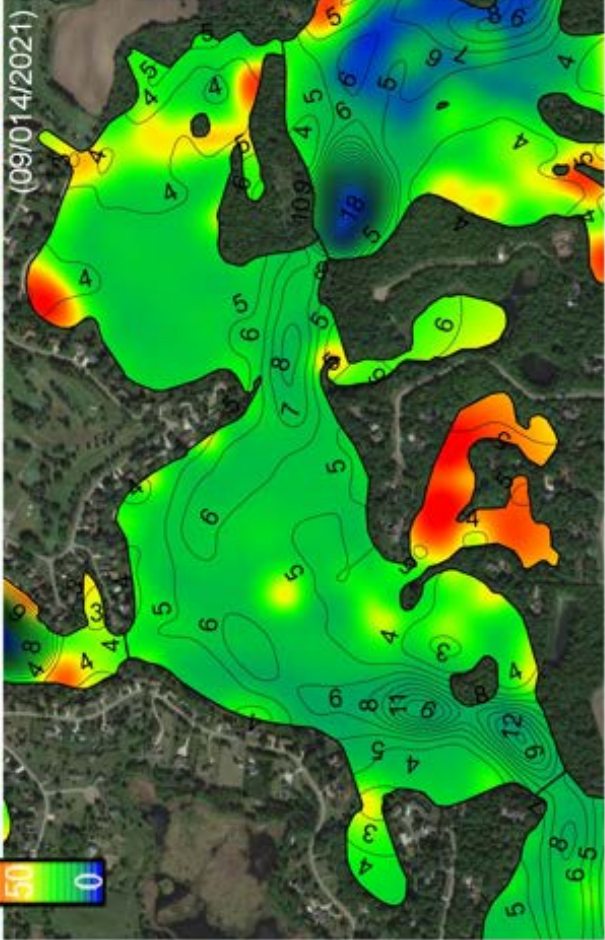
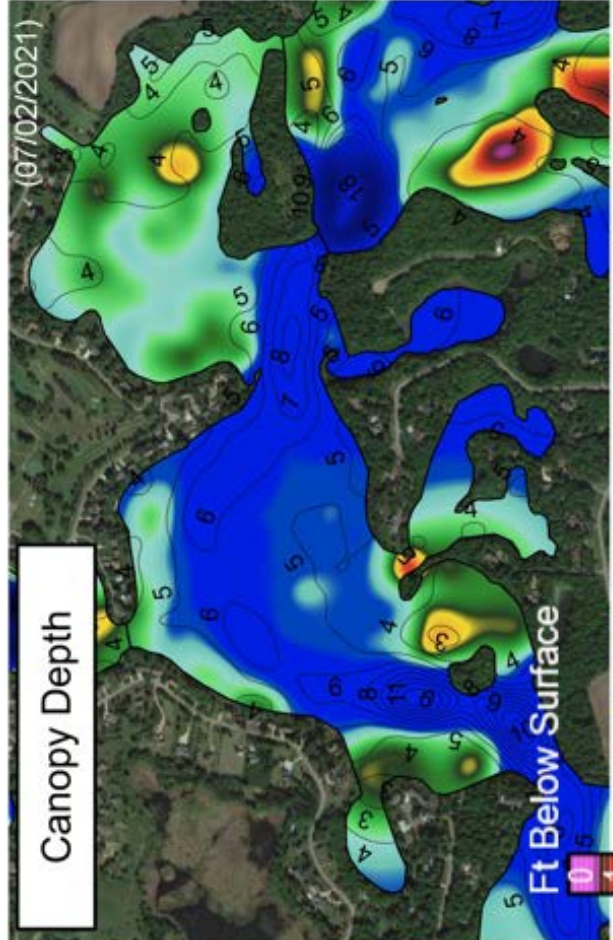
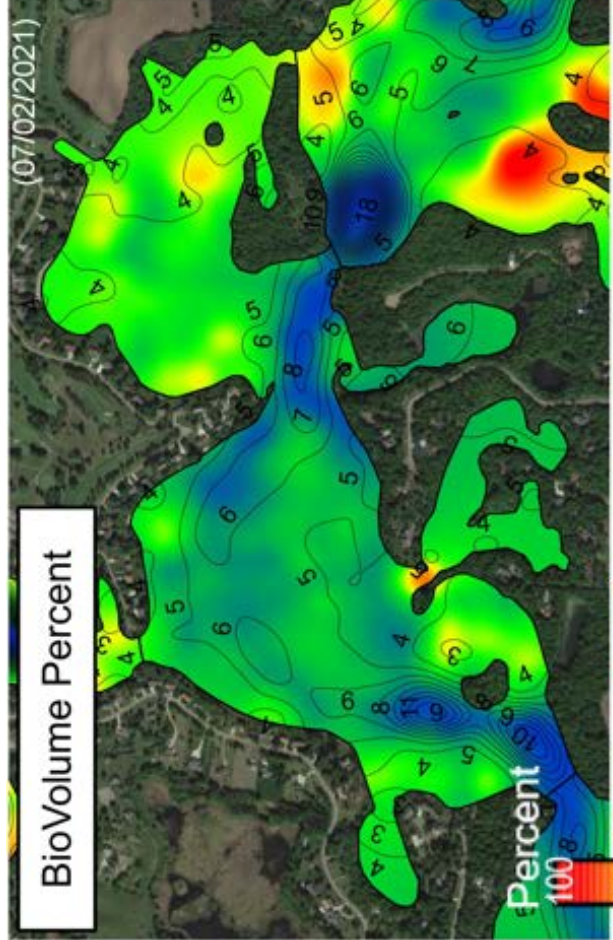


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GREAT NORTHERN LAKE

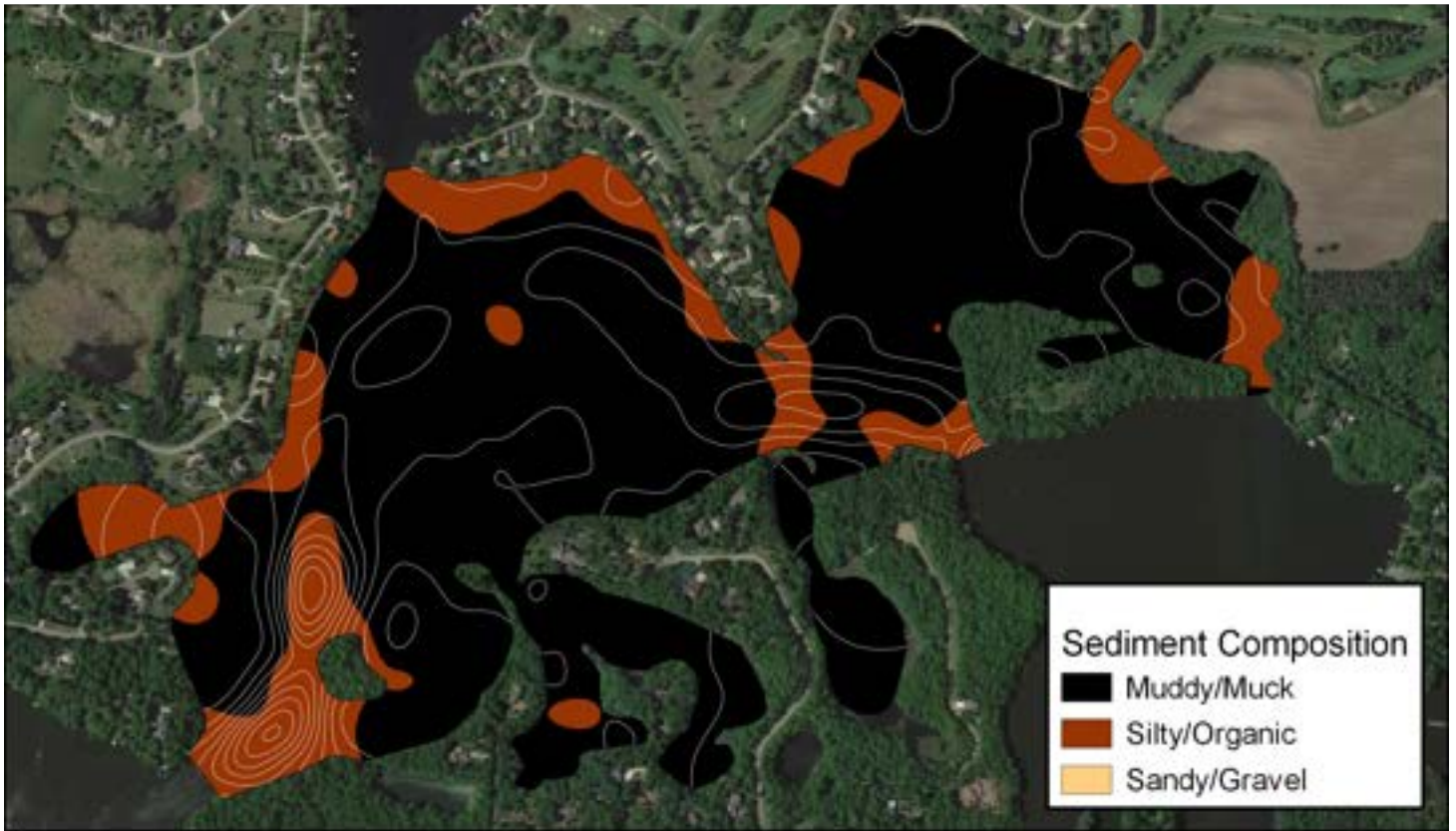
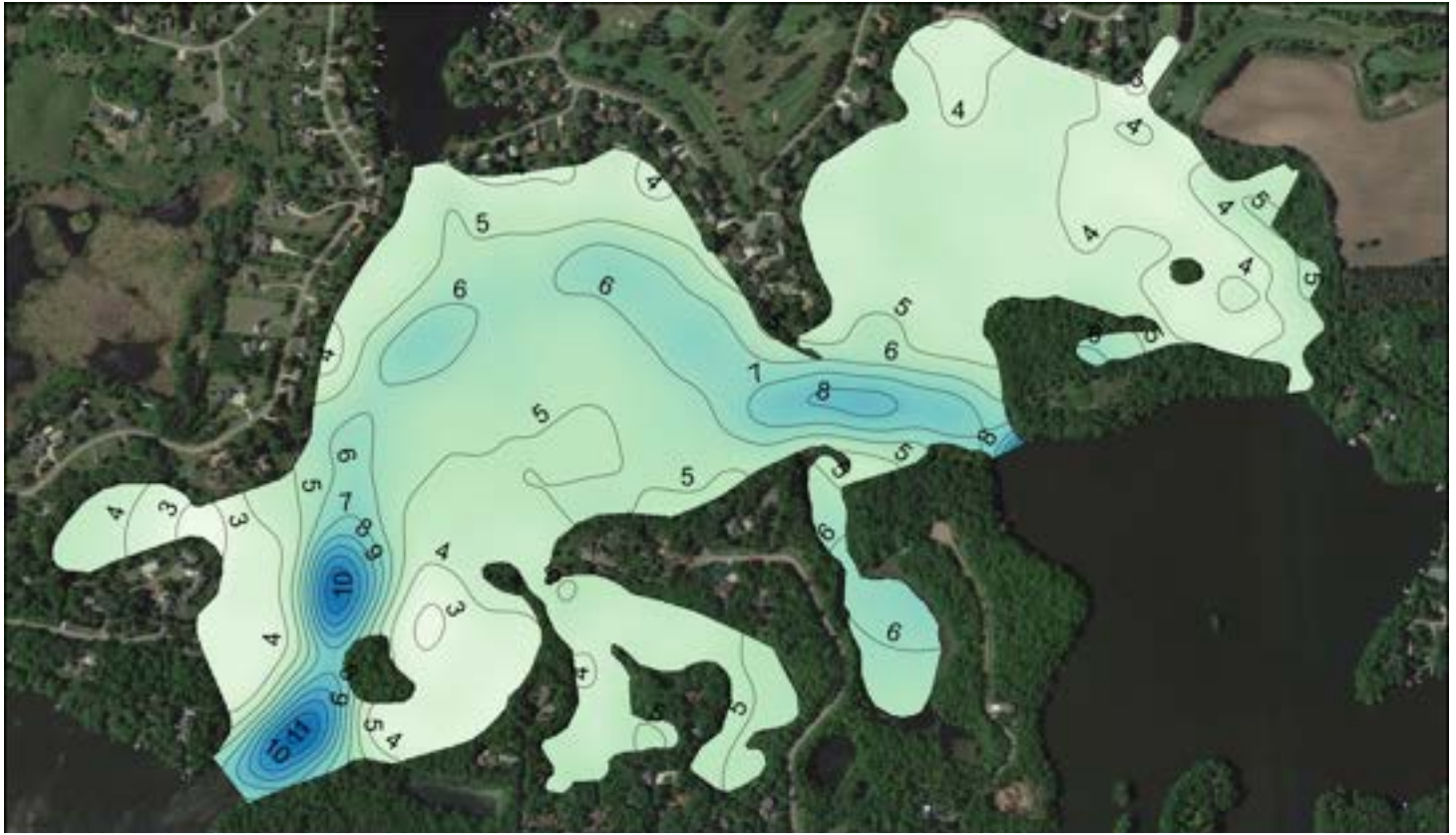
Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD < 2.5 ft)
July	64%	11%	3.81	12%
September	100%	18%	4.46	10%



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Great Northern Lake
(73008300)
Prepared for the Sauk River
Chain of Lakes Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
196	6.0	19.2	5.0	62%	38%	0%



Sediment Composition

- Muddy/Muck
- Silty/Organic
- Sandy/Gravel

500 1,000 ft

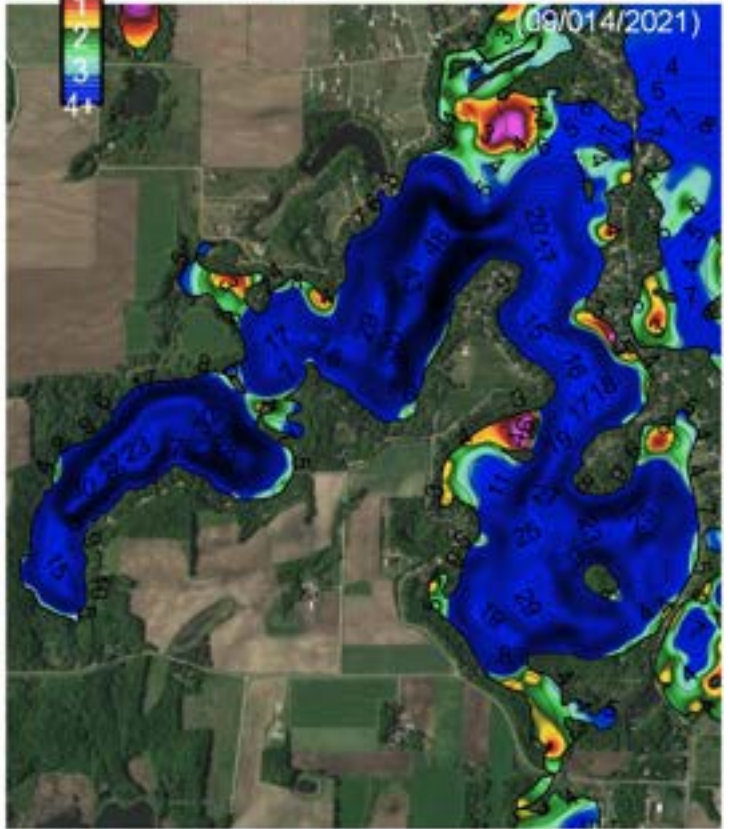
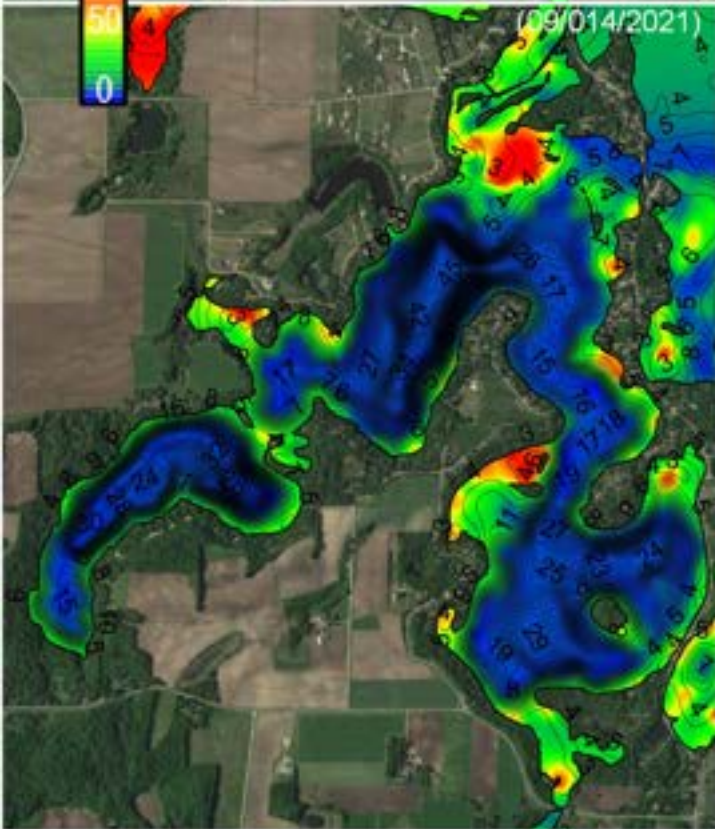
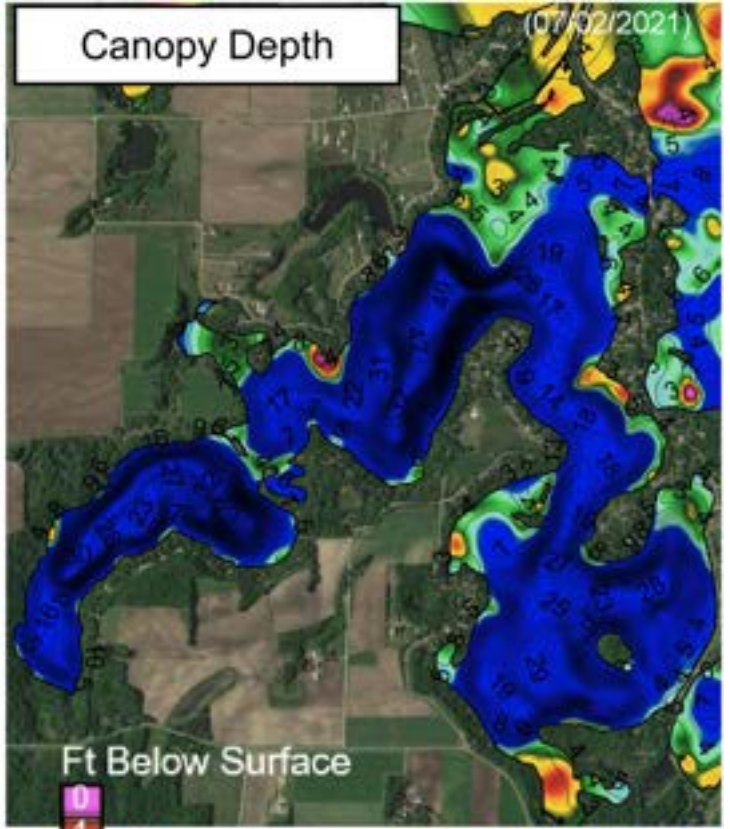
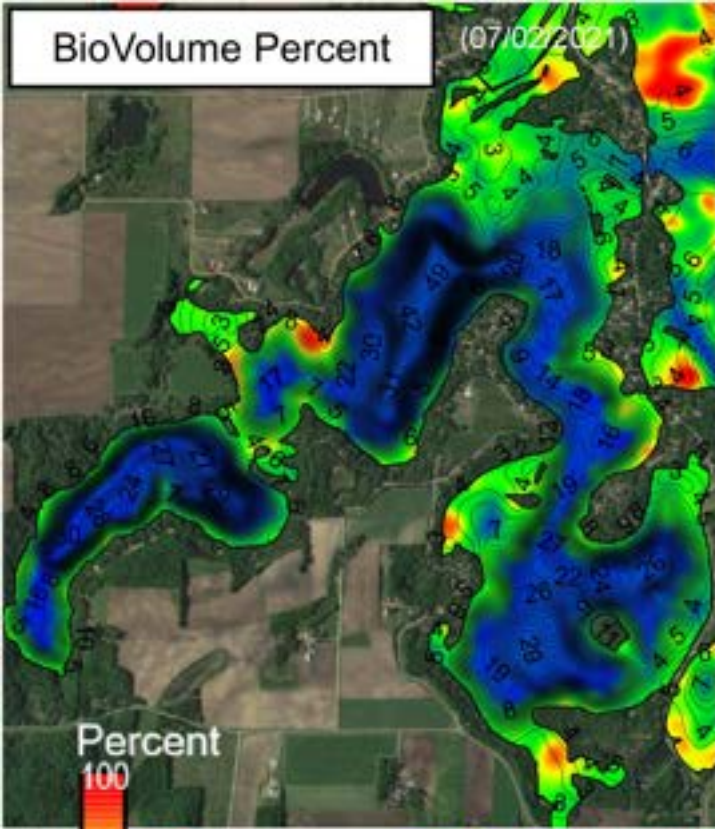


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Great Northern Lake (73008300)
Sonar Interpolation Maps
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HORSESHOE LAKE

Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD<2.5 ft)
July	58%	16%	4.47	18%
September	43%	12%	4.65	19%



4,000 ft

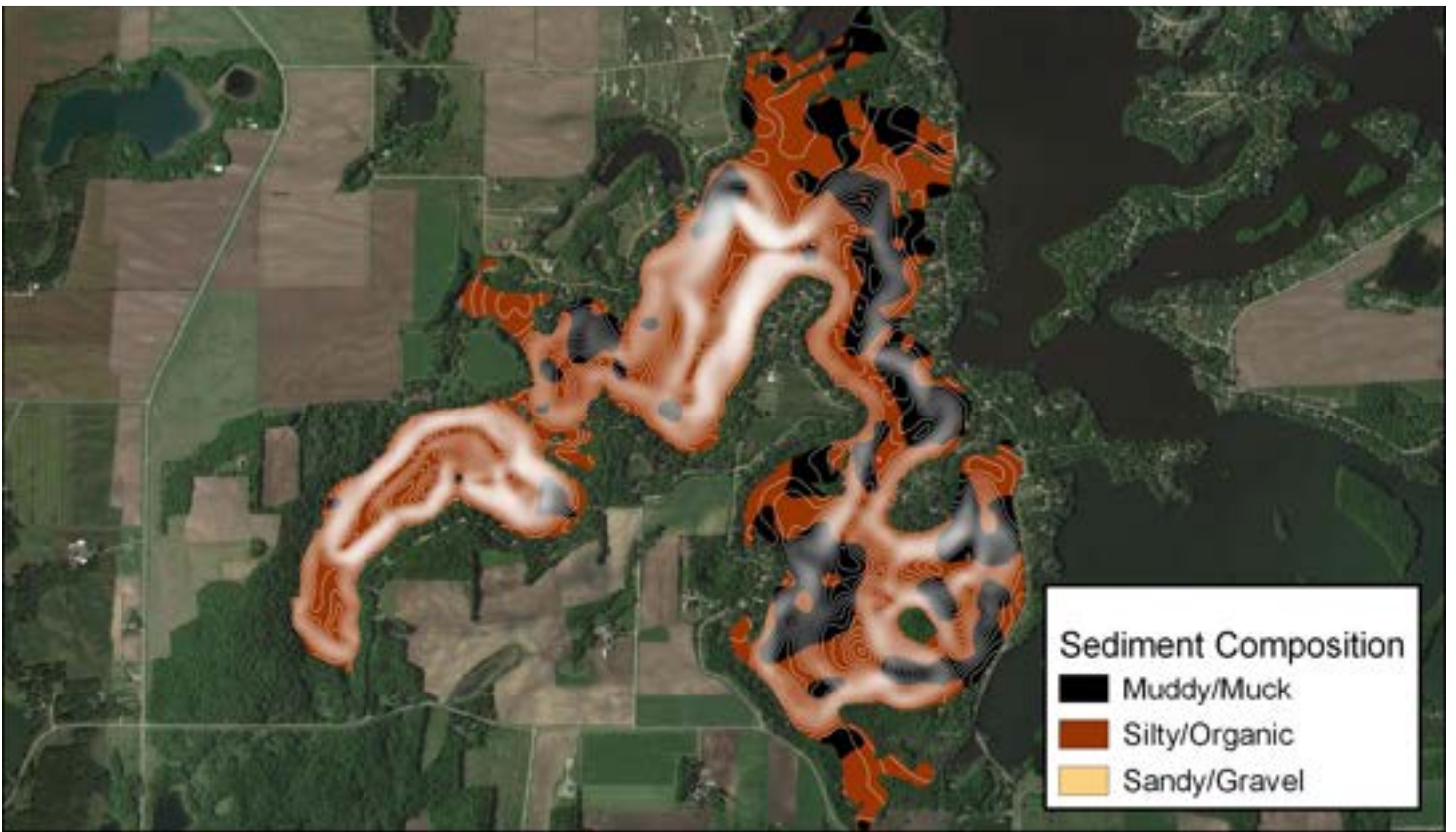


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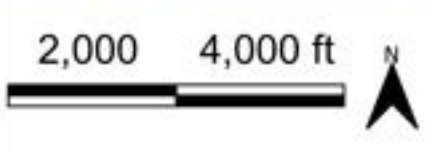
Horseshoe Lake
(73015700)

Prepared for: Sauk River
Chain of Lakes Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
627	13.8	53.7	5.2	43%	57%	0%



Sediment Composition
 ■ Muddy/Muck
 ■ Silty/Organic
 ■ Sandy/Gravel

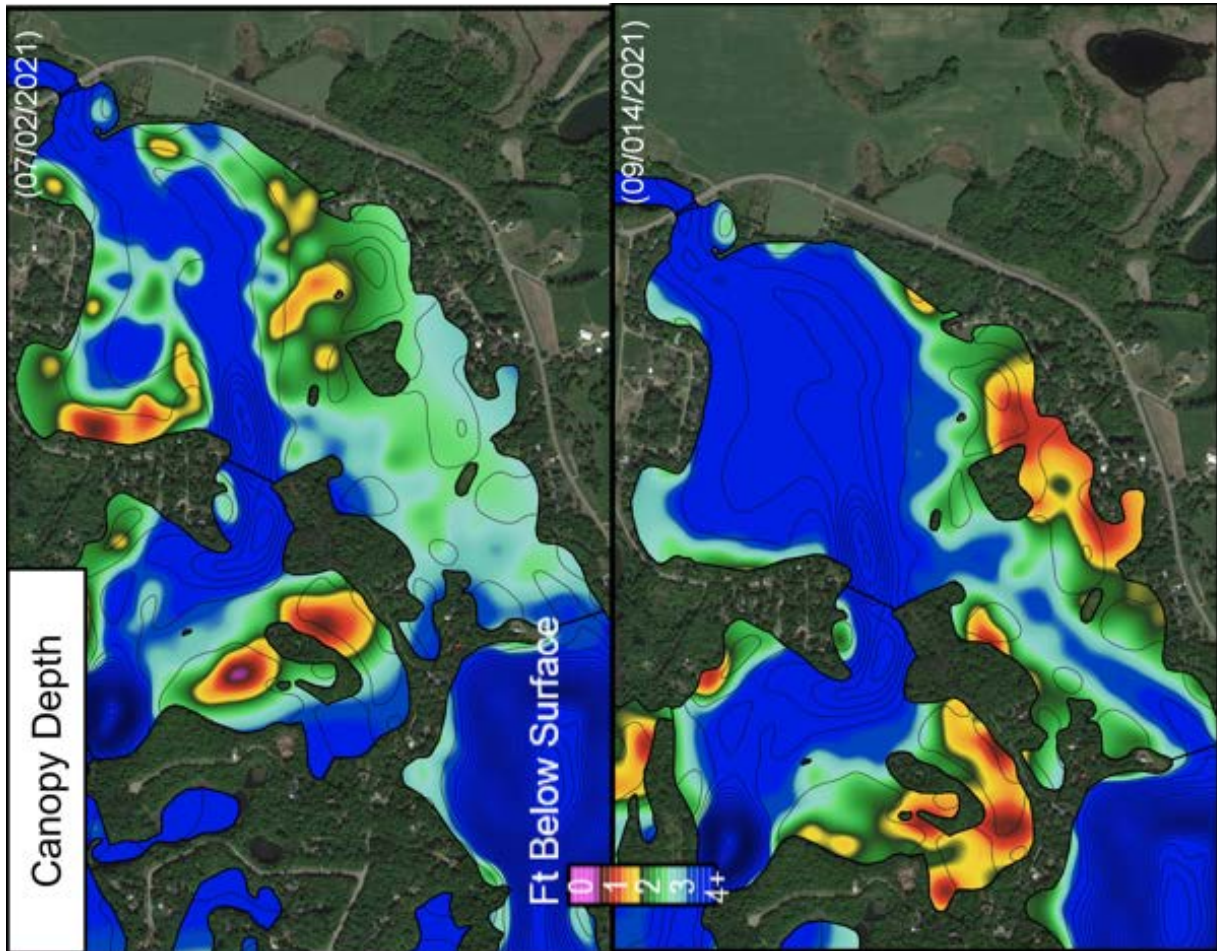
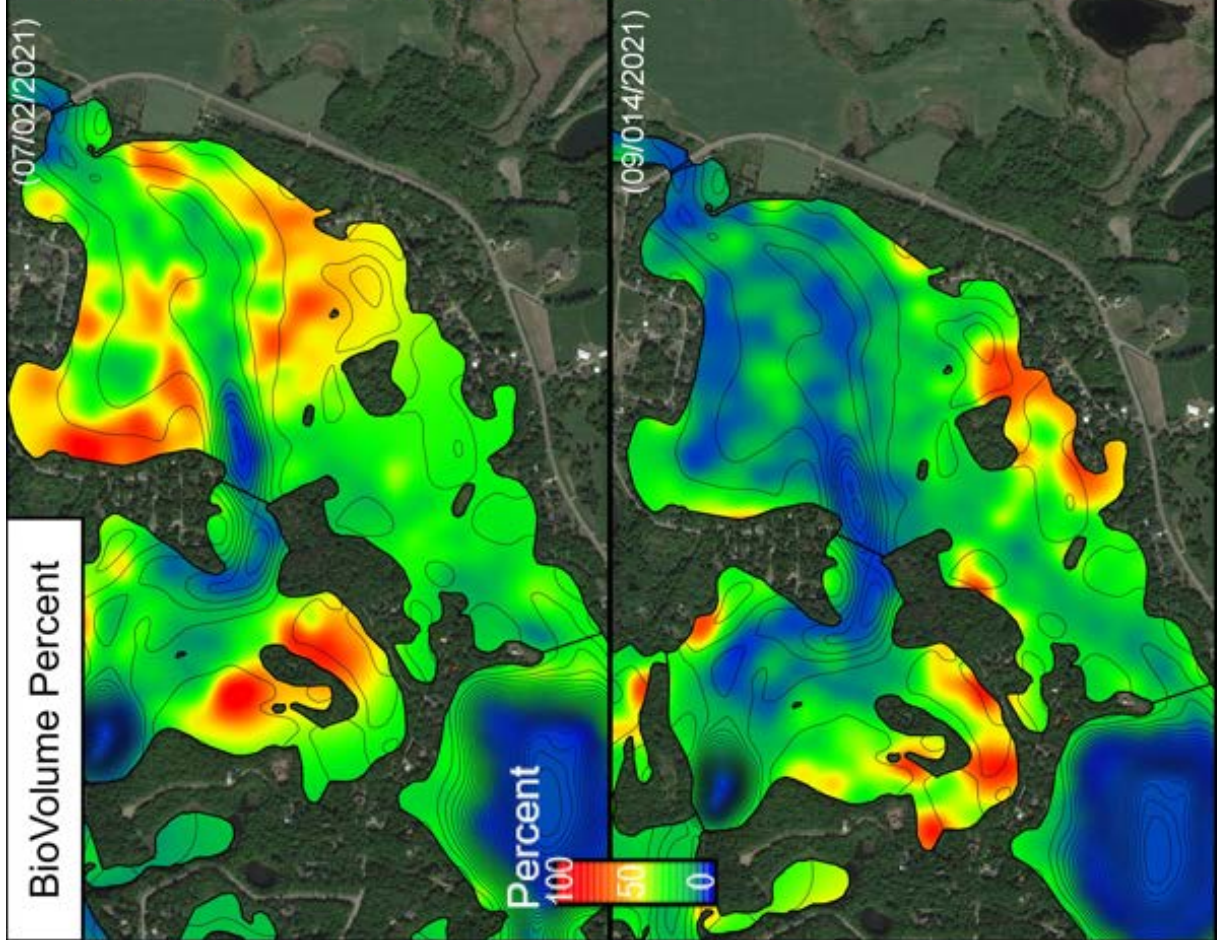


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Horseshoe Lake (73015700)
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KNAUS LAKE

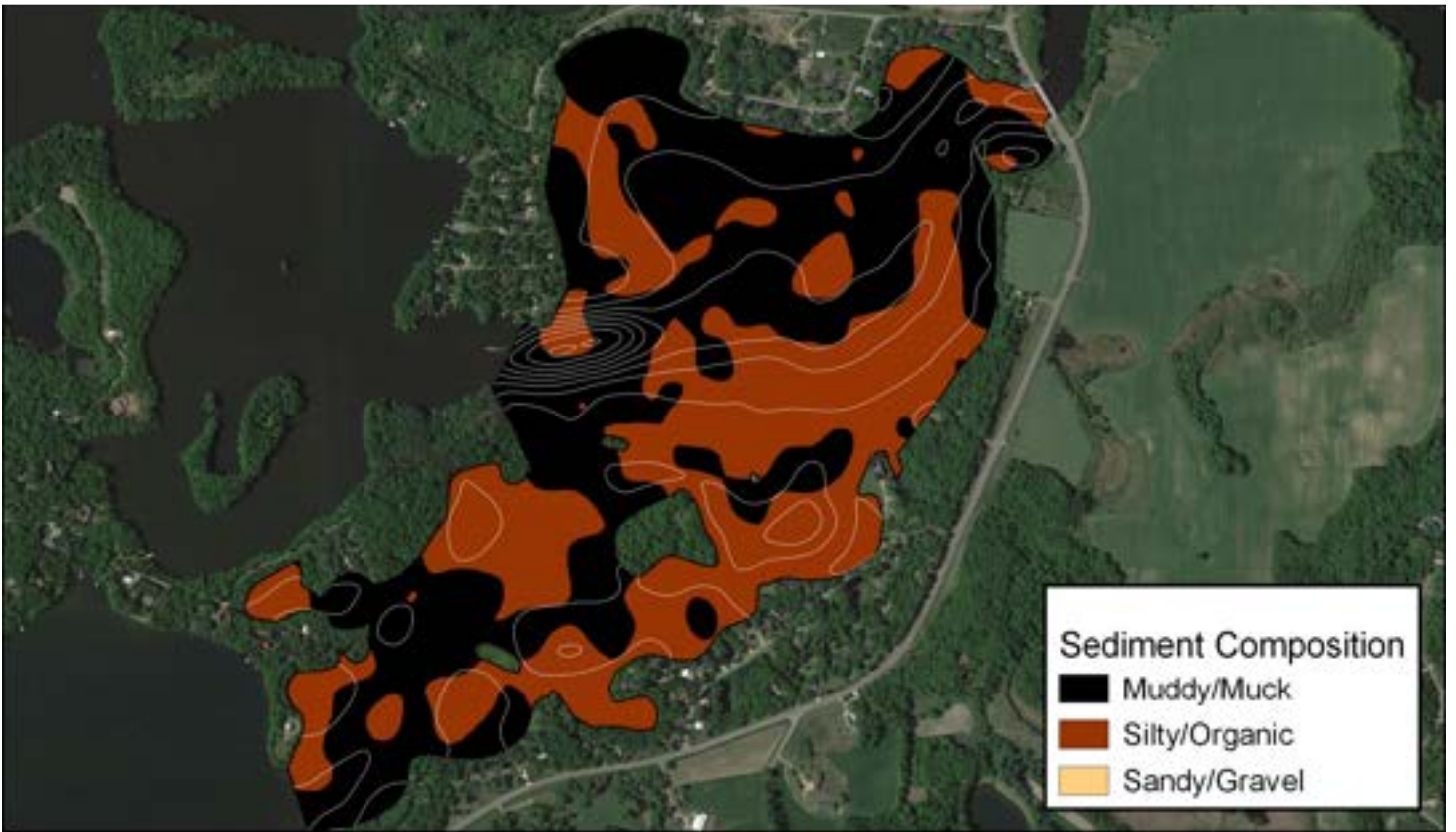
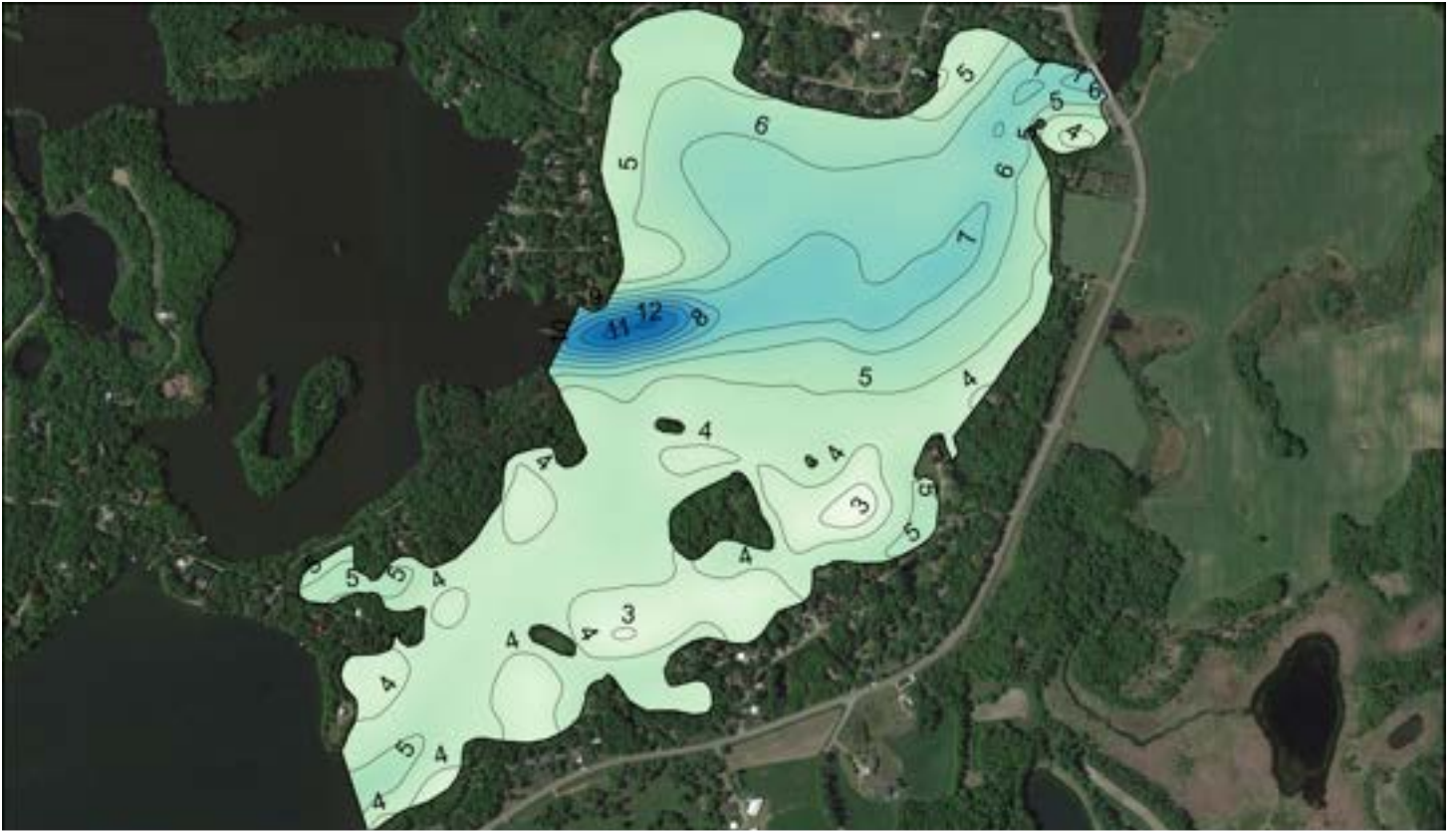
Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD<2.5 ft)
July	77%	30%	3.57	28%
September	50%	12%	3.62	21%



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Knaus Lake (73008600)
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Chain of Lakes Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
216	4.5	12.1	5.2	54%	44%	2%



750 1,500 ft

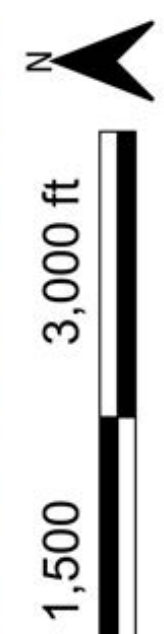
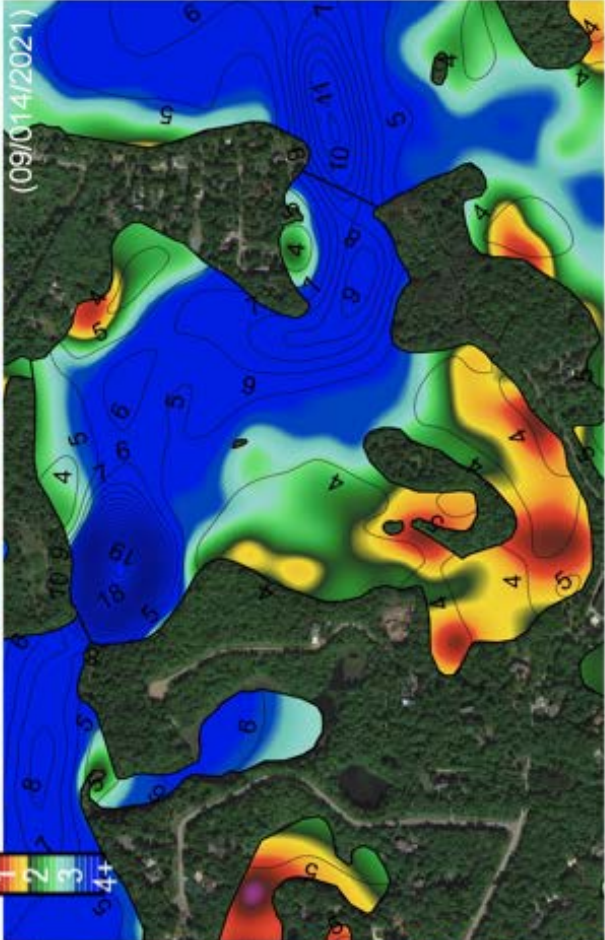
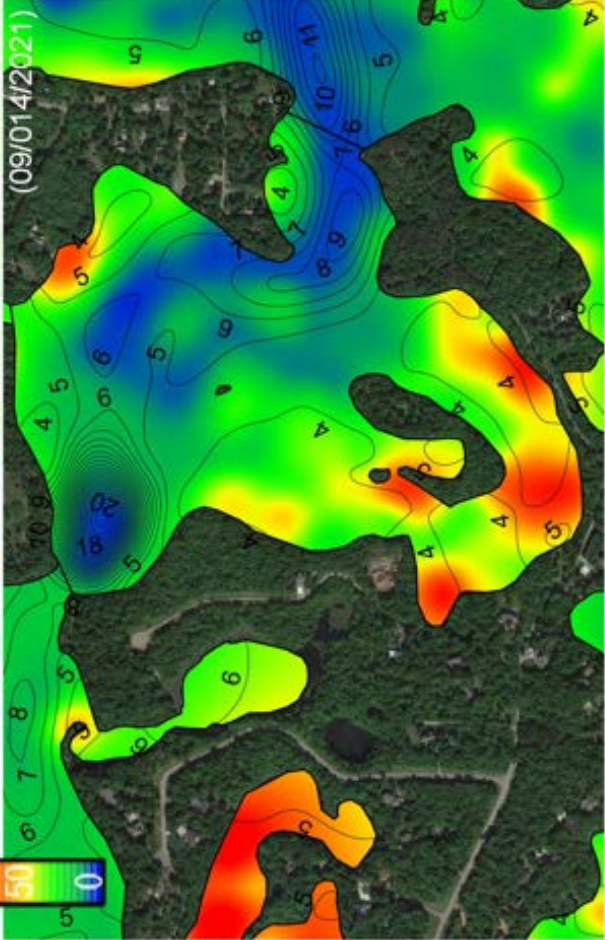
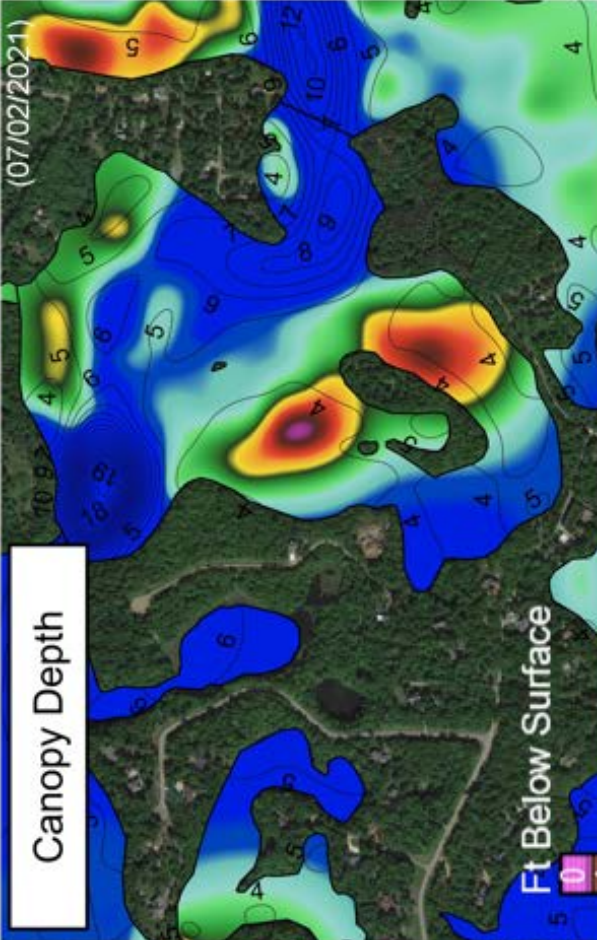
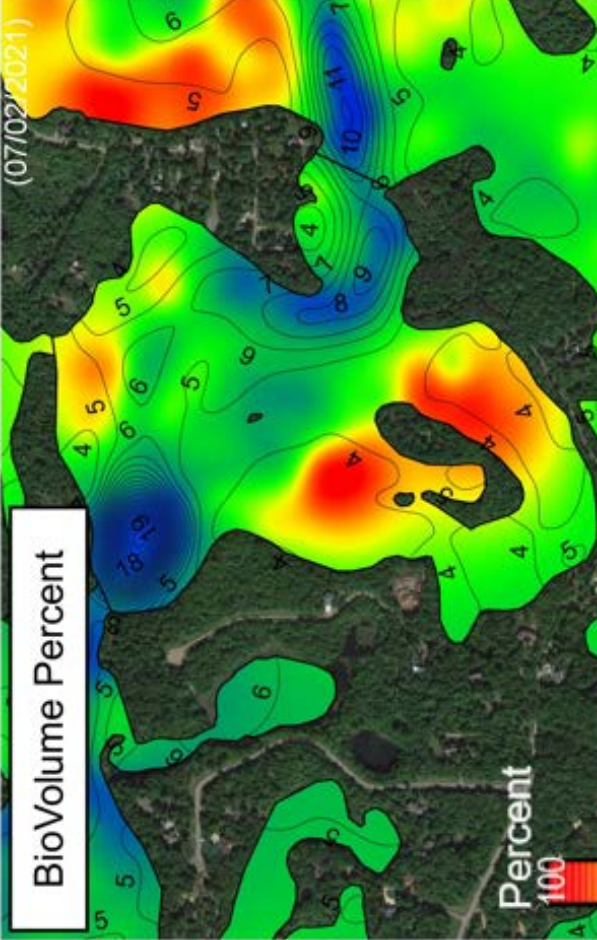


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Knaus Lake (73008600)
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KRAYS LAKE

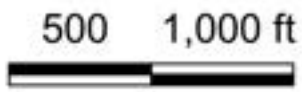
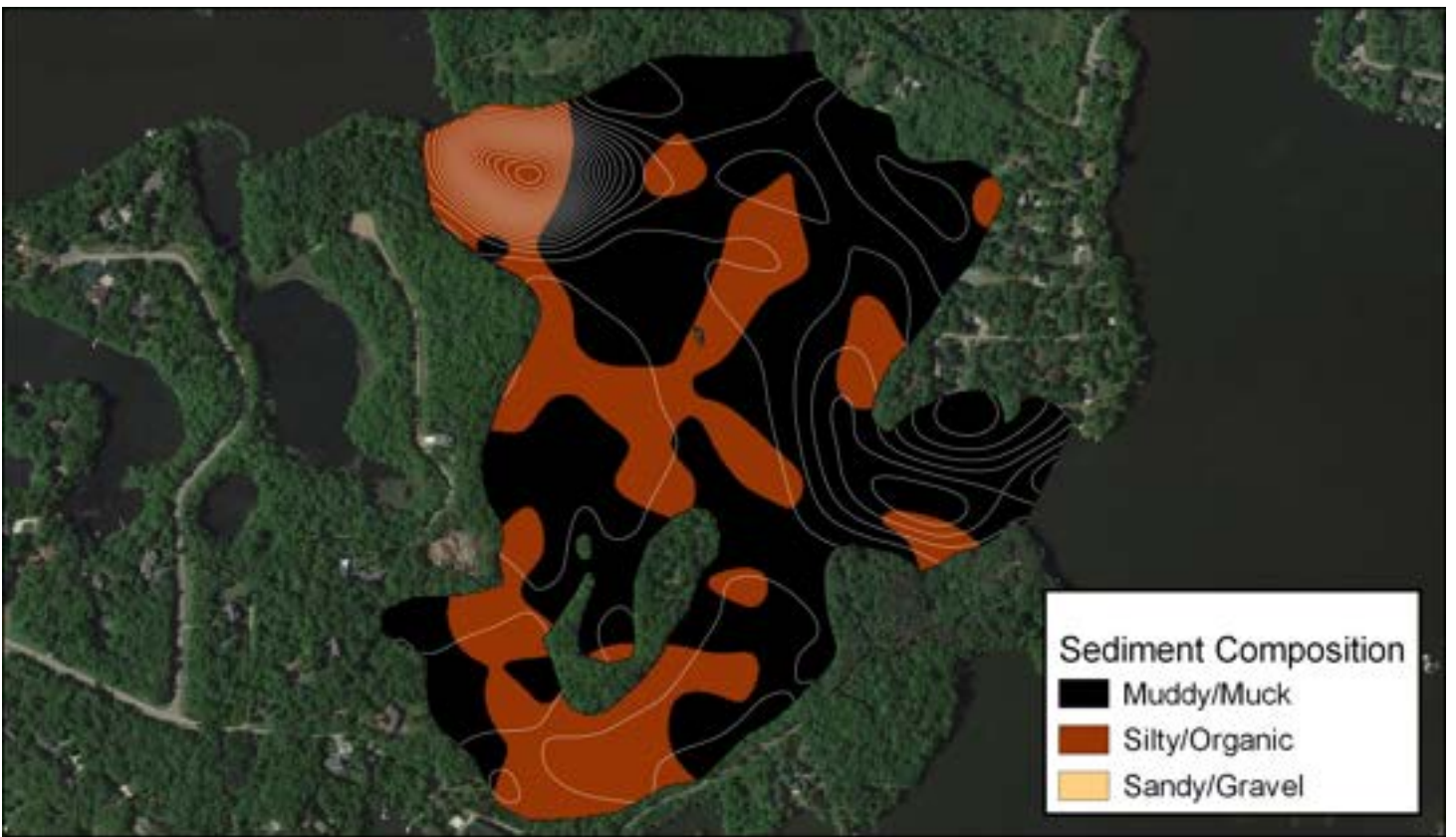
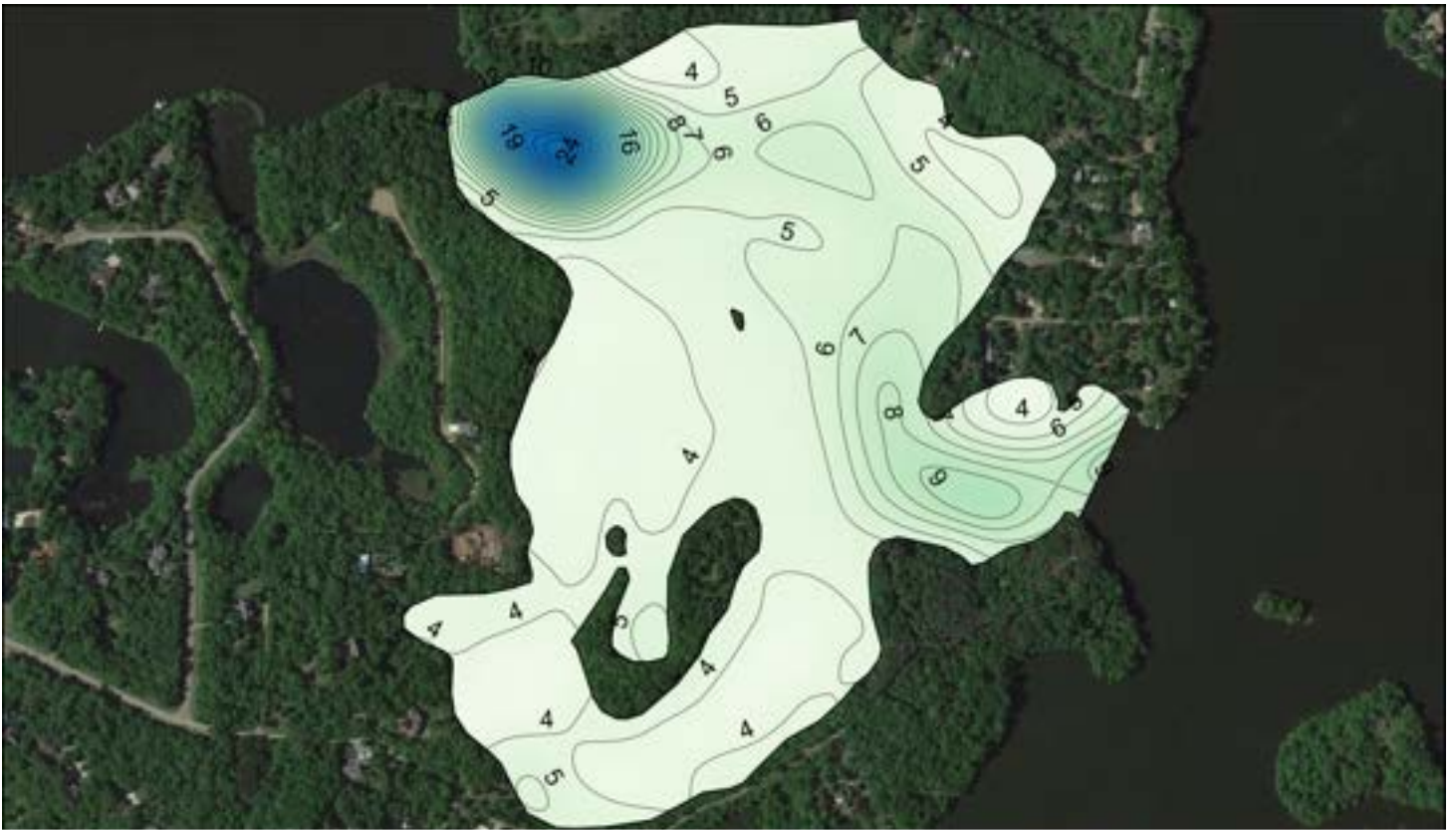
Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD < 2.5 ft)
July	54%	14%	3.85	19%
September	67%	16%	3.76	24%



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Krays Lake (73008700)
Prepared for the Sauk River
Chain of Lakes Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
95	2.7	27.6	5.6	58%	42%	0%

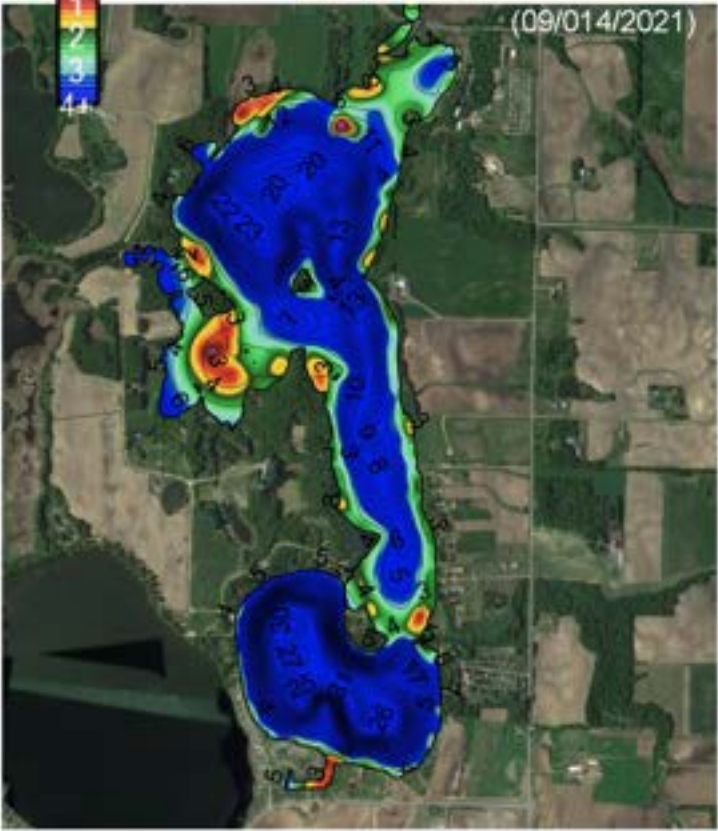
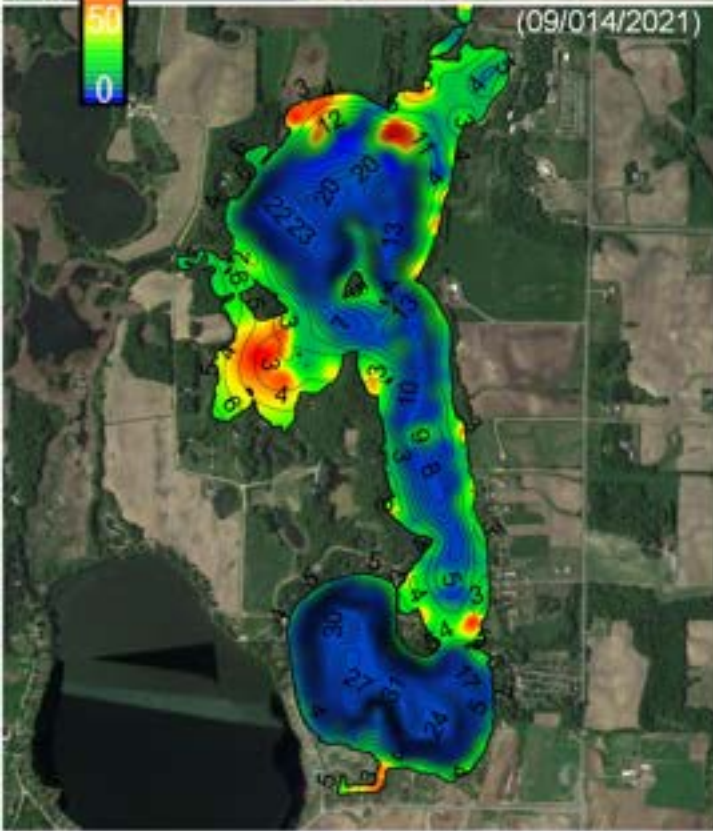
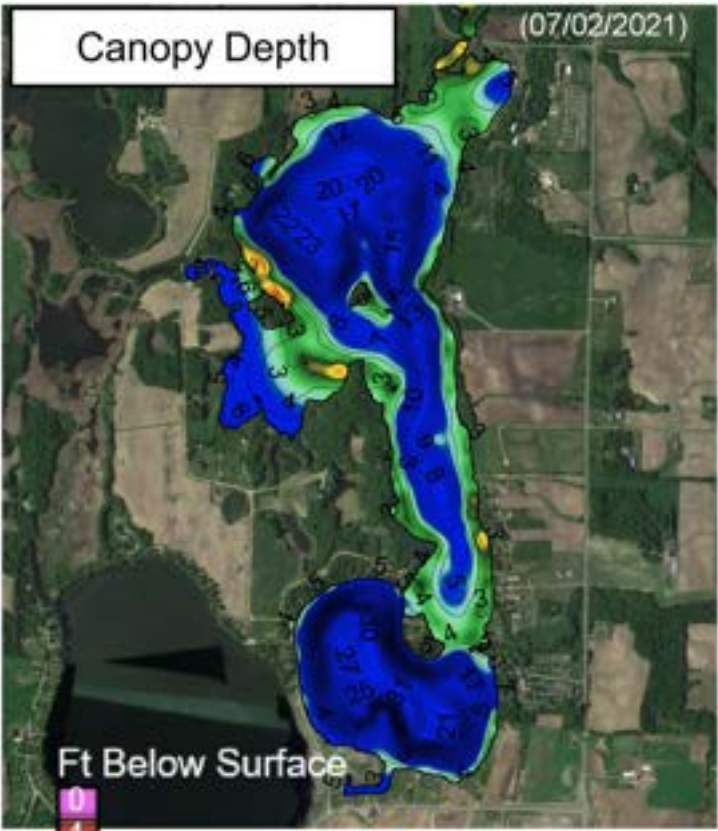
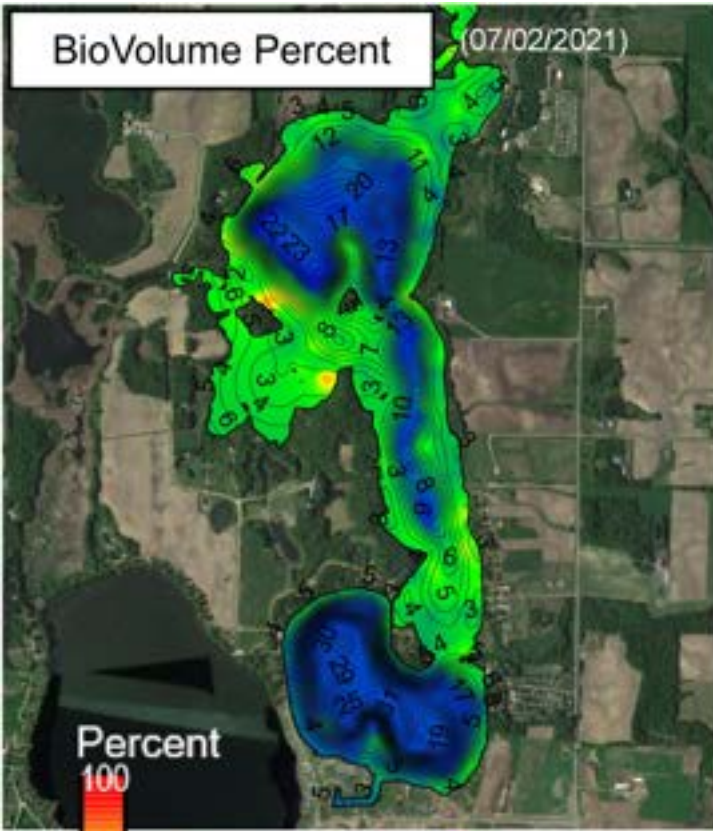


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Krays Lake (73008700)
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LONG LAKE

Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD<2.5 ft)
July	55%	11%	4.36	16%
September	35%	9%	3.44	24%



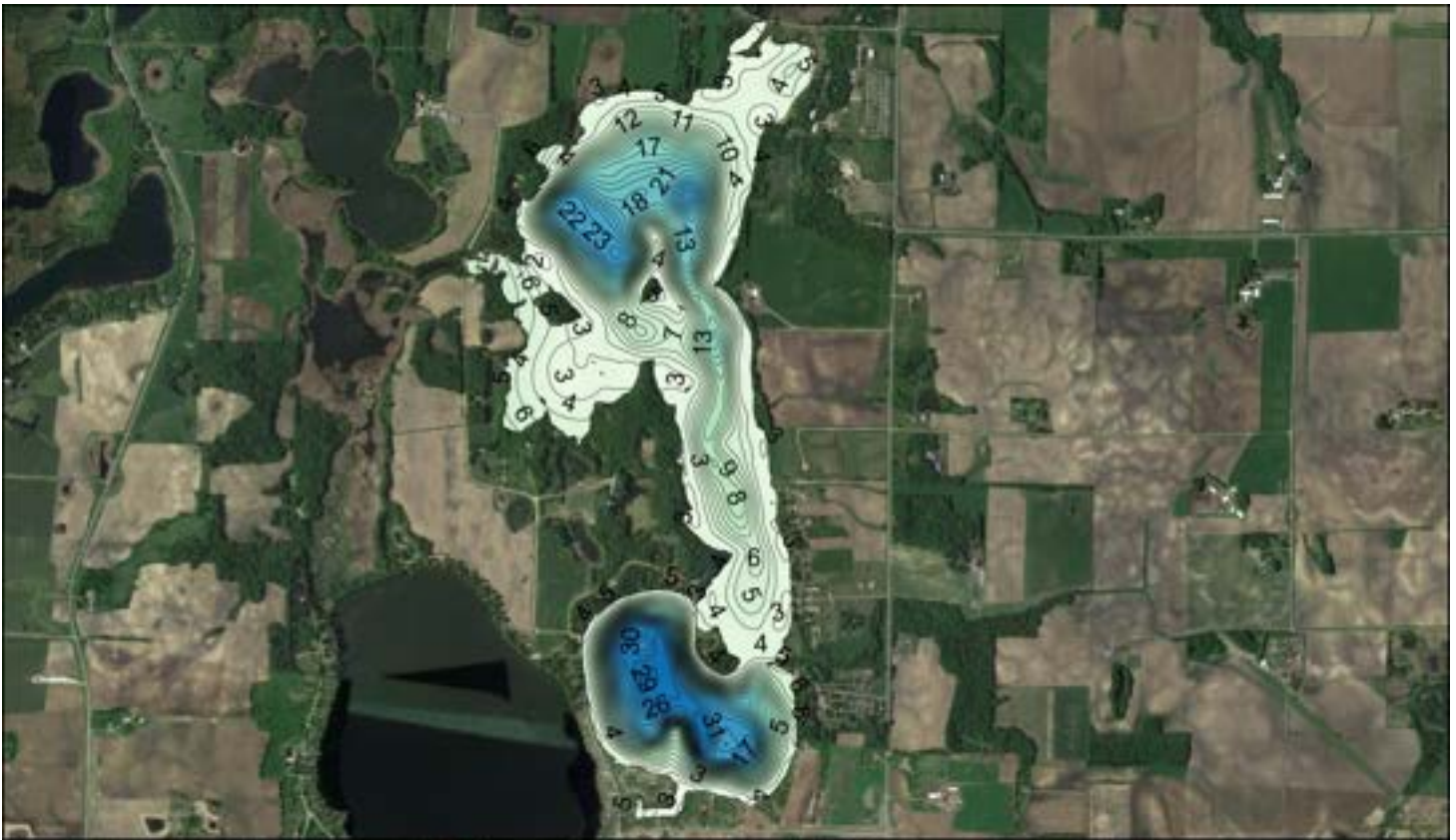
4,000 ft



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Long Lake (73013900)
Prepared for: Sauk River
Chain of Lakes
Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
487	9.2	32.6	10.3	46%	53%	0%



Sediment Composition
 ■ Muddy/Muck
 ■ Silty/Organic
 ■ Sandy/Gravel

2,000 4,000 ft

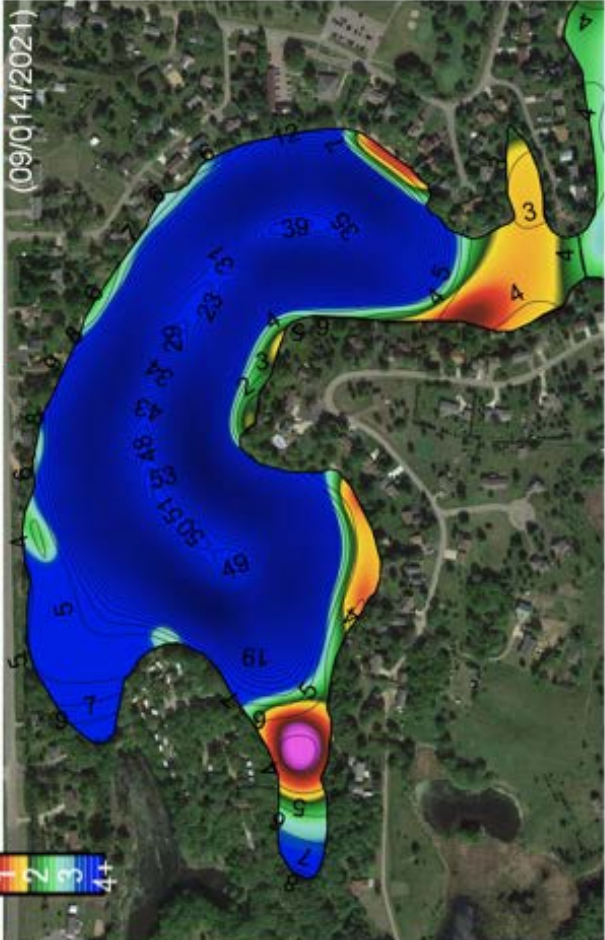
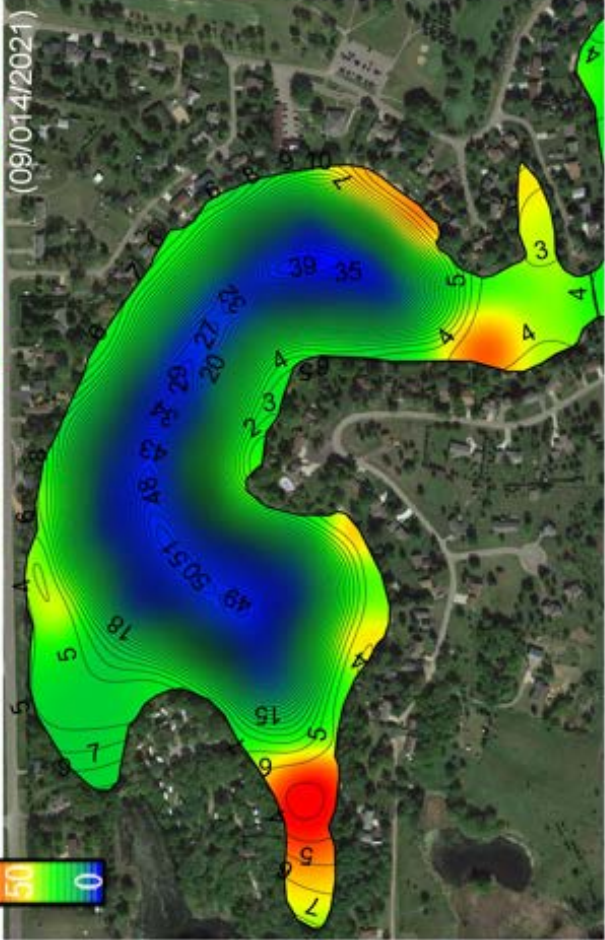
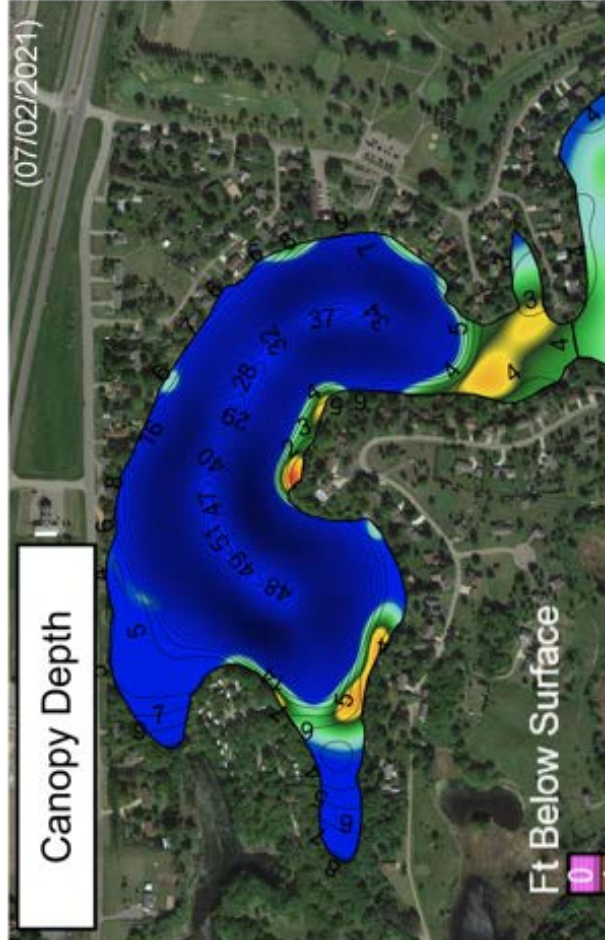
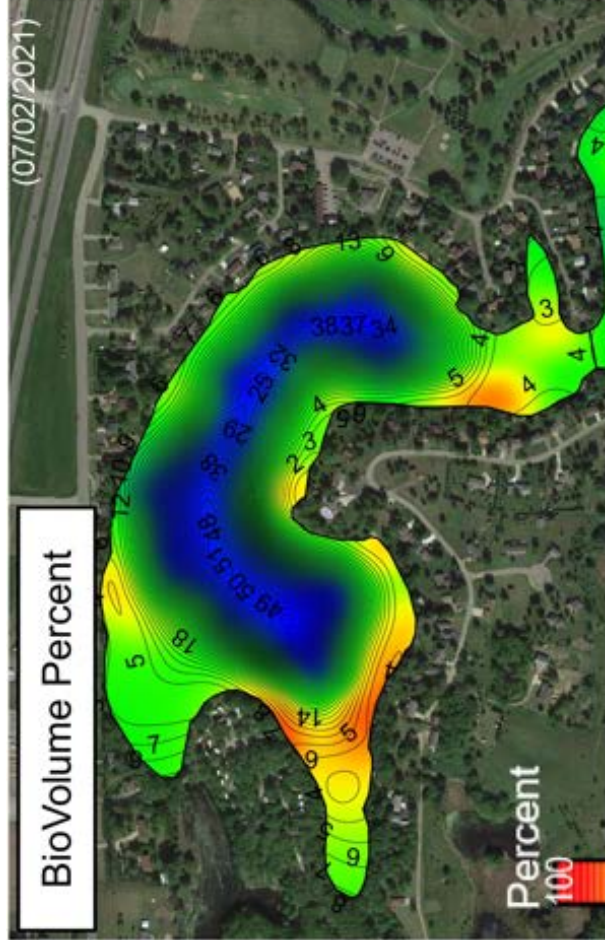


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Long Lake (73013900)
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SCHNEIDER LAKE

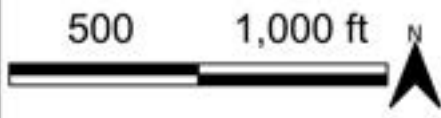
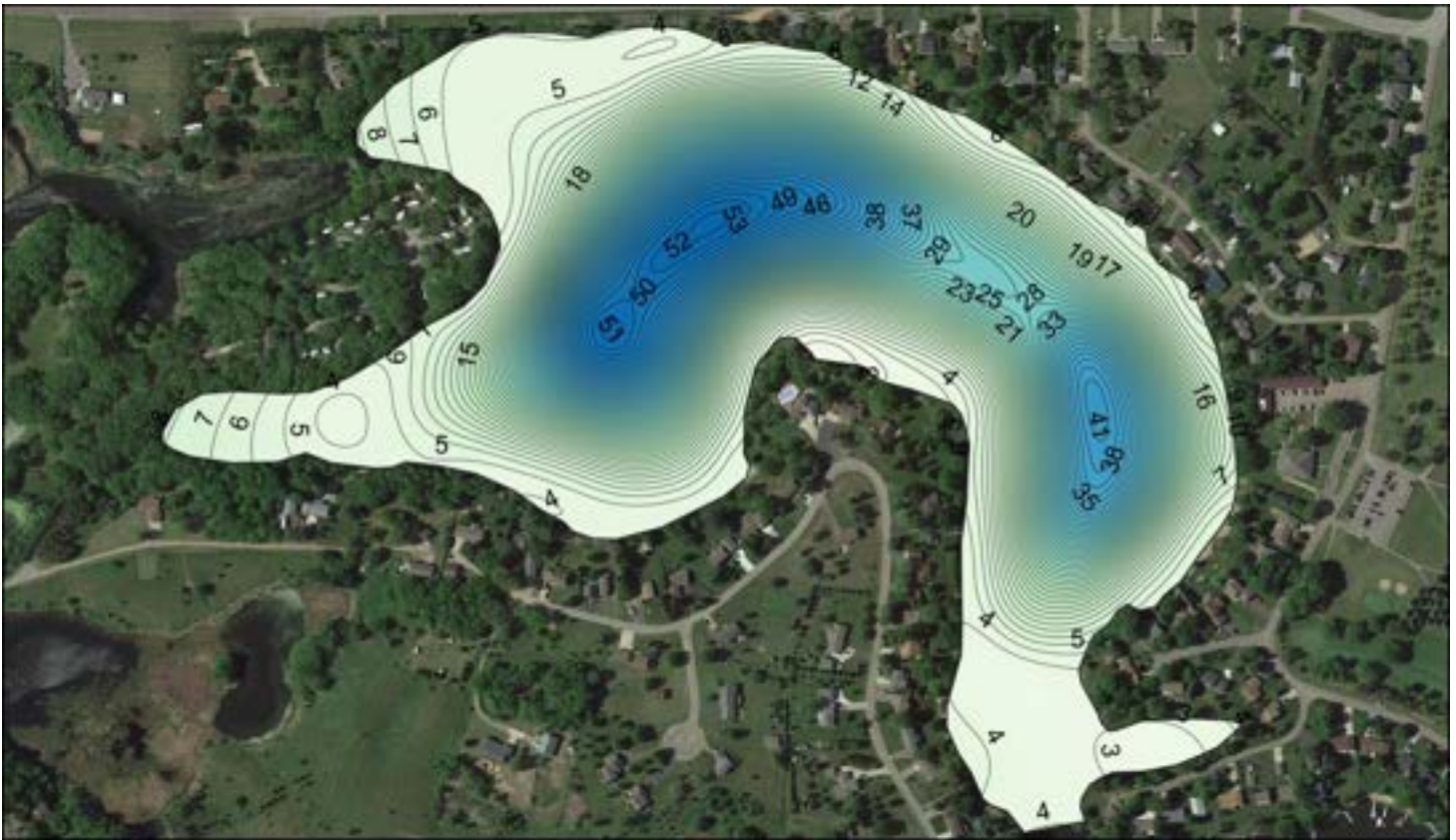
Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD<2.5 ft)
July	98%	37%	4.33	36%
September	98%	27%	4.88	24%



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Schneider Lake (73008200)
Prepared for the Sauk River
Chain of Lakes Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
60	2.0	53.4	17.9	61%	39%	0%

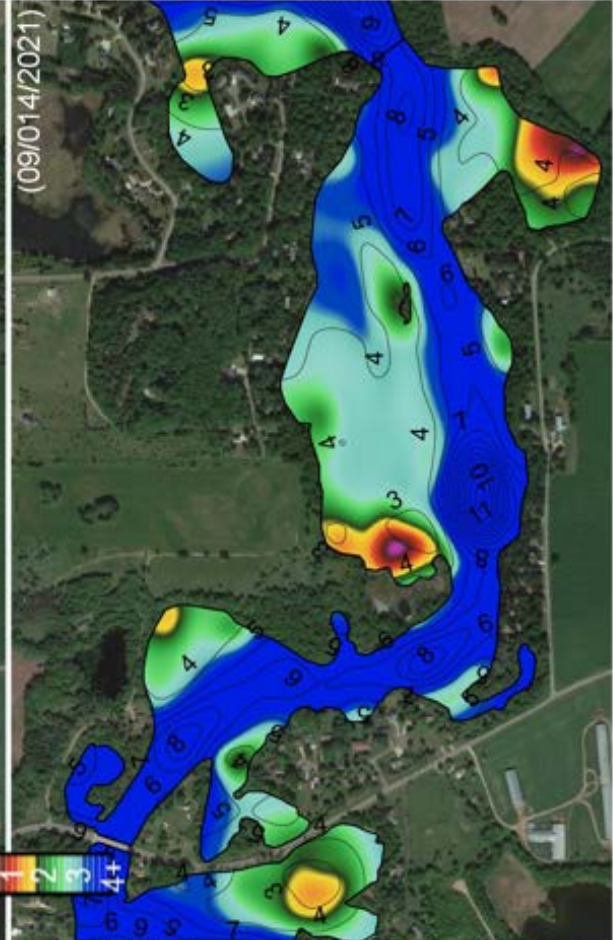
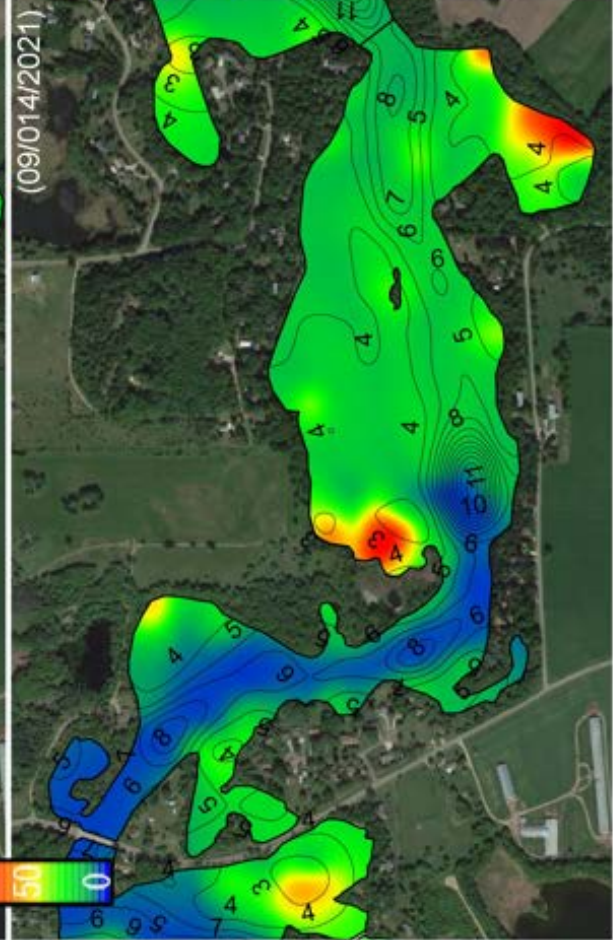
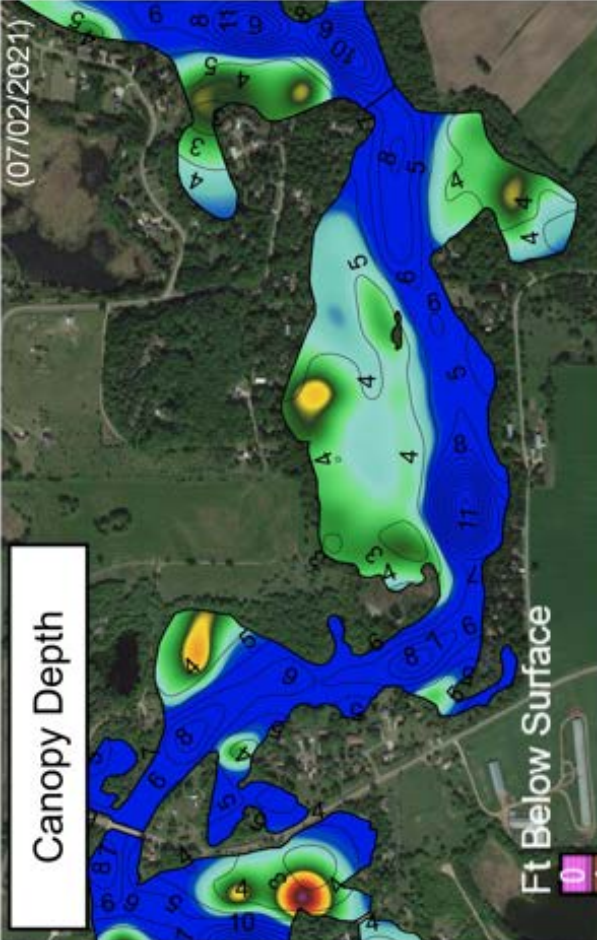
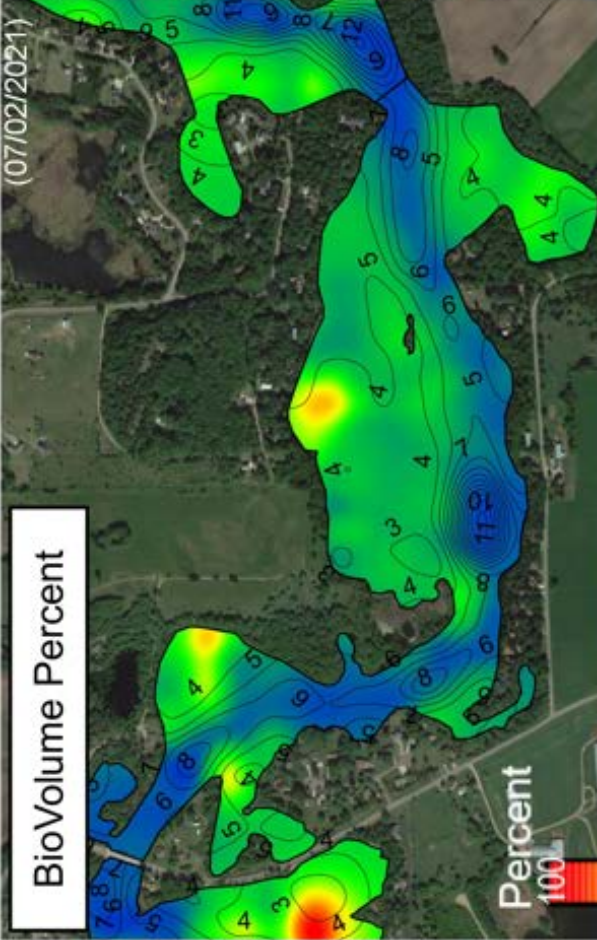


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Schneider Lake (73008200)
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ZUMWALDE LAKE

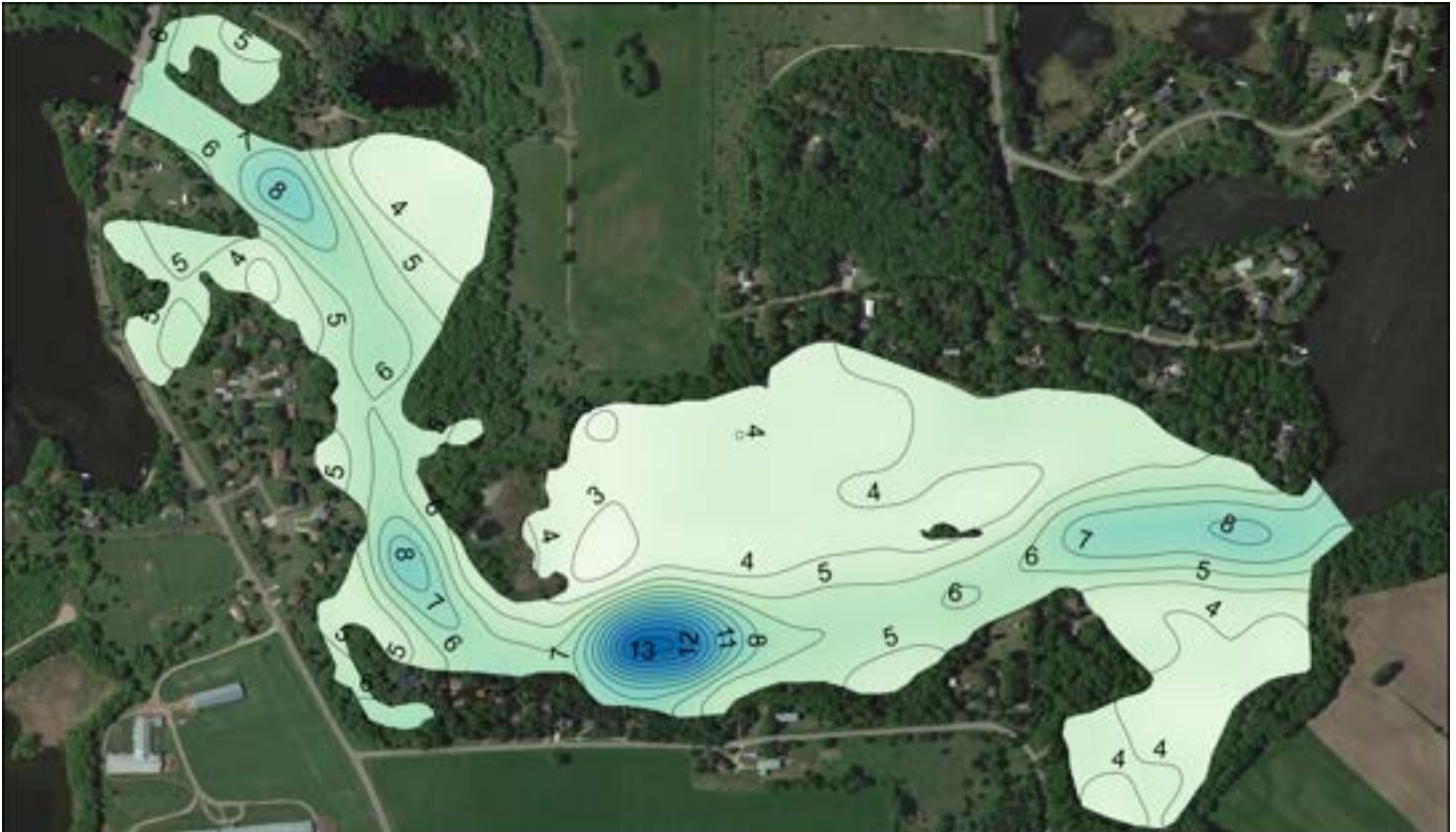
Survey	Percent Cover	Percent Biovolume	Canopy Depth (ft)	Nuisance (CD<2.5 ft)
July	56%	8%	3.87	11%
September	63%	11%	4.26	8%



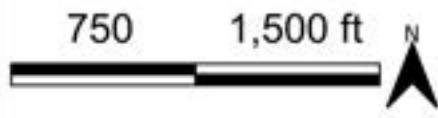
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Zumwalde Lake (73008900)
Prepared for the Sauk River
Chain of Lakes Association

Area (ac)	Shore Miles	Maximum Depth (ft)	Average Depth (ft)	Percent Muddy/Muck	Percent Silty/Organic	Percent Sandy/Gravel
128	4.6	26.4	5.2	50%	50%	0%



Sediment Composition
 ■ Muddy/Muck
 ■ Silty/Organic
 ■ Sandy/Gravel



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