Item 6D.
BCWMC 9-19-13

Minnesota Department of Natural Resources

Fisheries Management

STANDARD LAKE SURVEY REPORT

DRAFT VERSION - PRELIMINARY DATA (AS OF 08/29/2013)

Lake Name: Sweeney | **Survey Type: Special Assessment**

DOW Number: 27-0035-01 | **Survey ID Date: 08/28/2013**

SPECIAL ASSESSMENT
Electrofishing
Water Quality Measurement

Lake Identification

Alternate Lake Name:	N/A	DNR Sounding Map Number:	C1143
Primary Lake Class ID:	30	Alternate Lake Class ID:	N/A

Lake Location

Primary County:	Hennepin	Nearest Town:	Glenwood Junction

Legal Descriptions

Lake Center:	Township - 29N	Range - 24W	Section - 18
PLS Section Lake Center:	2902418		

All Legal Descriptions:

Hennepin County:	Township - 29N	Range - 24W	Sections - 18, 19

Area Office

Area Name:	Metro West	ORG Code:	F314
Region Name:	Central	Region Number:	3

Lake Access

(Information based on Re-Survey dated 07/01/1991)

Station ID	Ownership	Public Use	Type	Location / Comments

(Data excludes records where public use is not designated or is designated "No Public Use")

Lake Characteristics

Lake Area (planimetered acres):	66.00	GIS Shoreline Length (miles):	2.11
GIS Lake Area (acres):	67.64	Maximum Fetch (miles):	1.00
DOW Lake Area (acres):	0.00	Fetch Orientation (degrees):	N/A
Littoral Area (acres):	34.00	USGS Quad Map Number:	S16a
Area in MN (acres):	67.64	USGS Quad 24K GIS Index:	3632
Maximum Depth (feet):	28.0		
Mean Depth (feet):	N/A		

Watershed Characteristics

Major Watershed

Name: Mississippi River-TC
Watershed Number: 20
Watershed size (acres): 644,320

Minor Watershed

Name: Bassett Cr
Watershed Number: 95
Watershed size (acres): 13,581

Surveys And Investigations

Initial Survey: 08/03/1960.
Re-Survey: 07/01/1991, 07/13/1981.
Population Assessment: 07/02/1986, 07/13/1976.

Dissolved Oxygen And Temperature Profile Of Lake Water

Station ID	Sampling Date	Bottom Depth (Feet)	Sample Depth (Feet)	Water Temperature (°F)	Dissolved Oxygen (ppm)
WQ - 1	08/28/2013	22.0	Surface	82.6	7.2
			2.0	81.5	6.3
			4.0	80.6	6.1
			6.0	80.2	5.4
			8.0	80.1	4.9
			10.0	79.9	4.8
			12.0	79.7	4.2
			14.0	78.8	2.7
			16.0	78.1	1.4
			18.0	77.7	0.9
			20.0	76.8	0.5
			22.0	76.5	0.3

Field Measurements Of Water Quality

Station ID	Sampling Date	Sample Depth (Feet)	Secchi Depth (Feet)	Field pH	Alkalinity (ppm)	Water Color	Color Cause
WQ - 1	08/28/2013	Surface	4.0	N\A	N/A	Brown Grn	Algae

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Electrofishing Catch Summary for EF

Standard electrofishing

Total run-time for all stations: 01:37:00
Total on-time for all stations: 01:30:00
First Sampling Date: 08/28/2013
Last Sampling Date: 08/28/2013
Daylight Sampling: Yes
Target Species: N/A

		Summary By Numbers			Summary By Weight (pounds)			
		Total	Number per Hour		Total	Lbs per Hour		Mean
Abbr	Species	Number	Run-Time	On-Time	Weight	Run-Time	On-Time	Weight
BLB	Black Bullhead	3	1.86	2.00	1.45	0.89	0.96	0.48
BLC	Black Crappie	17	10.52	11.33	3.65	2.26	2.43	0.21
BLG	Bluegill	86	53.20	57.33	9.97	6.17	6.65	0.12
CAP	Common Carp	7	4.33	4.67	57.91	35.82	38.61	8.27
GOS	Golden Shiner	5	3.09	3.33	0.48	0.30	0.32	0.10
GSF	Green Sunfish	3	1.86	2.00	0.35	0.22	0.23	0.12
HSF	Hybrid Sunfish	3	1.86	2.00	0.39	0.24	0.26	0.13
LMB	Largemouth Bass	42	25.98	28.00	31.96	19.77	21.31	0.76
NOP	Northern Pike	1	0.62	0.67	5.97	3.69	3.98	5.97
PMK	Pumpkinseed	1	0.62	0.67	0.15	0.09	0.10	0.15
WTS	White Sucker	8	4.95	5.33	13.05	8.07	8.70	1.63
YEB	Yellow Bullhead	17	10.52	11.33	8.87	5.49	5.91	0.52
YEP	Yellow Perch	2	1.24	1.33	0.08	0.05	0.05	0.04

Length Frequency Distribution For EF

Standard electrofishing

(Field work conducted on 08/28/2013)

	BLB	BLC	BLG	CAP	GOS	GSF	HSF	LMB	NOP	PMK	WTS	YEB	YEP
< 3.00	-	-	-	-	1	-	-	2	-	-	-	-	-
3.00 - 3.49	-	-	1	-	-	-	-	1	-	-	-	-	-
3.50 - 3.99	-	-	2	-	-	-	-	2	-	-	-	-	-
4.00 - 4.49	-	-	4	-	-	-	-	1	-	-	-	-	1
4.50 - 4.99	-	-	24	-	-	1	-	2	-	-	-	-	1
5.00 - 5.49	-	-	23	-	-	1	-	-	-	1	-	-	-
5.50 - 5.99	-	-	18	-	1	1	3	-	-	-	-	-	-
6.00 - 6.49	-	-	6	-	1	-	-	-	-	-	-	-	-
6.50 - 6.99	-	1	7	-	1	-	-	-	-	-	-	-	-
7.00 - 7.49	-	6	1	-	-	-	-	1	-	-	-	-	-
7.50 - 7.99	-	9	-	-	1	-	-	-	-	-	-	-	-
8.00 - 8.49	1	1	-	-	-	-	-	2	-	-	-	1	-
8.50 - 8.99	-	-	-	-	-	-	-	1	-	-	-	2	-
9.00 - 9.49	-	-	-	-	-	-	-	2	-	-	-	3	-
9.50 - 9.99	1	-	-	-	-	-	-	3	-	-	-	3	-
10.00 - 10.49	1	-	-	-	-	-	-	4	-	-	-	2	-
10.50 - 10.99	-	-	1	-	-	-	-	4	-	-	-	5	-
11.00 - 11.49	-	-	-	-	-	-	-	4	-	-	-	1	-
11.50 - 11.99	-	-	-	-	-	-	-	2	-	-	-	-	-
12.00 - 12.99	-	-	-	-	-	-	-	3	-	-	-	-	-
13.00 - 13.99	-	-	-	-	-	-	-	1	-	-	-	-	-
14.00 - 14.99	-	-	-	-	-	-	-	1	-	-	-	-	-
15.00 - 15.99	-	-	1	-	-	-	-	1	-	-	2	-	-
16.00 - 16.99	-	-	-	-	-	-	-	1	-	-	6	-	-
17.00 - 17.99	-	-	-	-	-	-	-	2	-	-	-	-	-
18.00 - 18.99	-	-	-	-	-	-	-	-	-	-	-	-	-
19.00 - 19.99	-	-	-	-	-	-	-	-	-	-	-	-	-
20.00 - 20.99	-	-	-	-	-	-	-	-	-	-	-	-	-
21.00 - 21.99	-	-	-	-	-	-	-	-	-	-	-	-	-
22.00 - 22.99	-	-	-	1	-	-	-	-	-	-	-	-	-
23.00 - 23.99	-	-	-	2	-	-	-	-	-	-	-	-	-
24.00 - 24.99	-	-	-	-	-	-	-	-	-	-	-	-	-
25.00 - 25.99	-	-	-	2	-	-	-	-	-	-	-	-	-
26.00 - 26.99	-	-	-	1	-	-	-	-	-	-	-	-	-
27.00 - 27.99	-	-	-	1	-	-	-	-	-	-	-	-	-
28.00 - 28.99	-	-	-	-	-	-	-	-	-	-	-	-	-
29.00 - 29.99	-	-	-	-	-	-	-	-	1	-	-	-	-
30.00 - 30.99	-	-	-	-	-	-	-	-	-	-	-	-	-
31.00 - 31.99	-	-	-	-	-	-	-	-	-	-	-	-	-
32.00 - 32.99	-	-	-	-	-	-	-	-	-	-	-	-	-
33.00 - 33.99	-	-	-	-	-	-	-	-	-	-	-	-	-
34.00 - 34.99	-	-	-	-	-	-	-	-	-	-	-	-	-
35.00 - 35.99	-	-	-	-	-	-	-	-	-	-	-	-	-
= > 36.00	-	-	-	-	-	-	-	-	-	-	-	-	-

	BLB	BLC	BLG	CAP	GOS	GSF	HSF	LMB	NOP	PMK	WTS	YEB	YEP
Total	3	17	88	7	5	3	3	40	1	1	8	17	2
Min. Length	8.15	6.57	3.27	22.24	2.68	4.84	5.71	2.56	29.33	5.31	15.12	8.46	4.13
Max. Length	10.04	8.43	15.16	27.36	7.80	5.63	5.87	17.32	29.33	5.31	16.93	11.02	4.72
Mean Length	9.30	7.53	5.48	24.93	5.87	5.26	5.77	9.86	29.33	5.31	16.24	9.90	4.43
# Measured	3	17	88	7	5	3	3	40	1	1	8	17	2
No Lengths for	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: Unless all fish were measured in the catch, totals shown for some length-frequency distributions may differ from the total number of fish in the catch, due to rounding of fractions used in the estimation of length frequency from a subsample of measured fish

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Survey Crew Notes

Electrofishing assessment targeting all fish for Bassett Creek Watershed Management Commission

Discussion

The Bassett Creek Watershed Management Commission requested data on the fish community in Sweeney Lake and the connected Twin Lake. Specifically, the Commission was interested in the presence of common carp and gizzard shad. Since the most recent assessment was in 1991, an electrofishing assessment targeting all fish was conducted on Sweeney Lake during the day on August 28, 2013.

Sweeney Lake

Four transects, encompassing the entire lake, were electrofished. All transects were near shore in 4 feet of water or less. The conductivity of the lake water was high (1042 mS) and fish were shocked only moderately well. Despite this, in 1.5 h of electrofishing on-time, 195 fish were sampled, this included 13 different species. Bluegill, largemouth bass, black crappie, and yellow bullhead were the most abundant, respectively. Seven common carp were netted and measured. Many additional common carp were observed but were able to escape the electrical field before they were netted. One buffalo (Ictiobus sp.) was observed but could not be netted. Only netted fish are included in the survey report.

No gizzard shad were sampled in the 4 standard transects. However, areas of "rippling" water were observed off shore. Upon investigation with the electrofishing boat, these "ripples" were caused by schools of gizzard shad. The water was calm and these schools were observed in many areas throughout the lake. All gizzard shad that were shocked ranged from 3 to 5 inches. Since the shad were not sampled in the standard transects, they are not included in the survey report. Gizzard shad are not common in lakes of this type but they seemed relatively abundant in Sweeney Lake.

Twin Lake

The channel between Sweeney and Twin Lakes is shallow. At times the electrofishing boat had to be propelled by a push pole or crew members waded in the water and pushed the boat by hand. There was approximately 6 inches of clearance between the boat rails and the top of the bridge that leads to Twin Lake. During high water it may be difficult to pass under this bridge.

Once in Twin Lake, it was immediately obvious that the lake is heavily used by the public to recreate. Many people had accessed the lake at several points along the eastern shore and were swimming. Due to the number of people swimming laps in this 19-acre lake, it was determined that it was unsafe to use electricity to sample fish. No fish sampling was conducted. Water clarity was noticeably greater than Sweeney Lake and common carp and bluegill were visually observed.

Approval Dates And Notices

Date Approved By Metro West Area Fisheries Supervisor: _____

Date Approved By Central Region Fisheries Manager: _____

This Draft version of the Standard Lake Survey Report contains preliminary data (as of 08/29/2013), and is therefore subject to change at any time.

Largemouth bass

Gizzard shad

Minnesota Department of Natural Resources

8/30/13 EMAIL CORRESPONDENCE
Laura,

A couple of corrections needed to be made in the data or staff would have completed the draft report earlier on Thursday.

They were able to push the electrofishing boat through the channel and under the bridge to Twin Lake. Unfortunately there were so many swimmers that our staff weren't able to sample in that part of the two lakes. They even stopped to eat their lunch and wait an hour to see if the swimmers may leave. Swimmers were entering the lake from the trail on the southeast part of Twin Lake. Carp and bluegill were observed in Twin Lake (see discussion at the end of the report). Since the two lakes are connected, the fish in Sweeney Lake should reflect the community in Twin Lake.

Carp and gizzard shad were sampled in Sweeney Lake. The shad were well offshore and not part of the shoreline sampling stations. Staff saw ripples at the surface offshore and suspected gizzard shad. Please refer to the discussion in the report. Hope this helps and let us know if you have any questions.

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9/9/13 EMAIL CORRESPONDENCE
Laura,

The draft report will be very similar to the final report. There were two bluegill in the length-frequency table (10 and 15 inch) that the lengths are incorrect. We have more review and correcting to do on the data. Normally on a fish survey, after the field season, the data is reviewed and corrected during the winter, fish aged if structures were taken, data compiled and analyzed and a discussion prepared. Our staff reviewed the data and made some corrections and prepared a discussion. All that's left is additional review and corrections made, my review and approval along with my supervisor's. We do these things in the winter, generally by April.

Some fish species aren't real vulnerable to electrofishing in summer; northern pike, yellow perch and walleye to name a few. For Sweeney Lake, if northern pike are present, electrofishing wouldn't sample in relation to the abundance. One pike and two perch were sampled, indicating that these species were present although unsure on the relative abundance. Our normal fish surveys include trapnetting and gillnetting and sometimes electrofishing particularly for largemouth bass. Pike, perch and walleye are more vulnerable to gill nets. The gizzard shad were large enough to be vulnerable to the small mesh of our gill nets. So this species would most likely have been taken by gillnetting. The electrofishing sample gives a quick snap shot of the fish community although each sampling gear is selective for certain species.

Lacking all the pieces to the puzzle, based only on the electrofishing sample, some generalities could be inferred. The connection allows fish during part of the year to move between Sweeney and Twin lakes. So I'd expected the fish community to be similar. The fish community in lakes like Sweeney in this area are bass-panfish-pike combination. So largemouth bass and pike are the typical fish predators. Bluegill and black crappie and perhaps yellow perch are the principal panfish.

Largemouth bass – Consistent reproduction; moderate relative abundance; good size range up to 17 inches.

Bluegill and black crappie – Average to high average; small size, probably slow growth; angler harvest most likely of the larger fish.

Black bullhead – Larger size is an indication that bass are controlling reproduction.

Yellow bullhead – More yellow bullhead sampled compared to black bullhead. Yellow bullhead favor higher water quality than black bullhead.

Common carp – 22-28 inches, 8.3 pound average weight. Probably an indicator of high biomass or weight of carp per area in the lake. Carp reproduction could be occasional although the longevity may be 30 years or longer. So infrequent reproduction may still result in high weight in a lake because of the potential long life span for the species. Carp could increase internal nutrient loading as well as reduce the success of an alum application.

Gizzard shad – May have entered the lake from a connecting river or stream. May be effective in filtering zooplankton that prey on desirable algae species.

Daryl