



Minnesota Department of Natural Resources
 Fisheries Management
 LAKE SURVEY REPORT



Lake Name: Star
 DOW Number: 56-0385-00

Survey Type: Targeted Survey
 Survey ID Date: 07/13/2015

Lake Identification

Alternate Lake Name: N/A
 Primary Lake Class ID: 22

DNR Sounding Map Number: B0231
 Alternate Lake Class ID: N/A

Lake Location

Primary County: Otter Tail

Nearest Town: Dent

Legal Descriptions

Lake Center: Township - 135N Range - 41W Section - 11
 PLS Section Lake Center: 13504111

All Legal Descriptions:

Otter Tail County: Township - 135N Range - 40W Sections - 6, 7, 18
 Township - 135N Range - 41W (Seventeen various sections)
 Township - 136N Range - 41W Sections - 34, 35, 36

Area Office

Area Name: Fergus Falls
 Region Name: Northwest

ORG Code: F115
 Region Number: 1

Lake Access

Station ID	Ownership	Public Use	Type	Location / Comments
AC - 1	DNR	Open to Public use	Concrete	A state owned public access is located off of State Highway 108 along the north shoreline of the lake.
AC - 2	DNR	Open to Public use	Concrete	A state owned public access is located off of the township road along the east shoreline of the lake.

Lake Characteristics

Lake Area (planimetered acres): 4,721.00	GIS Shoreline Length (miles): 38.49
GIS Lake Area (acres): 4,454.01	Maximum Fetch (miles): 2.70
DOW Lake Area (acres): 4,809.00	Fetch Orientation (degrees): 67
Littoral Area (acres): 2,813.00	USGS Quad Map Number: L06d
Area in MN (acres): 4,453.99	USGS Quad 24K GIS Index: 2312
Maximum Depth (feet): 94.0	
Mean Depth (feet): N/A	

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Watershed Characteristics

Major Watershed

Name: Otter Tail River
 Watershed Number: 56
 Watershed size (acres): 1,222,024

Minor Watershed

Name: From Star L
 Watershed Number: 31
 Watershed size (acres): 23,684

Surveys and Investigations

Initial Survey: 09/11/1961.

Re-Survey: 07/15/1991, 07/16/1982, 07/06/1973.

Population Assessment: 07/16/2012, 07/13/2009, 07/17/2006, 07/14/2003, 07/17/2000, 07/14/1997, 07/18/1994, 07/12/1988, 07/09/1985.

Special Assessment: 04/04/2006, 04/05/2004, 04/08/2002, 03/22/2000, 04/06/1998, 05/19/1997, 04/10/1996, 08/30/1995, 05/24/1994, 10/06/1993, 07/20/1987.

Creel Survey: 05/16/1987.

External Management Survey: 06/16/2008.

Targeted Survey: 07/13/2015.

Current Water Level

Station ID	Date	Level	Reading (feet)	Reading Type
GA - 1	07/13/2015	Normal	2.20	Direct Gauge Reading

Benchmark and Gauge Descriptions / Locations

Station ID	Location Description
GA - 1	Gauge on the southeast abutment of the County Road 41 bridge.

Water Level History - Readings

Station ID	Date	Level	Reading (feet)	Reading Type
BM - 1	07/13/2009	Normal	-4.00	Above or below Benchmark
	07/17/2006	Normal	-4.10	Above or below Benchmark
BM - 2	07/16/2012	Normal	-8.55	Above or below Benchmark
	07/13/2009	Normal	-6.80	Above or below Benchmark
GA - 1	07/13/2015	Normal	2.20	Direct Gauge Reading
	07/16/2012	Normal	1.70	Direct Gauge Reading
	07/13/2009	Normal	2.17	Direct Gauge Reading
	07/17/2006	Normal	2.04	Above or below Benchmark

Water Level History - Station Summary

Station ID	Minimum Level		Maximum Level		Range (feet)	Average Level (feet)	Reading Type (and number of readings)
	Feet	Date	Feet	Date			
BM - 1	-4.10	07/17/2006	-4.00	07/13/2009	0.10	-4.05	Above or below Benchmark (2)
BM - 2	-8.55	07/16/2012	-6.80	07/13/2009	1.75	-7.68	Above or below Benchmark (2)
GA - 1	2.04	07/17/2006	2.04	07/17/2006	0.00	2.04	Above or below Benchmark (1)
GA - 1	1.70	07/16/2012	2.20	07/13/2015	0.50	2.02	Direct Gauge Reading (3)

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Dissolved Oxygen and Temperature Profile of Lake Water

<u>Station ID</u>	<u>Sampling Date</u>	<u>Bottom Depth (Feet)</u>	<u>Sample Depth (Feet)</u>	<u>Water Temperature (°F)</u>	<u>Dissolved Oxygen (ppm)</u>
WQ - 1	07/13/2015	52.0	Surface	74.7	9.1
			3.0	74.7	9.1
			6.0	74.7	9.2
			9.0	74.5	9.3
			12.0	73.8	9.3
			15.0	73.0	9.2
			18.0	70.7	8.4
			21.0	70.0	8.5
			24.0	68.4	8.1
			27.0	68.2	8.0
			30.0	62.6	6.9
			33.0	59.5	6.3
			36.0	57.6	5.4
			39.0	55.9	4.6
			42.0	54.9	4.1
			45.0	54.1	3.4
			48.0	53.8	2.9

Field Measurements of Water Quality

<u>Station ID</u>	<u>Sampling Date</u>	<u>Sample Depth (Feet)</u>	<u>Secchi Depth (Feet)</u>	<u>Field pH</u>	<u>Alkalinity (ppm)</u>	<u>Water Color</u>	<u>Color Cause</u>
WQ - 1	07/13/2015	Surface	10.5	N/A	N/A	Lt Green	Algae

LAKE SURVEY REPORT
TARGETED SURVEY DATED 07/13/2015 FOR DOW NUMBER 56-0385-00

Net Catch Summary by Numbers for GN

Standard gill net sets

Number of Sets: 12

First Set Date: 07/13/2015

Last Lift Date: 07/16/2015

Target Species: All ages yellow perch, All ages northern pike, All ages walleye

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 22*		
				25%	50%	75%
BLC	Black Crappie	1	0.08	0.22	0.42	1.14
BLG	Bluegill	57	4.75	N/A	N/A	N/A
BOF	Bowfin (Dogfish)	2	0.17	0.08	0.13	0.24
BRB	Brown Bullhead	3	0.25	0.25	0.50	1.62
HSF	Hybrid Sunfish	1	0.08	N/A	N/A	N/A
LMB	Largemouth Bass	4	0.33	0.25	0.62	1.20
NOP	Northern Pike	149	12.42	3.00	5.00	7.89
PMK	Pumpkinseed	52	4.33	N/A	N/A	N/A
RKB	Rock Bass	65	5.42	1.00	2.93	6.63
WAE	Walleye	120	10.00	4.01	6.61	9.63
WTS	White Sucker	17	1.42	1.02	2.00	3.49
YEB	Yellow Bullhead	56	4.67	0.65	2.59	6.43
YEP	Yellow Perch	256	21.33	7.06	17.14	33.87
Total Fish/Set:			65.25	* Quartiles for Number Per Set		

Net Catch Summary by Weight for GN

Standard gill net sets

Abbr	Species	Total Weight (Pounds)	Pounds Per Set	Mean Weight	Quartiles for Lake Class 22*		
					25%	50%	75%
BLC	Black Crappie	1.21	0.10	1.21	0.24	0.38	0.55
BLG	Bluegill	21.69	1.81	0.38	N/A	N/A	N/A
BOF	Bowfin (Dogfish)	10.24	0.85	5.12	3.01	4.13	5.18
BRB	Brown Bullhead	4.55	0.38	1.52	0.67	0.90	1.19
HSF	Hybrid Sunfish	0.84	0.07	0.84	N/A	N/A	N/A
LMB	Largemouth Bass	9.69	0.81	2.42	0.55	0.77	1.05
NOP	Northern Pike	218.39	18.20	1.47	1.68	2.25	2.80
PMK	Pumpkinseed	13.42	1.12	0.26	N/A	N/A	N/A
RKB	Rock Bass	33.75	2.81	0.52	0.30	0.41	0.52
WAE	Walleye	142.50	11.88	1.19	1.12	1.43	1.90
WTS	White Sucker	19.74	1.64	1.16	1.52	1.89	2.28
YEB	Yellow Bullhead	52.04	4.34	0.93	0.62	0.75	0.95
YEP	Yellow Perch	25.35	2.11	0.10	0.12	0.15	0.21
Total Pounds Fish/Set:			46.12	* Quartiles for Mean Weight			

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Net Catch Summary by Numbers for STN

Special sampling with trap nets

Number of Sets: 7
 First Set Date: 05/27/2015
 Last Lift Date: 05/28/2015
 Target Species: All ages bluegill

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 22*		
				25%	50%	75%
BLG	Bluegill	241	34.43	N/A	N/A	N/A
GSF	Green Sunfish	3	0.43	N/A	N/A	N/A
HSF	Hybrid Sunfish	23	3.29	N/A	N/A	N/A
PMK	Pumpkinseed	90	12.86	N/A	N/A	N/A
Total Fish/Set:			51.00	* Quartiles for Number Per Set		

Net Catch Summary by Weight for STN

Special sampling with trap nets

Abbr	Species	Total Weight (Pounds)	Pounds Per Set	Mean Weight	Quartiles for Lake Class 22*		
					25%	50%	75%
BLG	Bluegill	96.71	13.82	0.40	N/A	N/A	N/A
GSF	Green Sunfish	0.13	0.02	0.04	N/A	N/A	N/A
HSF	Hybrid Sunfish	12.40	1.77	0.54	N/A	N/A	N/A
PMK	Pumpkinseed	26.14	3.73	0.29	N/A	N/A	N/A
Total Pounds Fish/Set:			19.34	* Quartiles for Mean Weight			

LAKE SURVEY REPORT
TARGETED SURVEY DATED 07/13/2015 FOR DOW NUMBER 56-0385-00

Length Frequency Distribution for GN

Standard gill net sets

(Field work conducted between 07/13/2015 and 07/16/2015)

	<u>BLC</u>	<u>BLG</u>	<u>BOF</u>	<u>BRB</u>	<u>HSF</u>	<u>LMB</u>	<u>NOP</u>	<u>PMK</u>	<u>RKB</u>	<u>WAE</u>	<u>WTS</u>	<u>YEB</u>	<u>YEP</u>
< 3.00	-	-	-	-	-	-	-	-	-	-	-	-	-
3.00 - 3.49	-	-	-	-	-	-	-	1	-	-	-	-	-
3.50 - 3.99	-	1	-	-	-	-	-	1	-	-	-	-	-
4.00 - 4.49	-	-	-	-	-	-	-	-	1	-	-	-	-
4.50 - 4.99	-	3	-	-	-	-	-	4	1	-	-	-	-
5.00 - 5.49	-	2	-	-	-	-	-	5	2	-	-	-	30
5.50 - 5.99	-	3	-	-	-	-	-	5	5	-	-	-	115
6.00 - 6.49	-	3	-	-	-	-	-	2	3	-	-	-	70
6.50 - 6.99	-	5	-	-	-	-	-	11	2	-	-	-	26
7.00 - 7.49	-	11	-	-	-	-	-	16	2	1	-	-	10
7.50 - 7.99	-	2	-	-	-	-	-	6	8	6	-	-	3
8.00 - 8.49	-	8	-	-	-	-	-	1	6	2	-	-	1
8.50 - 8.99	-	9	-	-	-	-	-	-	5	1	-	-	-
9.00 - 9.49	-	10	-	-	-	-	-	-	9	1	-	-	1
9.50 - 9.99	-	-	-	-	1	-	1	-	8	5	2	2	-
10.00 - 10.49	-	-	-	-	-	-	-	-	10	8	4	-	-
10.50 - 10.99	-	-	-	-	-	-	-	-	3	7	2	14	-
11.00 - 11.49	-	-	-	-	-	-	-	-	-	10	1	11	-
11.50 - 11.99	-	-	-	-	-	-	-	-	-	4	-	9	-
12.00 - 12.99	1	-	-	-	-	-	-	-	-	7	-	10	-
13.00 - 13.99	-	-	-	1	-	-	-	-	-	2	-	8	-
14.00 - 14.99	-	-	-	2	-	2	-	-	-	7	-	2	-
15.00 - 15.99	-	-	-	-	-	-	6	-	-	8	1	-	-
16.00 - 16.99	-	-	-	-	-	-	17	-	-	17	4	-	-
17.00 - 17.99	-	-	-	-	-	2	34	-	-	15	3	-	-
18.00 - 18.99	-	-	-	-	-	-	29	-	-	4	-	-	-
19.00 - 19.99	-	-	-	-	-	-	22	-	-	8	-	-	-
20.00 - 20.99	-	-	-	-	-	-	19	-	-	3	-	-	-
21.00 - 21.99	-	-	-	-	-	-	6	-	-	-	-	-	-
22.00 - 22.99	-	-	-	-	-	-	7	-	-	1	-	-	-
23.00 - 23.99	-	-	1	-	-	-	3	-	-	2	-	-	-
24.00 - 24.99	-	-	-	-	-	-	1	-	-	1	-	-	-
25.00 - 25.99	-	-	-	-	-	-	-	-	-	-	-	-	-
26.00 - 26.99	-	-	1	-	-	-	1	-	-	-	-	-	-
27.00 - 27.99	-	-	-	-	-	-	1	-	-	-	-	-	-
28.00 - 28.99	-	-	-	-	-	-	-	-	-	-	-	-	-
29.00 - 29.99	-	-	-	-	-	-	-	-	-	-	-	-	-
30.00 - 30.99	-	-	-	-	-	-	-	-	-	-	-	-	-
31.00 - 31.99	-	-	-	-	-	-	-	-	-	-	-	-	-
32.00 - 32.99	-	-	-	-	-	-	-	-	-	-	-	-	-
33.00 - 33.99	-	-	-	-	-	-	-	-	-	-	-	-	-
34.00 - 34.99	-	-	-	-	-	-	-	-	-	-	-	-	-
35.00 - 35.99	-	-	-	-	-	-	1	-	-	-	-	-	-
= > 36.00	-	-	-	-	-	-	-	-	-	-	-	-	-

	<u>BLC</u>	<u>BLG</u>	<u>BOF</u>	<u>BRB</u>	<u>HSF</u>	<u>LMB</u>	<u>NOP</u>	<u>PMK</u>	<u>RKB</u>	<u>WAE</u>	<u>WTS</u>	<u>YEB</u>	<u>YEP</u>
Total	1	57	2	3	1	4	148	52	65	120	17	56	256
Min. Length	12.80	3.54	23.27	13.58	9.61	14.29	9.88	3.27	4.06	7.17	9.88	9.65	5.00
Max. Length	12.80	9.41	26.02	14.88	9.61	17.91	35.75	8.27	10.87	24.02	17.72	14.41	9.13
Mean Length	12.80	7.54	24.65	14.34	9.61	16.10	18.96	6.48	8.41	14.34	13.36	11.81	6.05
# Measured	1	57	2	3	1	4	147	52	65	120	17	56	191
No Lengths for	0	0	0	0	0	0	2	0	0	0	0	0	65

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

LAKE SURVEY REPORT
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Length Frequency Distribution for STN

Special sampling with trap nets

(Field work conducted between 05/27/2015 and 05/28/2015)

	<u>BLG</u>	<u>GSF</u>	<u>HSF</u>	<u>PMK</u>
< 3.00	-	-	-	-
3.00 - 3.49	-	-	-	-
3.50 - 3.99	1	2	-	2
4.00 - 4.49	-	1	-	2
4.50 - 4.99	7	-	-	2
5.00 - 5.49	20	-	-	3
5.50 - 5.99	13	-	-	2
6.00 - 6.49	13	-	-	13
6.50 - 6.99	11	-	1	27
7.00 - 7.49	30	-	2	16
7.50 - 7.99	25	-	5	19
8.00 - 8.49	28	-	6	4
8.50 - 8.99	50	-	4	-
9.00 - 9.49	38	-	4	-
9.50 - 9.99	5	-	1	-
10.00 - 10.49	-	-	-	-
10.50 - 10.99	-	-	-	-
11.00 - 11.49	-	-	-	-
11.50 - 11.99	-	-	-	-
12.00 - 12.99	-	-	-	-
13.00 - 13.99	-	-	-	-
14.00 - 14.99	-	-	-	-
15.00 - 15.99	-	-	-	-
16.00 - 16.99	-	-	-	-
17.00 - 17.99	-	-	-	-
18.00 - 18.99	-	-	-	-
19.00 - 19.99	-	-	-	-
20.00 - 20.99	-	-	-	-
21.00 - 21.99	-	-	-	-
22.00 - 22.99	-	-	-	-
23.00 - 23.99	-	-	-	-
24.00 - 24.99	-	-	-	-
25.00 - 25.99	-	-	-	-
26.00 - 26.99	-	-	-	-
27.00 - 27.99	-	-	-	-
28.00 - 28.99	-	-	-	-
29.00 - 29.99	-	-	-	-
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	-	-	-	-

	<u>BLG</u>	<u>GSF</u>	<u>HSF</u>	<u>PMK</u>
Total	241	3	23	90
Min. Length	3.74	3.86	6.69	3.86
Max. Length	9.88	4.02	9.92	8.15
Mean Length	7.33	3.95	8.31	6.80
# Measured	135	3	23	90
No Lengths for	106	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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Length At Capture with Last Incremental Length

(Body-Scale constant, all lengths, and all length increments in inches)

Species: Bluegill
Body-Scale Constant: 0.79
Total Sample Size: 65

Length at Capture in 2015 for Each Age Class, with Incremental Lengths for 2015

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2013	2	1	3.74	3.74	3.74	N/A	0.17	N/A
2012	3	20	5.59	6.61	4.96	0.121	0.32	0.016
2011	4	17	6.97	8.46	5.47	0.180	0.35	0.041
2010	5	8	7.85	9.06	6.73	0.281	0.42	0.083
2009	6	11	8.63	9.53	7.95	0.147	0.39	0.048
2008	7	6	9.33	9.76	8.90	0.133	0.30	0.033
2007	8	2	9.63	9.88	9.37	0.256	0.30	0.022

Species: Northern Pike
Body-Scale Constant: 2.09
Total Sample Size: 74

Length at Capture in 2015 for Each Age Class, with Incremental Lengths for 2015

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2014	1	1	9.88	9.88	9.88	N/A	1.18	N/A
2013	2	25	16.97	19.06	15.28	0.214	1.27	0.050
2012	3	31	19.45	22.64	16.18	0.310	1.00	0.031
2011	4	12	21.51	23.35	18.90	0.365	0.89	0.048
2010	5	4	24.10	26.22	22.44	0.786	0.77	0.026
2009	6	1	27.64	27.64	27.64	N/A	0.80	N/A

Species: Walleye
Body-Scale Constant: 1.10
Total Sample Size: 101

Length at Capture in 2015 for Each Age Class, with Incremental Lengths for 2015

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2014	1	10	7.85	8.50	7.17	0.117	1.61	0.111
2013	2	27	10.62	11.81	9.61	0.116	1.40	0.040
2012	3	18	13.33	15.94	9.25	0.383	1.48	0.097
2011	4	22	16.21	17.91	14.29	0.222	1.54	0.112
2010	5	21	17.61	19.76	16.14	0.229	1.59	0.107
2009	6	3	18.86	19.45	18.11	0.394	1.20	0.110

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TARGETED SURVEY DATED 07/13/2015 FOR DOW NUMBER 56-0385-00

Back-Calculated Lengths for Each Age Class and Average Annual Increments of Back-Calculated Lengths

Species: Bluegill

Gear Type: Combined Gear Types (STN)

Class	Age	N	1	2	3	4	5	6	7	8
2013	2	1	2.46	3.57	-	-	-	-	-	-
			2.46	1.11	-	-	-	-	-	-
2012	3	20	2.18	3.72	5.27	-	-	-	-	-
			2.18	1.54	1.55	-	-	-	-	-
2011	4	17	2.02	3.38	5.12	6.63	-	-	-	-
			2.02	1.36	1.75	1.50	-	-	-	-
2010	5	8	1.88	3.14	4.62	6.13	7.43	-	-	-
			1.88	1.27	1.48	1.51	1.30	-	-	-
2009	6	11	2.06	3.29	4.72	6.13	7.29	8.24	-	-
			2.06	1.23	1.43	1.42	1.15	0.95	-	-
2008	7	6	1.80	2.95	4.23	5.82	7.30	8.28	9.03	-
			1.80	1.16	1.27	1.59	1.48	0.98	0.75	-
2007	8	2	2.05	3.01	4.26	5.70	7.45	8.15	8.84	9.33
			2.05	0.96	1.26	1.44	1.75	0.70	0.69	0.50
Mean Length			2.04	3.39	4.93	6.26	7.34	8.24	8.98	9.33
Mean Increment			2.04	1.35	1.54	1.49	1.31	0.93	0.74	0.50
Total N			65	65	64	44	27	19	8	2

Species: Northern Pike

Gear Type: Combined Gear Types (GN)

Class	Age	N	1	2	3	4	5	6
2014	1	1	8.70	-	-	-	-	-
			8.70	-	-	-	-	-
2013	2	25	10.22	15.70	-	-	-	-
			10.22	5.49	-	-	-	-
2012	3	31	10.85	15.62	18.44	-	-	-
			10.85	4.77	2.82	-	-	-
2011	4	12	11.21	15.88	18.55	20.62	-	-
			11.21	4.66	2.67	2.07	-	-
2010	5	4	11.19	15.65	19.37	21.87	23.33	-
			11.19	4.47	3.72	2.51	1.46	-
2009	6	1	11.28	16.14	20.74	23.48	25.25	26.84
			11.28	4.86	4.60	2.74	1.77	1.59
Mean Length			10.69	15.70	18.59	21.08	23.71	26.84
Mean Increment			10.69	4.98	2.90	2.21	1.52	1.59
Total N			74	73	48	17	5	1

LAKE SURVEY REPORT
TARGETED SURVEY DATED 07/13/2015 FOR DOW NUMBER 56-0385-00

Back-Calculated Lengths for Each Age Class and Average Annual Increments of Back-Calculated Lengths (Continued)

Species: Walleye

Gear Type: Combined Gear Types (GN)

Class	Age	N	1	2	3	4	5	6
2014	1	10	6.24	-	-	-	-	-
			6.24	-	-	-	-	-
2013	2	27	5.74	9.22	-	-	-	-
			5.74	3.48	-	-	-	-
2012	3	18	5.38	9.02	11.85	-	-	-
			5.38	3.64	2.83	-	-	-
2011	4	22	5.33	8.84	12.02	14.67	-	-
			5.33	3.50	3.18	2.66	-	-
2010	5	21	5.30	8.51	11.57	13.90	16.02	-
			5.30	3.21	3.06	2.33	2.12	-
2009	6	3	5.41	8.52	11.70	13.94	16.13	17.66
			5.41	3.11	3.18	2.24	2.20	1.53
Mean Length			5.53	8.90	11.81	14.27	16.03	17.66
Mean Increment			5.53	3.44	3.04	2.48	2.13	1.53
Total N			101	91	64	46	24	3

LAKE SURVEY REPORT
TARGETED SURVEY DATED 07/13/2015 FOR DOW NUMBER 56-0385-00

Age Class Frequency Distribution

Species & SS Type (1)	Number of Fish (2)			Number of Fish in Year Class ('yy) and Age Class																
	Aged	Keyed	Unaged	'15 0	'14 1	'13 2	'12 3	'11 4	'10 5	'09 6	'08 7	'07 8	'06 9	'05 10	'04 11	'03 12	'02 13	'01 14	<'01 15+	
Bluegill																				
STN	65	176	0	0	0	1	45	56	39	59	32	9	0	0	0	0	0	0	0	
Northern Pike																				
GN	74	73	2	0	1	51	73	17	4	1	0	0	0	0	0	0	0	0	0	
Walleye																				
GN	101	13	6	0	10	33	18	23	25	5	0	0	0	0	0	0	0	0	0	

(1) Key to Sampling Station (SS) Type abbreviations:

STN = Special sampling with trap nets
GN = Standard gill net sets

(2) Notes:

Number of Fish Aged: Fish that were aged from bony parts.
Number of Fish Keyed: Fish assigned an age with an age-length key or by expansion of mesh or station age distributions.
Number of Fish Unaged: Fish that were not aged and were not assigned an age.

Discussion

A special gill net assessment was conducted to analyze the Walleye, Northern Pike, and Yellow Perch populations of Star Lake. Twelve gill nets were utilized to obtain a standardized fish sample. A special spring trapnetting assessment was also conducted to analyze the Bluegill population. The initial survey of Star Lake was conducted in 1961. Fourteen lake surveys have been conducted from 1961 to 2015. Star Lake is on a three-year lake survey rotation schedule and is included in lake class 22 of the MN DNR lake classification scheme.

Northern Pike gill net catch per unit effort (CPUE) was 12.4 per net, which exceeds the third quartile of the normal range for lake class 22 (interquartile range = 3.0 - 7.9). This is the highest Northern Pike gill net CPUE recorded for this lake. Historically, Northern Pike gill net CPUE ranged from 3.8 to 11.1 per net. Age and length data from recent surveys indicate that Northern Pike recruitment is consistent and that total annual mortality (A) is low to moderate. Pike ranged in length from 9.9 to 35.8 inches with a mean length and weight of 19.0 inches and 1.5 pounds. Northern Pike attain a mean length of 21.1 inches at age-IV. Growth rate estimates exceed mean Northern Pike growth rates for class 22 lakes in the Fergus Falls Management Area.

Spring trapnetting assessments were conducted in 2003, 2006, 2009, and 2012 to analyze the Bluegill population. A reduced daily bag limit regulation for sunfish (10 per day) was implemented in 2005. The objective of this regulation is to maintain the quality of the Bluegill size structure. In this assessment, Bluegill CPUE was 34.4 per net. Historically, Bluegill spring trap net CPUE has ranged from 27.4 to 53.5 per net. The Bluegill PSD-P value was 50, which is similar to the previous assessments. Age data from these assessments indicate that Bluegill recruitment is consistent. Bluegills attain a mean length of 8.2 inches at age-VI. Growth rate estimates are much faster than mean Bluegill growth rates for class 22 lakes in the Fergus Falls Management Area.

Yellow Perch gill net CPUE was 21.3 per net, which is within the normal range (interquartile range = 7.1 - 33.9). Historically, Yellow Perch gill net CPUE has fluctuated, ranging from 8.5 to 47.5 per net.

Walleye gill net CPUE was 10.0 per net, which is equivalent to the third quartile (interquartile range = 4.0 - 9.6). Since the 1973 lake survey, the general trend has been an increase in Walleye gill net CPUE. Age data from recent assessments indicate that Walleye natural reproduction and recruitment can be substantial in some years; however, it is inconsistent. The strongest year classes have consistently corresponded to years of fry stocking/natural reproduction which suggests that fry stocking is supplementing natural reproduction by increasing abundance or by offsetting weak natural year classes. Walleyes ranged in length from 7.2 to 24.0 inches with a mean length and weight of 14.3 inches and 1.2 pounds. Walleyes attain a mean length of 14.3 inches at age-IV. Growth rate estimates are equivalent to mean Walleye growth rates for class 22 lakes in the Fergus Falls Management Area.

Status Of The Fishery

Star Lake is a 4,721-acre mesotrophic (moderately fertile) lake located in north-central Otter Tail County approximately four miles west of Dent, MN. Star Lake is connected to Dead and Round Lakes via non-navigable streams. The immediate watershed is composed primarily of agricultural land interspersed with hardwood woodlots. Extensive marsh areas are located in the south bay and the west arm of the lake. The maximum depth is 94 feet; however, 59% of the lake is 15 feet or less in depth. The secchi disk reading was 10.5 feet. Previous secchi disk readings have ranged from 5.8 to 14.0 feet.

Development is scattered around the entire shoreline of Star Lake. DNR owned public water accesses are located along the north and east shorelines. Stands of hardstem bulrush, wild rice, and common cattail are scattered along the shoreline of the entire lake; however, the largest stands are located in the south bay and the west arm. Emergent aquatic plants provide valuable fish and wildlife habitat, and are critical for maintaining good water quality. They protect shorelines and lake bottoms, and can actually absorb and break down polluting chemicals. Emergent plants provide spawning areas for fish such as northern pike, largemouth bass, and panfish. They also serve as important nursery areas for all species of fish. Because of their ecological value, emergent plants may not be removed without a DNR permit. To maintain the excellent water quality and angling that this lake has to offer, it is imperative to preserve the quality of the aquatic habitat.

Star Lake is a popular angling lake during both the open water and ice fishing seasons. The lake has a reputation as one of the best all-around fishing lakes in Otter Tail County. Northern Pike, Walleye, and Bluegill are the dominant gamefish species. The prolificacy of these species can be attributed to the abundance of suitable spawning habitat that is available.

Walleye is a primary management specie in this lake. The long-term trend has been an increase in Walleye abundance. Walleyes ranged in length from 7.2 to 24.0 inches with an average length and weight of 14.3 inches and 1.2 pounds. Walleyes attain an average length of 14.3 inches at four years of age.

Northern Pike abundance has remained high in recent surveys. Age and length data from recent surveys indicate that Northern Pike reproduction is consistently good. Northern Pike ranged in length from 9.9 to 35.8 inches with an average length and weight of 19.0 inches and 1.5 pounds. Pike attain an average length of 22.1 inches at four years of age.

A reduced daily bag limit regulation for sunfish (10 per day) was implemented in 2005 to maintain the quality of the Bluegill population. Catch and length data from special spring assessments indicate that the regulation is maintaining a quality Bluegill population. Fifty percent of the Bluegills were 8.0 inches or greater in length. Bluegills attain an average length of 8.2 inches at six years of age.

Anglers can maintain the quality of angling by practicing selective harvest. Selective harvest encourages the release of medium to large size fish while allowing the harvest of more abundant smaller fish for table fare. Releasing the medium to large fish will ensure that the lake has enough spawning age fish on an annual basis and will provide anglers with more opportunities to catch large fish in the future.

Approval Dates And Notices

Date Approved By Fergus Falls Area Fisheries Supervisor: 03/17/2016

Date Approved By Northwest Region Fisheries Manager: 05/04/2016



MNDNR

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Lake Survey Report revision: 20160309-RJE. Data Date: 05/13/2016 at 2:43 pm



HISTORICAL NETTING SUMMARY

Gill Nets

Lake Name:

DOW No.

Other Tail County

Species	Year		2003		2006		2009		2012		2015		Number Per Set	Pounds Per Set	Number Per Set	Pounds Per Set	Number Per Set	Pounds Per Set
	No. Sets	2000	15	15	15	15	15	15	15	15	12							
Black Bullhead		6.80	5.52	2.60	2.16	0.47	0.40	0.60	0.72	0.53	0.67							
Black Crappie		0.73	0.47	0.07	0.07	0.60	0.52	0.60	0.35	0.53	0.13							
Bluegill		4.53	1.35	1.93	0.60	5.07	1.85	4.20	1.99	4.47	2.03							
Bowfin		0.27	0.95	0.27	1.28	0.13	0.68	0.47	1.93									
Brown Bullhead		11.27	8.26	0.73	0.64	2.33	2.20	5.33	6.45	1.47	2.02							
Burbot																		
Carp		0.13	0.62	0.07	0.22	0.07	0.01											
Hybrid Sunfish		0.27	0.13	0.20	0.05	0.33	0.12			0.53	0.21							
Largemouth Bass		0.53	0.45	0.07	0.18	0.60	0.67	0.53	0.73	0.33	0.55							
Northern Pike		6.60	11.27	8.13	11.51	10.73	16.76	7.47	10.71	9.73	15.54							
Pumpkinseed		6.00	1.43	1.67	0.40	3.93	1.10	2.20	0.64	1.67	0.52							
Rock Bass		5.93	3.17	3.60	1.45	1.73	0.83	6.40	3.08	2.00	1.17							
Shorthead Redhorse																		
Tullbee		0.07	0.10	0.67	0.11	0.33	0.59											
Walleye		9.93	11.52	6.60	8.58	8.53	10.79	8.40	7.80	9.47	10.34							
White sucker		1.40	2.99	2.00	3.83	1.07	1.79	1.33	3.00	0.60	1.17							
Yellow Bullhead		7.40	5.77	2.87	2.15	4.20	3.54	2.60	2.39	1.13	1.13							
Yellow Perch		12.87	2.09	19.33	2.28	37.80	4.48	8.47	0.97	9.73	1.14							



HISTORICAL NETTING SUMMARY

Gill Nets

Lake Name:

DOW No.

Otter Tail County

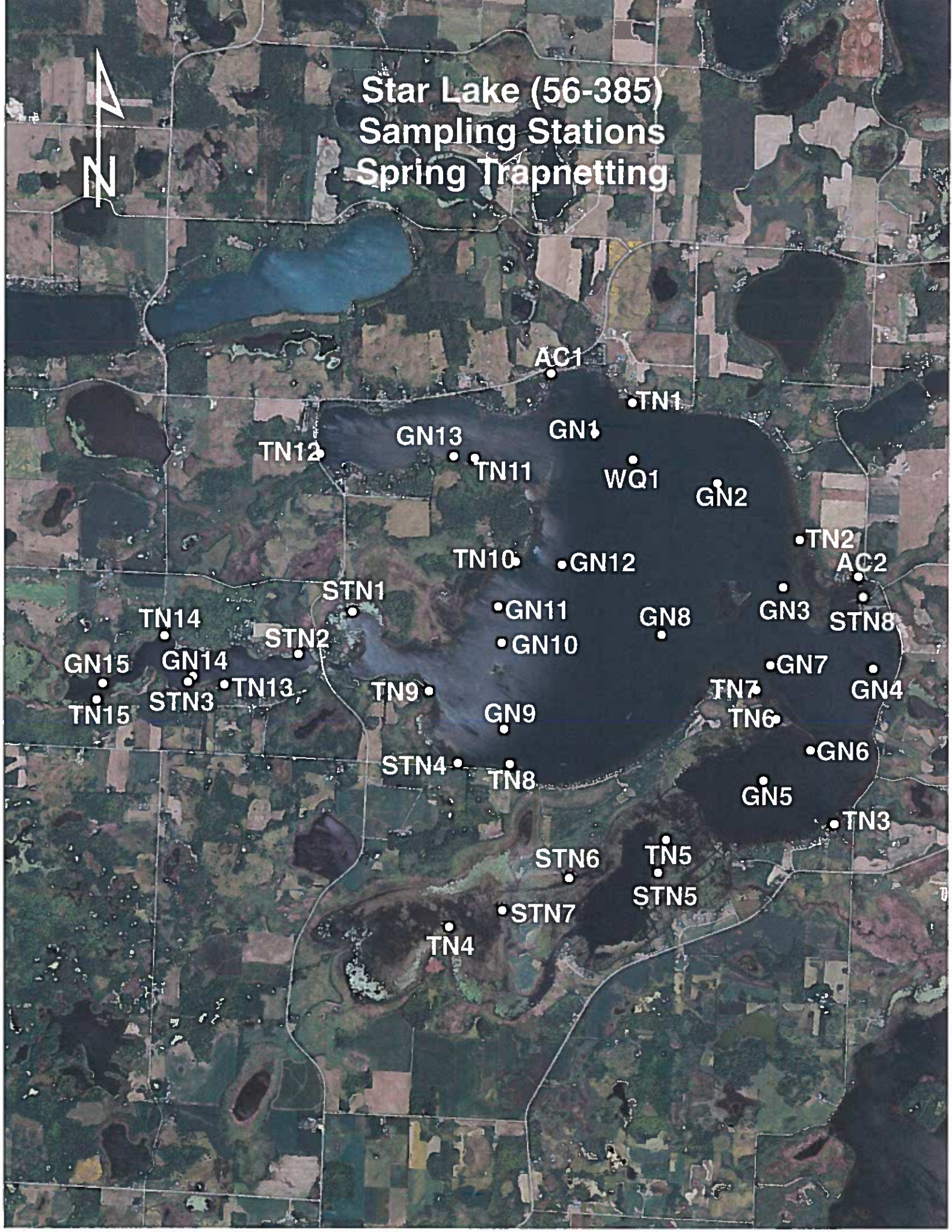
Year	1961	1973	1982	1985	1988	1991	1994	1997							
No. Sets	4	8	12	15	12	12	15	15							
Species	Number Per Set	Pounds Per Set	Number Per Set	Pounds Per Set	Number Per Set	Pounds Per Set	Number Per Set	Pounds Per Set							
Black Bullhead		0.80	0.43	5.40	3.95	6.10	4.01	2.70	1.79	4.60	2.86	4.10	4.10	0.90	0.80
Black Crappie				0.10	0.04			0.30	0.13	0.30	0.06	0.30	0.20	0.10	0.00
Bluegill		0.20	0.18	0.20	0.18	0.20	0.11	1.70	0.58	3.60	1.06	9.20	2.50	0.30	0.10
Bowfin		0.40	1.12	0.10	0.43	0.20	1.17			0.10	0.68	0.10	0.30		
Brown Bullhead	2.00	1.35	1.40	1.70	2.20	1.95	2.70	1.62	3.80	2.84	6.00	4.81	0.40	0.40	0.50
Burbot				0.10	0.36			0.10	0.01						
Carp										0.10	0.43				
Hybrid Sunfish				0.10	0.04	0.10	0.01			0.40	0.09	0.20	0.10	0.10	0.00
Largemouth Bass	0.30	0.03	0.10	0.11		0.10	0.10	0.10	0.03	0.30	0.37	0.10	0.10		
Northern Pike	7.80	11.18	11.10	10.31	15.36	11.00	18.01	3.80	5.26	6.30	10.40	6.10	0.40	10.60	16.70
Pumpkinseed		4.20	1.48	1.40	0.37	1.10	0.24	1.20	0.42	1.90	0.34	0.80	0.20	0.30	0.00
Rock Bass	1.50	0.95	12.50	6.13	4.40	2.36	2.30	1.23	0.31	1.60	0.82	1.20	0.70	4.70	3.00
Shorthead Redhorse										0.10	0.31				
Tullbee	3.00	5.05	0.10	0.02	0.40	0.14	1.40	1.35	0.10	0.09		0.70	0.40	0.30	0.20
Walleye	32.30	46.43	5.00	6.01	5.40	9.86	5.50	7.67	7.40	9.75	7.40	6.10	9.90	8.90	9.70
White Sucker	3.80	8.48	2.10	5.23	1.00	2.11	0.70	1.17	1.60	3.28	0.70	1.07	0.90	1.90	3.50
Yellow Bullhead	1.50	1.70	3.90	2.03	2.50	2.07	3.50	2.25	4.60	2.79	8.00	5.38	2.70	2.70	2.00
Yellow Perch	11.00	1.68	18.80	3.09	23.20	4.96	36.50	5.11	11.20	1.66	12.60	47.50	6.20	17.00	2.30

STAR LAKE (56-385)

HISTORICAL SPRING TRAPNETTING DATA FOR BLUEGILL

	2003	2006	2009	2012	2015
CPUE (#/Net)	37.5	53.5	27.4	42.1	34.43
PSD	97	95	100	85	83
PSD-P	25	23	44	26	50

Star Lake (56-385) Sampling Stations Spring Trapnetting



- AC1
- TN1
- GN13
- GN1
- TN12
- TN11
- WQ1
- GN2
- TN10
- GN12
- TN2
- AC2
- STN1
- GN11
- GN8
- GN3
- STN8
- TN14
- GN15
- GN14
- STN2
- GN10
- GN7
- GN4
- TN13
- STN3
- TN9
- GN9
- TN7
- TN6
- GN6
- STN4
- TN8
- GN5
- TN3
- STN6
- TN5
- STN5
- STN7
- TN4