



Minnesota Department of Natural Resources
Fisheries Management



STANDARD LAKE SURVEY REPORT

DRAFT VERSION - PRELIMINARY DATA (AS OF 08/12/2013)

Lake Name: Fox

Survey Type: Special Assessment

DOW Number: 46-0109-00

Survey ID Date: 04/29/2013

SPECIAL ASSESSMENT
Trap Netting targeting Muskellunge All Ages
Trap Netting
Water Quality Measurement

Lake Identification

Alternate Lake Name: N/A
Primary Lake Class ID: 24

DNR Sounding Map Number: D0266
Alternate Lake Class ID: N/A

Lake Location

Primary County: Martin

Nearest Town: Sherburn

Legal Descriptions

Lake Center: Township - 103N Range - 32W Section - 32
PLS Section Lake Center: 10303232

All Legal Descriptions:

Martin County: Township - 102N Range - 32W Sections - 4, 5, 6
Township - 103N Range - 32W Sections - 31, 32, 33, 34

Area Office

Area Name: Windom
Region Name: Southern

ORG Code: F418
Region Number: 4

Lake Access

(Information based on Population Assessment dated 09/07/1993)

Station ID	Ownership	Public Use	Type	Location / Comments
AC - 1	DNR	Open to Public use	Concrete	State access on the NE end of lake. 103N 32W S34. State access on the NE end of lake. 103N; 32W; S34.
AC - 2	Private Property	Client Use Only	Concrete	Fox Lake Club access on east end of lake. 103N 32W S34. Fox Lake Club access on east end of lake. 103N; 32W; S34.

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

Lake Characteristics

Lake Area (planimetered acres):	1041.00	GIS Shoreline Length (miles):	11.31
GIS Lake Area (acres):	951.02	Maximum Fetch (miles):	3.40
DOW Lake Area (acres):	967.00	Fetch Orientation (degrees):	90
Littoral Area (acres):	780.00	USGS Quad Map Number:	X11b
Area in MN (acres):	951.02	USGS Quad 24K GIS Index:	4621
Maximum Depth (feet):	20.0		
Mean Depth (feet):	N/A		

Watershed Characteristics**Major Watershed**

Name: Blue Earth River
Watershed Number: 30
Watershed size (acres): 777,240

Minor Watershed

Name: Fox L
Watershed Number: 77
Watershed size (acres): 4,023

Surveys And Investigations

Re-Survey: 09/07/2010, 09/11/2006, 09/11/2000, 09/04/1991, 09/23/1986, 09/16/1985.

Population Assessment: 09/04/2012, 09/06/2011, 09/08/2009, 09/02/2008, 09/10/2007, 09/12/2005, 09/07/2004, 09/08/2003, 09/09/2002, 09/10/2001, 08/30/1999, 08/31/1998, 09/02/1997, 09/03/1996, 09/05/1995, 09/06/1994, 09/07/1993, 09/01/1992, 09/13/1988, 09/08/1987, 10/05/1981.

Special Assessment: 04/29/2013, 03/20/2012, 04/25/2011, 07/28/2010, 05/20/2010, 04/21/2009, 05/01/2008, 05/10/2007, 04/16/2007, 09/25/2000, 09/08/1999, 10/21/1997.

Dissolved Oxygen Check: 01/08/2013, 12/28/2012, 02/16/2012, 02/24/2010.

Water Level History - Readings

Station ID	Date	Level	Reading (feet)	Reading Type
BM - 1	09/04/2012	Low	-2.70	Above or below Benchmark
	09/07/2011	Low	-2.60	Above or below Benchmark
	09/10/2010	Normal	-1.80	Above or below Benchmark
	09/05/2009	N/A	N/A	Above or below Benchmark
	09/05/2008	N/A	-2.20	Above or below Benchmark
	09/10/2007	Normal	-0.90	Above or below Benchmark
	09/12/2006	Normal	-2.10	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	-2.70	09/04/2012	-0.90	09/10/2007	1.80	-2.05	Above or below Benchmark (6)

Field Measurements Of Water Quality

Station ID	Sampling Date	Sample Depth (Feet)	Secchi Depth (Feet)	Field pH	Alkalinity (ppm)	Water Color	Color Cause
WQ - 2	05/07/2013	16.0	10.5	N/A	N/A	N/A	N/A

Net Catch Summary by Numbers for LTN

Large-frame (5 x 6 ft) trap nets

Number of Set - Days: 99
 First Set - Day Date: 04/29/2013
 Last Set - Day Date: 05/16/2013
 Target Species: All ages muskellunge

Abbr	Species	Total Fish	Number Per Set - Day	Quartiles for Lake Class 24*		
				25%	50%	75%
MUE	Muskellunge	100	1.01	N/A	N/A	N/A
Total Fish/Set - Day:			1.01	* Quartiles for Number Per Set - Day		

Net Catch Summary by Weight for LTN

Large-frame (5 x 6 ft) trap nets

Abbr	Species	Total Weight (Pounds)	Pounds Per Set - Day	Mean Weight	Quartiles for Lake Class 24*		
					25%	50%	75%
MUE	Muskellunge	1782.76	18.01	17.83	N/A	N/A	N/A
Total Pounds Fish/Set - Day:			18.01	* Quartiles for Mean Weight			

Length Frequency Distribution For LTN (for fish < 36.00 inches)

Large-frame (5 x 6 ft) trap nets

(Field work conducted between 04/29/2013 and 05/16/2013)

	<u>MUE</u>
< 3.00	-
3.00 - 3.49	-
3.50 - 3.99	-
4.00 - 4.49	-
4.50 - 4.99	-
5.00 - 5.49	-
5.50 - 5.99	-
6.00 - 6.49	-
6.50 - 6.99	-
7.00 - 7.49	-
7.50 - 7.99	-
8.00 - 8.49	-
8.50 - 8.99	-
9.00 - 9.49	-
9.50 - 9.99	-
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	1
29.00 - 29.99	-
30.00 - 30.99	-
31.00 - 31.99	1
32.00 - 32.99	-
33.00 - 33.99	5
34.00 - 34.99	10
35.00 - 35.99	-
= > 36.00	83

	<u>MUE</u>
Total	100
Min. Length	28.98
Max. Length	50.39
Mean Length	40.98
# Measured	99
No Lengths for	1

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

Length Frequency Distribution For LTN (for fish \geq 36.00 inches)

Large-frame (5 x 6 ft) trap nets

(Field work conducted between 04/29/2013 and 05/16/2013)

	<u>MUE</u>
< 36.00	17
36.00 - 36.99	3
37.00 - 37.99	6
38.00 - 38.99	9
39.00 - 39.99	11
40.00 - 40.99	9
41.00 - 41.99	12
42.00 - 42.99	1
43.00 - 43.99	1
44.00 - 44.99	1
45.00 - 45.99	3
46.00 - 46.99	8
47.00 - 47.99	8
48.00 - 48.99	7
49.00 - 49.99	2
50.00 - 50.99	1
51.00 - 51.99	-
52.00 - 52.99	-
53.00 - 53.99	-
54.00 - 54.99	-
55.00 - 55.99	-
56.00 - 56.99	-
57.00 - 57.99	-
58.00 - 58.99	-
59.00 - 59.99	-
60.00 - 60.99	-
61.00 - 61.99	-
62.00 - 62.99	-
63.00 - 63.99	-
64.00 - 64.99	-
65.00 - 65.99	-
66.00 - 66.99	-
67.00 - 67.99	-
68.00 - 68.99	-
69.00 - 69.99	-
70.00 - 70.99	-
71.00 - 71.99	-
72.00 - 72.99	-
73.00 - 73.99	-
74.00 - 74.99	-
75.00 - 75.99	-
76.00 - 76.99	-
77.00 - 77.99	-
= > 78.00	-

	<u>MUE</u>
Total	99
Min. Length	28.98
Max. Length	50.39
Mean Length	40.98
# Measured	99
No Lengths for	1

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

Length At Capture With Last Incremental Length

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

Species: Muskellunge
Body-Scale Constant: 2.99
Total Sample Size: 38

Length at Capture in 2013 for Each Age Class, with Incremental Lengths for 2013

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2009	4	1	28.98	28.98	28.98	N/A	1.86	N/A
2008	5	1	31.77	31.77	31.77	N/A	2.02	N/A
2007	6	0	-	-	-	-	-	-
2006	7	20	35.05	37.87	33.07	0.339	1.00	0.094
2005	8	0	-	-	-	-	-	-
2004	9	2	41.65	45.04	38.27	3.386	0.54	0.050
2003	10	0	-	-	-	-	-	-
2002	11	0	-	-	-	-	-	-
2001	12	6	42.28	46.22	38.07	1.305	0.42	0.128
2000	13	0	-	-	-	-	-	-
1999	14	0	-	-	-	-	-	-
1998	15	0	-	-	-	-	-	-
1997	16	8	46.31	50.39	41.46	1.136	0.59	0.117

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

Species: Muskellunge

Gear Type: Combined Gear Types (LTN)

Class	Age	N	1	2	3	4	5	6	7	8	9	10	11	12
2009	4	1	9.12	14.50	21.92	27.12	-	-	-	-	-	-	-	-
			9.12	5.38	7.42	5.20	-	-	-	-	-	-	-	-
2008	5	1	10.34	17.31	20.24	27.47	29.75	-	-	-	-	-	-	-
			10.34	6.97	2.93	7.23	2.28	-	-	-	-	-	-	-
2006	7	20	9.59	13.11	16.56	21.86	27.20	31.08	33.56	27.88	29.88	30.56	30.79	31.91
			9.59	3.52	3.46	5.30	5.35	3.88	2.49	3.60	2.00	0.68	0.23	1.12
2004	9	2	11.76	17.25	22.68	28.36	32.23	34.88	37.44	39.43	41.12	-	-	-
			11.76	5.49	5.43	5.68	3.88	2.65	2.56	1.99	1.69	-	-	-
2001	12	6	10.18	14.38	18.42	23.44	28.67	32.76	35.59	37.51	38.83	39.84	41.03	41.87
			10.18	4.21	4.04	5.02	5.23	4.08	2.83	1.92	1.32	1.01	1.19	0.84
1997	16	8	9.83	13.55	16.07	19.48	23.49	28.06	32.04	34.98	37.32	39.29	40.52	41.92
			9.83	3.73	2.52	3.41	4.01	4.57	3.98	2.94	2.34	1.97	1.23	1.40
Mean Length			9.85	13.77	17.31	22.24	26.98	30.90	33.78	35.98	37.86	38.93	40.08	41.23
Mean Increment			9.85	3.91	3.55	4.92	4.88	4.00	2.88	2.51	1.89	1.50	1.15	1.16
Total N			38	38	38	38	37	36	36	17	17	15	15	15

(Continued from above table)

Class	Age	N	13	14	15	16
2006	7	20	32.79	33.02	33.71	33.91
			0.88	0.23	0.69	0.20
1997	16	8	43.13	44.19	45.06	45.72
			1.21	1.06	0.87	0.66
Mean Length			41.98	42.95	43.80	44.41
Mean Increment			1.17	0.97	0.85	0.61
Total N			9	9	9	9

Age Class Frequency Distribution

Species and Gear (1)	Number of Fish (2)			Number of Fish in Year Class ('yy) and Age Class															
	Aged	Keyed	Unaged	'13	'12	'11	'10	'09	'08	'07	'06	'05	'04	'03	'02	'01	'00	'99	<'99
				0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Muskellunge																			
LTN	35	43	22	0	0	0	0	1	1	0	24	0	6	0	0	24	0	0	22

(1) Key to sampling gear abbreviations:

LTN = Large-frame (5 x 6 ft) trap nets

(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.

Approval Dates And Notices

Date Approved By Windom Area Fisheries Supervisor: _____

Date Approved By Southern Region Fisheries Manager: _____

This Draft version of the Standard Lake Survey Report contains preliminary data (as of 08/12/2013), and is therefore subject to change at any time.



Minnesota Department of Natural Resources

By accepting the data in this report, the user agrees the data will be used for personal benefit and not for profit. Any other uses or publication of the data needs the consent of the Department. The Minnesota Department of Natural Resources assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on the data.

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REPORT OVERVIEW - FOR OFFICE USE ONLY

(This page is not part of the Standard Lake Survey Report and should be discarded)

Lake Name: Fox

Survey Type: Special Assessment

DOW Number: 46-0109-00

Survey ID Date: 04/29/2013

Trap Netting targeting Muskellunge All Ages, Trap Netting, Water Quality Measurement

Survey Status: Field Work Complete

The following 19 (of 31) report components are not included in this report:

1. Current Water Level
2. Benchmark And Gauge Descriptions / Locations
3. Water Level History*
4. Lake Inlets
5. Additional Inlet Information
6. Lake Outlets
7. Additional Outlet Information
8. Water Control Structure (Dam)
9. Surrounding Watershed Characteristics, Shoreline Characteristics, and Riparian Landscape Observations
10. Resorts And Campgrounds
11. Fish Spawning Conditions
12. Erosion And Pollution
13. Fish Diseases And Parasites
14. Aquatic Vegetation And Shoalwater Substrates
15. Dissolved Oxygen And Temperature Profile Of Lake Water
16. Laboratory Analysis Of Water Chemistry
17. Status Of Fishery And Field Notes
18. Other Species (added to revision 03/24/2009)
19. Water Quality (Winter Observations) (added to revision 01/21/2010)

* Water Level History report: This data has not yet been migrated into the Fisheries LSM database. On 01/08/2009, two additional Water Level History report components (Readings and Station Summary) were added.

Note: The data source for Length and Age Class Frequency Distribution tables is updated twice daily - once at noon and once overnight. Any changes to the data made before noon on 08/12/2013 may not be reflected in the Distribution tables until after 12:30 pm on 08/12/2013.

The following 10 survey components were flagged to be specifically excluded from this report:

1. LTN - 1
2. LTN - 2
3. LTN - 3
4. LTN - 4
5. LTN - 9
6. LTN - 10
7. LTN - 11
8. LTN - 12
9. LTN - 13
10. LTN - 14