



Minnesota Department of Natural Resources Fisheries Management



STANDARD LAKE SURVEY REPORT

DRAFT VERSION - PRELIMINARY DATA (AS OF 07/22/2013)

Lake Name: Mule

Survey Type: Population Assessment

DOW Number: 11-0200-00

Survey ID Date: 07/15/2013

Lake Identification

Alternate Lake Name: N/A
Primary Lake Class ID: 23

DNR Sounding Map Number: C0151
Alternate Lake Class ID: N/A

Lake Location

Primary County: Cass

Nearest Town: Longville

Legal Descriptions

Lake Center: Township - 140N Range - 28W Section - 30
PLS Section Lake Center: 14002830

All Legal Descriptions:

Cass County: Township - 140N Range - 28W Sections - 19, 20, 29, 30, 31
Township - 140N Range - 29W Sections - 25, 36

Area Office

Area Name: Walker
Region Name: Northwest

ORG Code: F118
Region Number: 1

Lake Access

(Information based on Population Assessment dated 07/07/2008)

Station ID	Ownership	Public Use	Type	Location / Comments
AC - 1	DNR	Open to Public use	Asphalt	West side directly off State Hwy 84.

Lake Characteristics

Lake Area (planimetered acres): 456.00	GIS Shoreline Length (miles): 7.31
GIS Lake Area (acres): 524.58	Maximum Fetch (miles): 1.50
DOW Lake Area (acres): 501.00	Fetch Orientation (degrees): 45
Littoral Area (acres): 182.00	USGS Quad Map Number: K12a
Area in MN (acres): 524.58	USGS Quad 24K GIS Index: 2024
Maximum Depth (feet): 47.0	
Mean Depth (feet): N/A	

Watershed Characteristics

Major Watershed

Name: Leech Lake River
Watershed Number: 8
Watershed size (acres): 857,968

Minor Watershed

Name: From Blackwater L
Watershed Number: 56
Watershed size (acres): 7,113

Surveys And Investigations

Initial Survey: 07/30/1951.
 Re-Survey: 07/16/2001, 07/08/1991, 07/21/1969.
 Population Assessment: 07/15/2013, 07/07/2008, 07/12/2004, 07/16/1996, 07/07/1986, 07/24/1979.
 Special Assessment: 06/06/2011, 05/26/2009, 07/10/2006, 06/01/2003, 05/23/2002, 10/16/2000, 09/22/1992.
 Creel Survey: 05/15/2000.
 Natural Reproduction Check: 09/25/2007.
 External Management Survey: 08/23/2006, 09/06/2001, 07/31/2001, 06/27/2001.

Current Water Level

Station ID	Date	Level	Reading (feet)	Reading Type
BM - 4	07/17/2013	Normal	-4.90	Above or below Benchmark

Benchmark and Gauge Descriptions / Locations

Station ID	Location Description
BM - 4	Orange spike in 16-inch bur oak- 2ft form ground- 6ft from shore- 75ft south of public access on west shore

Water Level History - Readings

Station ID	Date	Level	Reading (feet)	Reading Type
BM - 1	07/07/2008	Normal	-9.18	Above or below Benchmark
	07/10/2006	Normal	-8.45	Above or below Benchmark
BM - 4	07/17/2013	Normal	-4.90	Above or below Benchmark
	07/07/2008	Normal	-6.38	Above or below Benchmark
	07/10/2006	Normal	-5.75	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	-9.18	07/07/2008	-8.45	07/10/2006	0.73	-8.82	Above or below Benchmark (2)
BM - 4	-6.38	07/07/2008	-4.90	07/17/2013	1.48	-5.68	Above or below Benchmark (3)

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	07/15/2013	34.5	3.0	75.2	9.0
			6.0	75.2	9.1
			9.0	75.2	9.0
			12.0	75.2	9.0
			15.0	75.2	9.2
			18.0	71.1	9.3
			21.0	60.4	12.0
			24.0	55.4	9.0
			27.0	52.7	7.0
			28.0	49.5	2.5
			29.0	48.9	2.4
			30.0	48.6	2.6
			33.0	47.1	2.2

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	07/15/2013	Surface	N/A	N/A	N/A	Green	N/A

Net Catch Summary by Numbers for GN

Standard gill net sets

Number of Sets: 9
 First Set Date: 07/15/2013
 Last Lift Date: 07/19/2013
 Target Species: N/A

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 23*		
				25%	50%	75%
BLC	Black Crappie	19	2.11	0.33	0.78	1.67
BLG	Bluegill	88	9.78	N/A	N/A	N/A
BRB	Brown Bullhead	4	0.44	0.25	0.67	1.83
LMB	Largemouth Bass	25	2.78	0.50	0.79	1.67
NOP	Northern Pike	168	18.67	2.19	5.00	8.70
PMK	Pumpkinseed	39	4.33	N/A	N/A	N/A
RKB	Rock Bass	44	4.89	0.67	2.00	4.45
SMB	Smallmouth Bass	13	1.44	0.22	0.63	1.60
TLC	Tullibee (Cisco)	7	0.78	1.25	3.79	10.43
WAE	Walleye	40	4.44	1.00	2.37	5.00
WTS	White Sucker	6	0.67	0.48	1.00	2.00
YEP	Yellow Perch	18	2.00	1.48	4.55	13.81
Total Fish/Set:			52.33	* 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 23*		
					25%	50%	75%
BLC	Black Crappie	4.10	0.46	0.22	0.20	0.30	0.50
BLG	Bluegill	9.76	1.08	0.11	N/A	N/A	N/A
BRB	Brown Bullhead	5.67	0.63	1.42	0.50	0.76	1.15
LMB	Largemouth Bass	28.26	3.14	1.13	0.55	0.78	1.15
NOP	Northern Pike	232.98	25.89	1.39	1.55	2.21	3.21
PMK	Pumpkinseed	2.75	0.31	0.07	N/A	N/A	N/A
RKB	Rock Bass	23.76	2.64	0.54	0.23	0.30	0.44
SMB	Smallmouth Bass	17.10	1.90	1.32	0.76	1.50	1.80
TLC	Tullibee (Cisco)	26.21	2.91	3.74	0.34	0.55	1.00
WAE	Walleye	56.54	6.28	1.41	1.23	1.81	2.95
WTS	White Sucker	18.61	2.07	3.10	1.60	2.01	2.60
YEP	Yellow Perch	3.86	0.43	0.21	0.10	0.13	0.20
Total Pounds Fish/Set:			47.74	* Quartiles for Mean Weight			

Net Catch Summary by Numbers for TN

Standard 3/4-in mesh, double frame trap net sets

Number of Sets: 8
 First Set Date: 07/15/2013
 Last Lift Date: 07/18/2013
 Target Species: N/A

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 23*		
				25%	50%	75%
BLC	Black Crappie	22	2.75	0.48	0.96	2.15
BLG	Bluegill	307	38.38	7.74	19.83	43.38
HSF	Hybrid Sunfish	1	0.13	N/A	N/A	N/A
LMB	Largemouth Bass	4	0.50	0.39	0.83	1.53
NOP	Northern Pike	11	1.38	N/A	N/A	N/A
PMK	Pumpkinseed	44	5.50	1.41	2.71	5.94
RKB	Rock Bass	12	1.50	0.80	1.67	3.69
WAE	Walleye	1	0.13	0.20	0.40	0.71
Total Fish/Set:			50.25	* Quartiles for Number Per Set		

Net Catch Summary by Weight for TN

Standard 3/4-in mesh, double frame trap net sets

Abbr	Species	Total Weight (Pounds)	Pounds Per Set	Mean Weight	Quartiles for Lake Class 23*		
					25%	50%	75%
BLC	Black Crappie	7.18	0.90	0.33	0.25	0.38	0.51
BLG	Bluegill	63.85	7.98	0.21	0.11	0.15	0.21
HSF	Hybrid Sunfish	0.61	0.08	0.61	N/A	N/A	N/A
LMB	Largemouth Bass	5.38	0.67	1.34	0.22	0.40	0.71
NOP	Northern Pike	10.96	1.37	1.00	N/A	N/A	N/A
PMK	Pumpkinseed	2.30	0.29	0.05	0.12	0.18	0.23
RKB	Rock Bass	3.40	0.43	0.28	0.19	0.27	0.40
WAE	Walleye	0.58	0.07	0.58	0.72	1.45	2.80
Total Pounds Fish/Set:			11.78	* Quartiles for Mean Weight			

Electrofishing Catch Summary for EF

Standard electrofishing

Total run-time for all stations: 04:28:00
 Total on-time for all stations: 02:00:09
 First Sampling Date: 06/05/2013
 Last Sampling Date: 06/06/2013
 Daylight Sampling: No
 Target Species: All ages largemouth bass, All ages smallmouth bass

Abbr	Species	Summary By Numbers			Summary By Weight (pounds)			
		Total Number	Number per Hour Run-Time	On-Time	Total Weight	Lbs per Hour Run-Time	On-Time	Mean Weight
LMB	Largemouth Bass	90	20.15	44.94	133.31	29.84	66.57	1.48
SMB	Smallmouth Bass	15	3.36	7.49	36.23	8.11	18.09	2.42

STANDARD LAKE SURVEY REPORT
POPULATION ASSESSMENT DATED 07/15/2013 FOR DOW NUMBER 11-0200-00

DRAFT

Length Frequency Distribution For GN

Standard gill net sets

(Field work conducted between 07/15/2013 and 07/19/2013)

	<u>BLC</u>	<u>BLG</u>	<u>BRB</u>	<u>LMB</u>	<u>NOP</u>	<u>PMK</u>	<u>RKB</u>	<u>SMB</u>	<u>TLC</u>	<u>WAE</u>	<u>WTS</u>	<u>YEP</u>
< 3.00	-	-	-	-	-	-	-	-	-	-	-	-
3.00 - 3.49	-	4	-	-	-	6	-	-	-	-	-	-
3.50 - 3.99	-	31	-	-	-	13	-	-	-	-	-	-
4.00 - 4.49	1	8	-	-	-	9	-	-	-	-	-	-
4.50 - 4.99	4	2	-	-	-	6	-	-	-	-	-	-
5.00 - 5.49	7	5	-	-	-	3	1	-	-	-	-	-
5.50 - 5.99	3	18	-	-	-	1	2	-	-	-	-	2
6.00 - 6.49	-	11	-	1	-	1	6	-	-	-	-	2
6.50 - 6.99	-	6	-	-	-	-	1	-	-	-	-	4
7.00 - 7.49	-	1	-	2	-	-	-	1	-	-	-	3
7.50 - 7.99	1	-	-	4	-	-	1	3	-	-	-	4
8.00 - 8.49	-	1	-	1	-	-	4	1	-	-	-	-
8.50 - 8.99	-	1	-	-	-	-	4	-	-	1	-	-
9.00 - 9.49	1	-	-	-	-	-	5	-	-	1	-	-
9.50 - 9.99	-	-	-	-	-	-	11	-	-	1	-	-
10.00 - 10.49	-	-	-	1	-	-	7	-	-	-	-	-
10.50 - 10.99	1	-	-	1	1	-	2	-	-	2	-	2
11.00 - 11.49	-	-	-	1	-	-	-	-	-	2	-	1
11.50 - 11.99	-	-	-	-	-	-	-	1	-	7	-	-
12.00 - 12.99	-	-	1	2	1	-	-	-	-	9	-	-
13.00 - 13.99	1	-	-	3	3	-	-	1	-	-	-	-
14.00 - 14.99	-	-	3	5	5	-	-	1	-	-	-	-
15.00 - 15.99	-	-	-	3	23	-	-	3	-	1	1	-
16.00 - 16.99	-	-	-	-	29	-	-	-	-	1	-	-
17.00 - 17.99	-	-	-	-	32	-	-	2	-	1	-	-
18.00 - 18.99	-	-	-	-	18	-	-	-	-	2	1	-
19.00 - 19.99	-	-	-	1	21	-	-	-	3	5	2	-
20.00 - 20.99	-	-	-	-	9	-	-	-	3	1	1	-
21.00 - 21.99	-	-	-	-	5	-	-	-	1	3	1	-
22.00 - 22.99	-	-	-	-	5	-	-	-	-	-	-	-
23.00 - 23.99	-	-	-	-	4	-	-	-	-	3	-	-
24.00 - 24.99	-	-	-	-	1	-	-	-	-	-	-	-
25.00 - 25.99	-	-	-	-	2	-	-	-	-	-	-	-
26.00 - 26.99	-	-	-	-	2	-	-	-	-	-	-	-
27.00 - 27.99	-	-	-	-	1	-	-	-	-	-	-	-
28.00 - 28.99	-	-	-	-	-	-	-	-	-	-	-	-
29.00 - 29.99	-	-	-	-	3	-	-	-	-	-	-	-
30.00 - 30.99	-	-	-	-	1	-	-	-	-	-	-	-
31.00 - 31.99	-	-	-	-	-	-	-	-	-	-	-	-
32.00 - 32.99	-	-	-	-	2	-	-	-	-	-	-	-
33.00 - 33.99	-	-	-	-	-	-	-	-	-	-	-	-
34.00 - 34.99	-	-	-	-	-	-	-	-	-	-	-	-
35.00 - 35.99	-	-	-	-	-	-	-	-	-	-	-	-
= > 36.00	-	-	-	-	-	-	-	-	-	-	-	-
	<u>BLC</u>	<u>BLG</u>	<u>BRB</u>	<u>LMB</u>	<u>NOP</u>	<u>PMK</u>	<u>RKB</u>	<u>SMB</u>	<u>TLC</u>	<u>WAE</u>	<u>WTS</u>	<u>YEP</u>
Total	19	88	4	25	168	39	44	13	7	40	6	18
Min. Length	4.29	3.43	12.40	6.46	10.75	3.39	5.20	7.32	19.53	8.74	15.43	5.67
Max. Length	13.46	8.78	14.69	19.61	32.72	6.02	10.63	17.83	21.22	23.70	21.30	11.26
Mean Length	6.23	4.94	13.94	11.83	18.56	4.17	8.69	12.36	20.24	15.14	19.17	7.58
# Measured	19	88	4	25	168	39	44	13	7	40	6	18
No Lengths for	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

Length Frequency Distribution For TN

Standard 3/4-in mesh, double frame trap net sets

(Field work conducted between 07/15/2013 and 07/18/2013)

	<u>BLC</u>	<u>BLG</u>	<u>HSF</u>	<u>LMB</u>	<u>NOP</u>	<u>PMK</u>	<u>RKB</u>	<u>WAE</u>
< 3.00	-	3	-	-	-	-	-	-
3.00 - 3.49	-	20	-	-	-	30	-	-
3.50 - 3.99	1	30	-	-	-	5	1	-
4.00 - 4.49	-	10	-	-	-	4	1	-
4.50 - 4.99	1	4	-	-	-	-	-	-
5.00 - 5.49	1	8	-	-	-	2	-	-
5.50 - 5.99	-	28	-	-	-	1	2	-
6.00 - 6.49	-	55	-	-	-	-	1	-
6.50 - 6.99	-	54	-	1	-	-	-	-
7.00 - 7.49	-	42	-	-	-	2	2	-
7.50 - 7.99	3	30	-	1	-	-	1	-
8.00 - 8.49	5	20	-	-	-	-	2	-
8.50 - 8.99	7	3	1	-	-	-	2	-
9.00 - 9.49	2	-	-	-	-	-	-	-
9.50 - 9.99	-	-	-	-	-	-	-	-
10.00 - 10.49	1	-	-	-	-	-	-	-
10.50 - 10.99	-	-	-	-	-	-	-	-
11.00 - 11.49	1	-	-	-	-	-	-	-
11.50 - 11.99	-	-	-	-	-	-	-	-
12.00 - 12.99	-	-	-	-	-	-	-	1
13.00 - 13.99	-	-	-	-	1	-	-	-
14.00 - 14.99	-	-	-	1	-	-	-	-
15.00 - 15.99	-	-	-	-	2	-	-	-
16.00 - 16.99	-	-	-	-	5	-	-	-
17.00 - 17.99	-	-	-	-	1	-	-	-
18.00 - 18.99	-	-	-	1	1	-	-	-
19.00 - 19.99	-	-	-	-	-	-	-	-
20.00 - 20.99	-	-	-	-	1	-	-	-
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>BLC</u>	<u>BLG</u>	<u>HSF</u>	<u>LMB</u>	<u>NOP</u>	<u>PMK</u>	<u>RKB</u>	<u>WAE</u>
Total	22	307	1	4	11	44	12	1
Min. Length	3.90	2.95	8.70	6.61	13.82	3.07	3.86	12.24
Max. Length	11.10	8.82	8.70	18.15	20.39	7.09	8.86	12.24
Mean Length	8.15	6.14	8.70	11.76	16.78	3.77	6.79	12.24
# Measured	22	307	1	4	11	43	12	1
No Lengths for	0	0	0	0	0	1	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

Length Frequency Distribution For EF

Standard electrofishing

(Field work conducted between 06/05/2013 and 06/06/2013)

	<u>LMB</u>	<u>SMB</u>
< 3.00	-	-
3.00 - 3.49	-	-
3.50 - 3.99	-	-
4.00 - 4.49	-	-
4.50 - 4.99	-	-
5.00 - 5.49	1	-
5.50 - 5.99	1	-
6.00 - 6.49	-	-
6.50 - 6.99	4	-
7.00 - 7.49	-	-
7.50 - 7.99	2	-
8.00 - 8.49	1	-
8.50 - 8.99	3	-
9.00 - 9.49	1	-
9.50 - 9.99	2	1
10.00 - 10.49	-	1
10.50 - 10.99	1	-
11.00 - 11.49	-	-
11.50 - 11.99	1	-
12.00 - 12.99	4	-
13.00 - 13.99	23	-
14.00 - 14.99	19	1
15.00 - 15.99	15	3
16.00 - 16.99	7	2
17.00 - 17.99	4	5
18.00 - 18.99	1	2
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>LMB</u>	<u>SMB</u>
Total	90	15
Min. Length	5.35	9.65
Max. Length	18.58	18.50
Mean Length	13.45	15.98
# Measured	90	15
No Lengths for	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

Other Species

Gear Type (1)	Other Species (Gender) (2)	Total Num	Number Measured	Length (inches) Min - Mean - Max	Number Weighed	Weight (pounds) Min - Mean - Max
TN	Northern Crayfish	2	0	N/A	0	N/A
	Snapping Turtle	1	1	14.57	0	N/A

(1) **Key to sampling gear abbreviations:**

TN = Standard 3/4-in mesh, double frame trap net sets

(2) **Gender:** If identified and reported.

Approval Dates And Notices

Date Approved By Walker Area Fisheries Supervisor: _____

Date Approved By Northwest Region Fisheries Manager: _____

This Draft version of the Standard Lake Survey Report contains preliminary data (as of 07/22/2013), 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.

Standard Lake Survey Report revision: 04/05/2011-RJE. Data Date: 07/22/2013 at 7:57 am .

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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: Mule

Survey Type: Population Assessment

DOW Number: 11-0200-00

Survey ID Date: 07/15/2013

Survey Status: Field Work Complete

The following 18 (of 31) report components are not included in this report:

1. Water Level History*
2. Lake Inlets
3. Additional Inlet Information
4. Lake Outlets
5. Additional Outlet Information
6. Water Control Structure (Dam)
7. Surrounding Watershed Characteristics, Shoreline Characteristics, and Riparian Landscape Observations
8. Resorts And Campgrounds
9. Fish Spawning Conditions
10. Erosion And Pollution
11. Fish Diseases And Parasites
12. Aquatic Vegetation And Shoalwater Substrates
13. Laboratory Analysis Of Water Chemistry
14. Length At Capture With Last Incremental Length*
15. Back-Calculated Lengths
16. Age Class Frequency Distributions
17. Status Of Fishery And Field Notes
18. 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.

* Length At Capture With Last Incremental Length report: The following criteria must be met for a report to be generated:

1. The fish species must have an assigned body scale constant.
2. Fish must have an "official" age assigned.
3. Fish must have a digitized measurement marked for back calculation use.

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 07/22/2013 may not be reflected in the Distribution tables until after 12:30 pm on 07/22/2013.

The following survey component was flagged to be specifically excluded from this report: TN - 9