

Fisheries Management
Lake Name: Caribou
Survey Type: Standard Survey
DOW Number: 16-0360-00
Survey ID Date: 07/05/2017
Lake Identification

 Alternate Lake Name: N/A
 Primary Lake Class ID: 6

 DNR Sounding Map Number: B0075
 Alternate Lake Class ID: N/A

Lake Location

Primary County: Cook

Nearest Town: Lutsen

Legal Descriptions

 Lake Center: Township - 60N Range - 3W Section - 2
 PLS Section Lake Center: 6000302

All Legal Descriptions:

 Cook County: Township - 60N Range - 3W Sections - 1, 2, 11, 12
 Township - 61N Range - 3W Sections - 35, 36

Area Office

 Area Name: Grand Marais
 Region Name: Northeast

 ORG Code: F218
 Region Number: 2

Lake Access

(Information based on Population Assessment dated 07/14/2008)

<u>Station ID</u>	<u>Ownership</u>	<u>Public Use</u>	<u>Type</u>	<u>Location / Comments</u>
AC - 1	DNR	Open to Public use	Concrete	Off Cook County Road 4 (Caribou Trail); on SW shore of the western basin of the lake. Parking available for about six vehicles.

Lake Characteristics

Lake Area (planimetered acres):	728.00	GIS Shoreline Length (miles):	10.31
GIS Lake Area (acres):	720.62	Maximum Fetch (miles):	2.53
DOW Lake Area (acres):	714.00	Fetch Orientation (degrees):	360
Littoral Area (acres):	439.00	USGS Quad Map Number:	H27b
Area in MN (acres):	720.62	USGS Quad 24K GIS Index:	1453
Maximum Depth (feet):	30.0		
Mean Depth (feet):	N/A		

Watershed Characteristics
Major Watershed

 Name: Lake Superior - North
 Watershed Number: 1
 Watershed size (acres): 1,015,865

Minor Watershed

 Name: Caribou Cr
 Watershed Number: 61
 Watershed size (acres): 11,954

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Surveys and Investigations

Initial Survey: 07/19/1951.
Re-Survey: 07/20/1998, 08/19/1986, 07/25/1977.
Population Assessment: 07/21/2014, 08/01/2011, 07/14/2008, 07/18/2005, 07/21/2003, 07/17/1995, 07/13/1992, 08/07/1989, 08/02/1984, 07/25/1979, 07/17/1972, 07/20/1971, 08/06/1970, 08/28/1969, 07/16/1956.
Special Assessment: 06/16/2014, 06/16/2011, 06/13/2008, 06/20/2003, 06/17/2002, 07/01/1998, 08/19/1981.
Standard Survey: 07/05/2017.
Targeted Survey: 06/15/2017.

Current Water Level

Station ID	Date	Level	Reading (feet)	Reading Type
BM - 2	07/13/2017	High	-3.84	Above or below Benchmark
BM - 3	07/13/2017	High	-1.55	Above or below Benchmark

Notes: BM-1 is the top of 3X3-foot boulder a short way from the water's edge. This boulder was marked by a chiseled "X" filled with red paint, which was still visible in 2017, 41 years after being painted in 1976.

Benchmark and Gauge Descriptions / Locations

Station ID	Location Description
BM - 2	Chiseled X painted red (in 1976) on uppermost part of 5.5 X 4 X 2.5 ft gray- boulder 3 ft from waters edge, 20 yd north of dock at access (2017)
BM - 3	Top of triangular boulder, 4-ft long, on point in SE corner of lake (1998). UTM from 2011. (2017)

Water Level History - Readings

Station ID	Date	Level	Reading (feet)	Reading Type
BM - 1	08/18/1986	High	-6.60	Above or below Benchmark
	07/25/1977	Low	-7.75	Above or below Benchmark
	10/04/1976	Low	-7.60	Above or below Benchmark
BM - 2	07/13/2017	High	-3.84	Above or below Benchmark
	07/22/2014	Normal	-3.80	Above or below Benchmark
	08/01/2011	High	-4.00	Above or below Benchmark
	09/19/1991	N/A	-4.08	Above or below Benchmark
	08/18/1986	High	-3.80	Above or below Benchmark
	09/19/1977	High	-3.20	Above or below Benchmark
	07/25/1977	Low	-4.63	Above or below Benchmark
	10/04/1976	Low	-4.85	Above or below Benchmark
BM - 3	07/13/2017	High	-1.55	Above or below Benchmark
	07/21/2014	Normal	-1.65	Above or below Benchmark
	08/01/2011	High	-2.42	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	-7.75	07/25/1977	-6.60	08/18/1986	1.15	-7.32	Above or below Benchmark (3)
BM - 2	-4.85	10/04/1976	-3.20	09/19/1977	1.65	-4.03	Above or below Benchmark (8)
BM - 3	-2.42	08/01/2011	-1.55	07/13/2017	0.87	-1.87	Above or below Benchmark (3)

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Lake Inlets

(Field work conducted on 07/12/2017)

<u>Station ID</u>	<u>Name</u>	<u>Kittle Number</u>	<u>Origin and Cover Type (Primary and Secondary)</u>	<u>Surface Temp (°F)</u>
IN - 1	Unnamed	N/A	Bog Conifers (P) and Bog (S)	N/A
IN - 2	Unnamed	N/A	Other Hardwoods (P) and Conifers (S)	N/A
IN - 3	Murmur Creek	S-058-002	Lake Conifers (P) and Hardwoods (S)	N/A

Additional Inlet Information

<u>Station ID</u>	<u>Mean Width (feet)</u>	<u>Mean Depth (feet)</u>	<u>Discharge (CFS)</u>	<u>Mean Velocity (FPS)</u>	<u>Barriers to Fish Movement</u>	<u>Known Fish Spawning Runs</u>
IN - 1	3.20	0.40	0.3	0.28	Unknown	N/A
Inlet Origin: Wetlands SE of Sawmill Bay						
IN - 2	3.20	0.40	0.9	0.75	N/A	N/A
Inlet Origin: valley south of public access						
IN - 3	0.00	0.00	0.0	0.00	No; Navigable to Bigsby L.	NOP, WAE, WTS
Inlet Origin: Bigsby Lake						

Lake Outlets

(Field work conducted on 07/12/2017)

<u>Station ID</u>	<u>Name</u>	<u>Kittle Number</u>	<u>Tributary To</u>
OUT - 1	Caribou Creek	S-058-002	Poplar River

Additional Outlet Information

<u>Station ID</u>	<u>Mean Width (feet)</u>	<u>Mean Depth (feet)</u>	<u>Flow (CFS)</u>	<u>Mean Velocity (FPS)</u>	<u>Barriers to Fish Movement</u>	<u>Water Control Structure</u>
OUT - 1	10.20	2.40	33.04	1.5	Periodic; Beaver dams downstream	No barrier

Resorts and Campgrounds

Notes: The shoreline of Caribou Lake is heavily developed on the south and western shores. About 105 docks were visible in 2015 aerial photography. The north and eastern shores of Caribou Lake are mostly undeveloped with mature forest typical of the area. Northern white cedar, black spruce, white spruce, white birch, quaking aspen, Bebb willow, sugar, mountain and red maple are all common along the shoreline of the lake. No large wetlands adjoin the shoreline.

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Fish Spawning Conditions

Station ID	Species Name	Rating	Location / Comments
SP - 1	black crappie	Poor	Murmur Creek inlet from Bigsby Lake and shore line with gravel in both directions.
	bluegill	Poor	
	northern pike	Fair	
	walleye	Good	
	white sucker	Excellent	
	yellow perch	Good	
SP - 2	black crappie	Fair	Sawmill Bay.
	bluegill	Fair	
	northern pike	Good	
	smallmouth bass	Poor	
	walleye	None	
	yellow perch	Fair	
SP - 3	black crappie	Poor	South shore of North East arm. Scattered boulders in shallow water extending out 50 yards from shore.
	bluegill	Poor	
	northern pike	None	
	smallmouth bass	Good	
	walleye	Poor	
	yellow perch	Fair	
SP - 4	black crappie	Poor	Small enclosed bay with scattered vegetation in the NW corner of the lake near the lake outlet Caribou Creek.
	bluegill	Poor	
	northern pike	Poor	
	smallmouth bass	Poor	
	walleye	None	
	yellow perch	Fair	

Notes: A spawning site survey was conducted on 7-10-17. Four main sites were identified:

Site 1 was the Murmur Creek inlet from Bigsby Lake in the far NE end of the lake. The short section of creek into Bigsby Lake at the very least serves as a migration route for fish wishing to enter this warmer, more vegetated water through this connection for spawning or feeding. Spawning conditions for Walleye appeared to have been good with gravel and rubble in both directions from the inlet and the combination of current from Murmur Creek and wave action from westerly winds should keep water moving to oxygenate eggs. Conditions for Yellow Perch spawning were rated as good. Spawning conditions for Northern Pike, Bluegill and Black Crappie were all rated as "Poor" due to a lack of woody or weedy cover, however all three of these species could easily enter Bigsby Lake to find a more suitable environment.

Site 2 was Sawmill Bay in the far South East corner of Caribou Lake. This bay is protected from most wind directions and therefore should warm earlier than the main lake in spring. There are some fallen trees and sparse vegetation on the south end of the bay.

Site 3 This site was on the south shore of the North East Arm of the lake and offered shallow water with boulders and rubble extending 50 yards out from shore.

Site 4 was a small narrow bay in the North West corner of the lake. Caribou Creek flows out of the west end of this bay. This bay contains some vegetation.

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Fish Diseases and Parasites

<u>Species Examined</u>	<u>Number of Fish Examined</u>			<u>Examination Results</u>	
	<u>Internally</u>	<u>Externally</u>	<u>In Lab</u>	<u>Condition Observed</u>	<u>Number of Fish</u>
smallmouth bass	-	-	-	Neascus (Black Spot)	1

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Aquatic Vegetation and Shoalwater Substrates

Abundance Of Aquatic Plants (In Transects)

Number of Transects: 30
 Maximum Depth of Aquatic Vegetation Sample (Feet): 1.0
 Date(s) of Field Work: 07/03/2017 through 07/12/2017

<u>Common Name</u>	<u>Type</u>	<u>Frequency of Occurrence (%)</u>	<u>Abundance Rating</u>	<u>Mean Abundance (%)</u>
Alder Group	-	60	Rare	21.1
Blue Flag Iris	Terrestrial	27	Rare	6.7
Cattail Group	Emergent	3	Rare	2.8
Clasping-leaf Pondweed	Submergent	10	Rare	2.8
Horsetail Group	Emergent	7	Rare	3.3
Joe pye weed group	Terrestrial	10	Rare	2.8
Mint Group	Terrestrial	7	Rare	1.1
Needlerush Group	Emergent	3	Rare	1.7
Sedge Group	Terrestrial	7	Rare	1.1
Water (wild) Celery	Submergent	17	Rare	3.9
Water Horehound	Terrestrial	7	Rare	1.1
Waterweed Group	Submergent	10	Rare	1.7
White Waterlily Group	Floating-leaf	3	Rare	1.7
Willow Group	-	7	Rare	1.1
Wire-grass Sedge Group	-	7	Rare	1.1
Yellow Waterlily Group	Floating-leaf	3	Rare	1.7
common bladderwort	Submergent	7	Rare	1.1
coontail / Common hornwort	Submergent	3	Rare	0.6
sedge	Terrestrial	3	Rare	0.6
sweet gale	Terrestrial	17	Rare	5.0

(Floating-Leaf and wetland species may be tallied with emergent species)

Vegetation Notes: Aquatic vegetation was sparse during the 2017 survey, as has been the case during other surveys. Most of the 30 transects in the vegetation survey contained very little or no plants beyond shoreline vegetation. The most common aquatic plants were sedges and water celery. Large to moderate concentrations of aquatic plants were only found in a few widely spaced areas such as the far south end of Sawmill Bay and the south end of the lake in front of Cathedral of the Pines camp. There was a cattail bed in the bay opposite the public access. The outlet bay which narrows to become Caribou Creek contained some beds of white water lilies, yellow water lilies and some clasping leaf pondweed and elodea. More plant species may have been sampled if the vegetation survey had been conducted in August when plants would have been at or near their maximum size for the year.

Shoalwater Substrates (In Transects)

<u>Common Name</u>	<u>Frequency of Occurrence (%)</u>	<u>Abundance Rating</u>	<u>Mean Abundance (%)</u>
Boulder	83	Common	55.0
Clay	3	Rare	0.6
Detritus	20	Rare	6.7
Gravel	67	Rare	28.9
Ledge rock	3	Rare	0.6
Muck	3	Rare	1.7
Rubble	83	Common	50.6
Sand	30	Rare	16.1
Silt	53	Rare	20.0

Substrates Notes: Caribou Lake, like most other Cook County lakes, had substrates dominated by boulders, rubble and

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

gravel. There were a few areas of ledgerrock that fell outside of the transects but were observed during other parts of the survey. Most vegetation/substrate transects were dominated by courser hard material with some areas of silt and a few of detritus, however in all transects fine material (smaller than gravel) was never dominant.

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	07/05/2017	29.0	Surface	68.9	9.7
			2.0	68.9	9.7
			4.0	68.7	9.7
			6.0	68.4	9.7
			8.0	68.2	9.7
			10.0	67.6	9.7
			12.0	67.6	9.7
			14.0	67.3	9.6
			16.0	66.6	9.2
			18.0	64.8	8.4
			20.0	64.4	8.2
			22.0	63.5	7.2
			24.0	62.2	5.8
			26.0	61.9	5.3
			28.0	59.5	1.4

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	07/05/2017	Surface	9.0	N/A	N/A	Brown	Bog-stain
Color Description: Bog Stain							

Notes: Caribou Lake water quality was measured on 7-5-17 at station WQ1 which was the deepest location (29 feet) of the southern basin of the lake. The summer of 2017 was cool, especially the months of June and July, and it appeared that there was little stratification of the water column in this lake.

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Net Catch Summary by Numbers for GN

Standard gill net sets

Number of Sets: 9
 First Set Date: 07/05/2017
 Last Lift Date: 07/13/2017
 Target Species: N/A

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 6*		
				25%	50%	75%
BLG	Bluegill	2	0.22	N/A	N/A	N/A
NOP	Northern Pike	6	0.67	1.16	2.17	3.88
PMK	Pumpkinseed	1	0.11	N/A	N/A	N/A
SMB	Smallmouth Bass	6	0.67	0.17	0.33	0.67
WAE	Walleye	51	5.67	2.96	5.25	13.19
WTS	White Sucker	50	5.56	2.63	5.83	11.67
YEP	Yellow Perch	20	2.22	0.53	1.50	2.78
Total Fish/Set:			15.11	* 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 6*		
					25%	50%	75%
BLG	Bluegill	0.14	0.02	0.07	N/A	N/A	N/A
NOP	Northern Pike	14.40	1.60	2.40	1.48	1.75	2.41
PMK	Pumpkinseed	0.06	0.01	0.06	N/A	N/A	N/A
SMB	Smallmouth Bass	5.64	0.63	0.94	0.33	0.94	2.15
WAE	Walleye	51.70	5.74	1.01	0.68	0.91	1.30
WTS	White Sucker	78.17	8.69	1.56	1.65	2.13	2.44
YEP	Yellow Perch	2.05	0.23	0.10	0.12	0.16	0.27
Total Pounds Fish/Set:			16.91	* Quartiles for Mean Weight			

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Net Catch Summary by Numbers for TN

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

Number of Sets: 9
 First Set Date: 07/05/2017
 Last Lift Date: 07/13/2017
 Target Species: N/A

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 6*		
				25%	50%	75%
BLC	Black Crappie	2	0.22	0.05	0.67	0.80
BLG	Bluegill	11	1.22	1.44	4.50	8.50
NOP	Northern Pike	7	0.78	N/A	N/A	N/A
PMK	Pumpkinseed	1	0.11	N/A	0.50	N/A
SMB	Smallmouth Bass	5	0.56	0.37	0.50	1.90
WAE	Walleye	6	0.67	0.50	1.12	2.71
WTS	White Sucker	1	0.11	0.69	1.08	2.27
Total Fish/Set:			3.67	* 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 6*		
					25%	50%	75%
BLC	Black Crappie	1.45	0.16	0.72	0.30	0.88	0.92
BLG	Bluegill	3.91	0.43	0.36	0.11	0.25	0.40
NOP	Northern Pike	19.76	2.20	2.82	N/A	N/A	N/A
PMK	Pumpkinseed	0.04	0.00	0.04	N/A	0.37	N/A
SMB	Smallmouth Bass	5.92	0.66	1.18	0.18	0.30	0.60
WAE	Walleye	5.47	0.61	0.91	0.75	1.06	1.46
WTS	White Sucker	0.87	0.10	0.87	1.40	1.80	2.81
Total Pounds Fish/Set:			4.16	* Quartiles for Mean Weight			

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Natural Reproduction Catch Summary for TQU

1/4-in trap nets

Number of Sets: 9
First Set Date: 07/05/2017
Last Lift Date: 07/13/2017
Target Species: N/A

Abbr	Species	Age	Total Number	Number Measured	Mean Length (inches)	Length Range (inches)		CPUE (num/ set)
						Minimum	Maximum	
BLC	Black Crappie	All	1	1	14.88	14.88	14.88	0.11
CSH	Common Shiner	All	11	0	N/A	N/A	N/A	1.22
SMB	Smallmouth Bass	YOY	12	12	1.06	0.83	1.30	1.33
SMB	Smallmouth Bass	≥ 1	3	3	8.10	7.32	8.98	0.33
WAE	Walleye	YOY	23	21	2.12	1.73	2.40	2.56
WAE	Walleye	≥ 1	1	1	13.27	13.27	13.27	0.11
WTS	White Sucker	YOY	475	23	1.24	0.91	1.54	52.78
WTS	White Sucker	≥ 1	2	2	6.50	4.80	8.19	0.22
YEP	Yellow Perch	YOY	2,201	77	1.29	1.06	1.61	244.56
YEP	Yellow Perch	≥ 1	34	5	3.49	2.95	5.00	3.78

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Length Frequency Distribution for GN

Standard gill net sets

(Field work conducted between 07/05/2017 and 07/13/2017)

	<u>BLG</u>	<u>NOP</u>	<u>PMK</u>	<u>SMB</u>	<u>WAE</u>	<u>WTS</u>	<u>YEP</u>
< 3.00	-	-	-	-	-	-	-
3.00 - 3.49	-	-	-	-	-	-	-
3.50 - 3.99	1	-	-	-	-	-	-
4.00 - 4.49	-	-	1	-	-	-	-
4.50 - 4.99	-	-	-	-	-	-	-
5.00 - 5.49	1	-	-	-	-	-	4
5.50 - 5.99	-	-	-	1	-	-	10
6.00 - 6.49	-	-	-	1	-	-	2
6.50 - 6.99	-	-	-	1	-	-	2
7.00 - 7.49	-	-	-	-	1	-	-
7.50 - 7.99	-	-	-	-	-	-	1
8.00 - 8.49	-	-	-	-	1	1	1
8.50 - 8.99	-	-	-	-	8	1	-
9.00 - 9.49	-	-	-	-	4	1	-
9.50 - 9.99	-	-	-	-	2	2	-
10.00 - 10.49	-	-	-	-	2	1	-
10.50 - 10.99	-	-	-	-	1	4	-
11.00 - 11.49	-	-	-	-	-	-	-
11.50 - 11.99	-	-	-	-	1	-	-
12.00 - 12.99	-	-	-	-	3	6	-
13.00 - 13.99	-	-	-	-	3	9	-
14.00 - 14.99	-	-	-	2	8	3	-
15.00 - 15.99	-	-	-	1	5	4	-
16.00 - 16.99	-	1	-	-	4	1	-
17.00 - 17.99	-	-	-	-	1	7	-
18.00 - 18.99	-	-	-	-	2	5	-
19.00 - 19.99	-	1	-	-	1	1	-
20.00 - 20.99	-	-	-	-	3	1	-
21.00 - 21.99	-	-	-	-	-	3	-
22.00 - 22.99	-	2	-	-	-	-	-
23.00 - 23.99	-	-	-	-	1	-	-
24.00 - 24.99	-	-	-	-	-	-	-
25.00 - 25.99	-	1	-	-	-	-	-
26.00 - 26.99	-	1	-	-	-	-	-
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>NOP</u>	<u>PMK</u>	<u>SMB</u>	<u>WAE</u>	<u>WTS</u>	<u>YEP</u>
Total	2	6	1	6	51	50	20
Min. Length	3.54	16.26	4.33	5.79	7.28	8.31	5.00
Max. Length	5.35	26.46	4.33	15.28	23.70	21.46	8.19
Mean Length	4.45	22.04	4.33	10.52	13.43	14.74	6.03
# Measured	2	6	1	6	51	50	20
No Lengths for	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

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Length Frequency Distribution for TN

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

(Field work conducted between 07/05/2017 and 07/13/2017)

	<u>BLC</u>	<u>BLG</u>	<u>NOP</u>	<u>PMK</u>	<u>SMB</u>	<u>WAE</u>	<u>WTS</u>
< 3.00	-	-	-	-	-	-	-
3.00 - 3.49	-	-	-	-	-	-	-
3.50 - 3.99	-	-	-	1	-	-	-
4.00 - 4.49	-	1	-	-	-	-	-
4.50 - 4.99	-	2	-	-	-	-	-
5.00 - 5.49	-	2	-	-	-	-	-
5.50 - 5.99	-	-	-	-	-	-	-
6.00 - 6.49	-	-	-	-	-	-	-
6.50 - 6.99	-	1	-	-	-	-	-
7.00 - 7.49	-	-	-	-	-	-	-
7.50 - 7.99	-	-	-	-	1	-	-
8.00 - 8.49	-	-	-	-	-	-	-
8.50 - 8.99	-	3	-	-	-	-	-
9.00 - 9.49	-	-	-	-	-	1	-
9.50 - 9.99	-	2	-	-	-	-	-
10.00 - 10.49	-	-	-	-	-	1	-
10.50 - 10.99	1	-	-	-	-	-	-
11.00 - 11.49	1	-	-	-	-	-	-
11.50 - 11.99	-	-	-	-	-	-	-
12.00 - 12.99	-	-	-	-	2	-	1
13.00 - 13.99	-	-	-	-	-	2	-
14.00 - 14.99	-	-	-	-	1	1	-
15.00 - 15.99	-	-	-	-	1	-	-
16.00 - 16.99	-	-	1	-	-	-	-
17.00 - 17.99	-	-	-	-	-	-	-
18.00 - 18.99	-	-	2	-	-	-	-
19.00 - 19.99	-	-	1	-	-	1	-
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	-	-	1	-	-	-	-
31.00 - 31.99	-	-	-	-	-	-	-
32.00 - 32.99	-	-	1	-	-	-	-
33.00 - 33.99	-	-	-	-	-	-	-
34.00 - 34.99	-	-	-	-	-	-	-
35.00 - 35.99	-	-	-	-	-	-	-
= > 36.00	-	-	-	-	-	-	-

	<u>BLC</u>	<u>BLG</u>	<u>NOP</u>	<u>PMK</u>	<u>SMB</u>	<u>WAE</u>	<u>WTS</u>
Total	2	11	7	1	5	6	1
Min. Length	10.59	4.06	16.61	3.74	7.60	9.09	12.83
Max. Length	11.14	9.96	32.24	3.74	15.04	19.49	12.83
Mean Length	10.87	6.98	22.19	3.74	12.54	13.22	12.83
# Measured	2	11	7	1	5	6	1
No Lengths for	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

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Length Frequency Distribution for TQU

1/4-in trap nets

(Field work conducted between 07/05/2017 and 07/13/2017)

	<u>BLC</u>	<u>SMB</u>	<u>YSMB</u>	<u>WAE</u>	<u>YWAE</u>	<u>WTS</u>	<u>YWTS</u>	<u>YEP</u>	<u>YYEP</u>
< 0.50	-	-	-	-	-	-	-	-	-
0.50 - 0.99	-	-	3	-	-	-	7	-	-
1.00 - 1.49	-	-	9	-	-	-	451	-	2093
1.50 - 1.99	-	-	-	-	3	-	17	-	108
2.00 - 2.49	-	-	-	-	20	-	-	-	-
2.50 - 2.99	-	-	-	-	-	-	-	8	-
3.00 - 3.49	-	-	-	-	-	-	-	18	-
3.50 - 3.99	-	-	-	-	-	-	-	-	-
4.00 - 4.49	-	-	-	-	-	-	-	-	-
4.50 - 4.99	-	-	-	-	-	1	-	-	-
5.00 - 5.49	-	-	-	-	-	-	-	8	-
5.50 - 5.99	-	-	-	-	-	-	-	-	-
6.00 - 6.49	-	-	-	-	-	-	-	-	-
6.50 - 6.99	-	-	-	-	-	-	-	-	-
7.00 - 7.49	-	1	-	-	-	-	-	-	-
7.50 - 7.99	-	1	-	-	-	-	-	-	-
8.00 - 8.49	-	-	-	-	-	1	-	-	-
8.50 - 8.99	-	1	-	-	-	-	-	-	-
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 - 12.49	-	-	-	-	-	-	-	-	-
12.50 - 12.99	-	-	-	-	-	-	-	-	-
13.00 - 13.49	-	-	-	1	-	-	-	-	-
13.50 - 13.99	-	-	-	-	-	-	-	-	-
14.00 - 14.49	-	-	-	-	-	-	-	-	-
14.50 - 14.99	1	-	-	-	-	-	-	-	-
15.00 - 15.49	-	-	-	-	-	-	-	-	-
15.50 - 15.99	-	-	-	-	-	-	-	-	-
= > 16.00	-	-	-	-	-	-	-	-	-
	<u>BLC</u>	<u>SMB</u>	<u>YSMB</u>	<u>WAE</u>	<u>YWAE</u>	<u>WTS</u>	<u>YWTS</u>	<u>YEP</u>	<u>YYEP</u>
Total	1	3	12	1	23	2	475	34	2201
Min. Length	14.88	7.32	0.83	13.27	1.73	4.80	0.91	2.95	1.06
Max. Length	14.88	8.98	1.30	13.27	2.40	8.19	1.54	5.00	1.61
Mean Length	14.88	8.10	1.06	13.27	2.12	6.50	1.24	3.49	1.29
# Measured	1	3	12	1	21	2	23	5	77
No Lengths for	0	0	0	0	2	0	452	29	2124

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
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Length At Capture with Last Incremental Length

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

Species: Black Crappie
Body-Scale Constant: 0.79
Total Sample Size: 3

Length at Capture in 2017 for Each Age Class, with Incremental Lengths for 2017

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2010	7	1	10.59	10.59	10.59	N/A	0.23	N/A
2009	8	1	11.14	11.14	11.14	N/A	0.22	N/A
2008	9	0	-	-	-	-	-	-
2007	10	0	-	-	-	-	-	-
2006	11	1	14.88	14.88	14.88	N/A	0.22	N/A

Species: Bluegill
Body-Scale Constant: 0.79
Total Sample Size: 12

Length at Capture in 2017 for Each Age Class, with Incremental Lengths for 2017

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2015	2	6	4.93	5.35	4.06	0.191	1.14	0.088
2014	3	1	6.54	6.54	6.54	N/A	1.11	N/A
2013	4	0	-	-	-	-	-	-
2012	5	0	-	-	-	-	-	-
2011	6	4	9.01	9.65	8.54	0.232	0.30	0.047
2010	7	0	-	-	-	-	-	-
2009	8	0	-	-	-	-	-	-
2008	9	1	9.96	9.96	9.96	N/A	0.24	N/A

Species: Northern Pike
Body-Scale Constant: 2.09
Total Sample Size: 13

Length at Capture in 2017 for Each Age Class, with Incremental Lengths for 2017

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2014	3	2	16.44	16.61	16.26	0.177	3.38	0.032
2013	4	4	19.04	19.76	18.50	0.275	2.16	0.120
2012	5	1	20.04	20.04	20.04	N/A	0.98	N/A
2011	6	1	22.44	22.44	22.44	N/A	1.01	N/A
2010	7	1	22.24	22.24	22.24	N/A	0.55	N/A
2009	8	1	26.46	26.46	26.46	N/A	0.46	N/A
2008	9	1	32.24	32.24	32.24	N/A	0.56	N/A
2007	10	1	25.08	25.08	25.08	N/A	0.59	N/A
2006	11	1	30.08	30.08	30.08	N/A	0.59	N/A

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Length At Capture with Last Incremental Length (Continued)

Species: Pumpkinseed
Body-Scale Constant: 0.98
Total Sample Size: 2

Length at Capture in 2017 for Each Age Class, with Incremental Lengths for 2017

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2015	2	2	4.04	4.33	3.74	0.295	0.80	0.021

Species: Smallmouth Bass
Body-Scale Constant: 1.42
Total Sample Size: 14

Length at Capture in 2017 for Each Age Class, with Incremental Lengths for 2017

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2015	2	7	7.22	8.98	5.79	0.418	1.12	0.118
2014	3	0	-	-	-	-	-	-
2013	4	0	-	-	-	-	-	-
2012	5	2	12.66	12.80	12.52	0.138	0.52	0.031
2011	6	5	14.86	15.28	14.25	0.172	0.40	0.060

Species: Walleye
Body-Scale Constant: 1.10
Total Sample Size: 57

Length at Capture in 2017 for Each Age Class, with Incremental Lengths for 2017

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2016	1	1	7.28	7.28	7.28	N/A	2.29	N/A
2015	2	20	9.31	10.71	8.39	0.135	1.13	0.057
2014	3	7	12.92	13.94	11.89	0.239	0.89	0.062
2013	4	14	14.94	16.69	13.98	0.224	0.76	0.083
2012	5	7	15.74	17.09	13.94	0.455	0.44	0.050
2011	6	1	18.31	18.31	18.31	N/A	0.49	N/A
2010	7	1	19.49	19.49	19.49	N/A	0.27	N/A
2009	8	2	19.49	20.20	18.78	0.709	0.44	0.079
2008	9	0	-	-	-	-	-	-
2007	10	1	19.41	19.41	19.41	N/A	0.27	N/A
2006	11	3	21.61	23.70	20.47	1.045	0.38	0.029

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

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

Species: Black Crappie

Gear Type: Combined Gear Types (TN and TQU)

Class	Age	N	1	2	3	4	5	6	7	8	9	10	11
2010	7	1	1.41	2.80	5.77	7.86	8.97	9.76	10.36	-	-	-	-
			1.41	1.39	2.97	2.09	1.11	0.79	0.60	-	-	-	-
2009	8	1	1.44	2.22	4.01	6.00	9.04	9.81	10.39	10.92	-	-	-
			1.44	0.78	1.79	1.99	3.04	0.77	0.58	0.53	-	-	-
2006	11	1	2.20	3.99	6.06	8.20	10.82	12.30	13.23	13.80	14.15	14.46	14.66
			2.20	1.79	2.07	2.14	2.62	1.48	0.93	0.57	0.35	0.31	0.20
Mean Length			1.68	3.00	5.28	7.35	9.61	10.62	11.33	12.36	14.15	14.46	14.66
Mean Increment			1.68	1.32	2.28	2.07	2.26	1.01	0.70	0.55	0.35	0.31	0.20
Total N			3	3	3	3	3	3	3	2	1	1	1

Species: Bluegill

Gear Type: Combined Gear Types (GN and TN)

Class	Age	N	1	2	3	4	5	6	7	8	9
2015	2	6	1.49	3.79	-	-	-	-	-	-	-
			1.49	2.31	-	-	-	-	-	-	-
2014	3	1	1.26	2.79	5.42	-	-	-	-	-	-
			1.26	1.53	2.63	-	-	-	-	-	-
2011	6	4	1.40	2.68	4.79	6.70	7.97	8.71	-	-	-
			1.40	1.27	2.11	1.92	1.27	0.74	-	-	-
2008	9	1	1.39	2.47	4.16	5.29	6.48	7.96	8.77	9.37	9.72
			1.39	1.08	1.69	1.13	1.19	1.48	0.81	0.60	0.35
Mean Length			1.43	3.23	4.79	6.42	7.67	8.56	8.77	9.37	9.72
Mean Increment			1.43	1.79	2.13	1.76	1.25	0.89	0.81	0.60	0.35
Total N			12	12	6	5	5	5	1	1	1

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

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

Species: Northern Pike

Gear Type: Combined Gear Types (GN and TN)

Class	Age	N	1	2	3	4	5	6	7	8	9	10	11
2014	3	2	5.15	9.79	13.06	-	-	-	-	-	-	-	-
			5.15	4.64	3.27	-	-	-	-	-	-	-	-
2013	4	4	5.12	9.67	13.52	16.87	-	-	-	-	-	-	-
			5.12	4.55	3.85	3.36	-	-	-	-	-	-	-
2012	5	1	4.77	9.08	13.47	16.11	19.06	-	-	-	-	-	-
			4.77	4.31	4.39	2.64	2.95	-	-	-	-	-	-
2011	6	1	5.41	8.46	12.13	17.46	20.16	21.43	-	-	-	-	-
			5.41	3.05	3.67	5.33	2.70	1.27	-	-	-	-	-
2010	7	1	5.78	9.47	13.62	17.23	19.01	19.96	21.69	-	-	-	-
			5.78	3.69	4.15	3.61	1.78	0.95	1.73	-	-	-	-
2009	8	1	4.54	8.59	12.27	17.19	19.60	22.26	25.02	25.99	-	-	-
			4.54	4.05	3.68	4.92	2.41	2.66	2.76	0.97	-	-	-
2008	9	1	5.82	11.23	16.74	21.99	25.39	27.39	29.34	30.52	31.68	-	-
			5.82	5.41	5.51	5.25	3.40	2.00	1.95	1.18	1.16	-	-
2007	10	1	5.48	8.63	11.25	14.22	17.11	20.18	22.24	22.97	23.80	24.48	-
			5.48	3.15	2.62	2.97	2.89	3.07	2.06	0.73	0.83	0.68	-
2006	11	1	5.41	9.81	16.73	19.14	22.09	25.25	26.27	27.13	27.67	28.63	29.49
			5.41	4.40	6.92	2.41	2.95	3.16	1.02	0.86	0.54	0.96	0.86
Mean Length			5.23	9.50	13.57	17.35	20.35	22.75	24.91	26.65	27.72	26.56	29.49
Mean Increment			5.23	4.27	4.07	3.69	2.73	2.19	1.90	0.94	0.84	0.82	0.86
Total N			13	13	13	11	7	6	5	4	3	2	1

Species: Pumpkinseed

Gear Type: Combined Gear Types (GN and TN)

Class	Age	N	1	2
2015	2	2	1.64	3.24
			1.64	1.60
Mean Length			1.64	3.24
Mean Increment			1.64	1.60
Total N			2	2

Species: Smallmouth Bass

Gear Type: Combined Gear Types (GN, TN, TQU)

Class	Age	N	1	2	3	4	5	6
2015	2	7	3.20	6.09	-	-	-	-
			3.20	2.89	-	-	-	-
2012	5	2	2.92	4.30	6.42	8.93	12.14	-
			2.92	1.38	2.12	2.51	3.21	-
2011	6	5	2.85	5.21	7.47	10.09	12.60	14.46
			2.85	2.36	2.26	2.62	2.51	1.86
Mean Length			3.04	5.52	7.17	9.76	12.47	14.46
Mean Increment			3.04	2.49	2.22	2.59	2.71	1.86
Total N			14	14	7	7	7	5

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

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

Species: Walleye

Gear Type: Combined Gear Types (GN and TN)

Class	Age	N	1	2	3	4	5	6	7	8	9	10	11
2016	1	1	4.99	-	-	-	-	-	-	-	-	-	-
			4.99	-	-	-	-	-	-	-	-	-	-
2015	2	20	4.59	8.18	-	-	-	-	-	-	-	-	-
			4.59	3.59	-	-	-	-	-	-	-	-	-
2014	3	7	4.38	8.83	12.03	-	-	-	-	-	-	-	-
			4.38	4.45	3.21	-	-	-	-	-	-	-	-
2013	4	14	4.37	7.88	11.54	14.18	-	-	-	-	-	-	-
			4.37	3.51	3.66	2.64	-	-	-	-	-	-	-
2012	5	7	3.68	7.60	10.55	13.31	15.30	-	-	-	-	-	-
			3.68	3.92	2.95	2.76	1.98	-	-	-	-	-	-
2011	6	1	5.16	8.68	12.84	15.42	17.25	17.81	-	-	-	-	-
			5.16	3.52	4.16	2.58	1.83	0.56	-	-	-	-	-
2010	7	1	4.54	7.66	10.08	13.71	15.94	17.92	19.22	-	-	-	-
			4.54	3.12	2.42	3.63	2.23	1.98	1.30	-	-	-	-
2009	8	2	2.77	5.71	9.00	12.65	15.38	17.08	18.22	19.05	-	-	-
			2.77	2.94	3.29	3.66	2.73	1.70	1.15	0.83	-	-	-
2007	10	1	3.42	6.50	9.55	12.38	14.92	16.88	17.90	18.47	18.84	19.14	-
			3.42	3.08	3.05	2.83	2.54	1.96	1.02	0.57	0.37	0.30	-
2006	11	3	3.48	6.56	10.03	13.06	14.97	17.30	18.36	19.46	20.19	20.75	21.23
			3.48	3.08	3.46	3.03	1.92	2.33	1.06	1.10	0.73	0.56	0.48
Mean Length			4.27	7.91	11.12	13.71	15.39	17.33	18.38	19.16	19.86	20.35	21.23
Mean Increment			4.27	3.65	3.36	2.82	2.11	1.86	1.11	0.92	0.64	0.50	0.48
Total N			57	56	36	29	15	8	7	6	4	4	3

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

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	'17 0	'16 1	'15 2	'14 3	'13 4	'12 5	'11 6	'10 7	'09 8	'08 9	'07 10	'06 11	'05 12	'04 13	'03 14	<'03 15+	
Black Crappie																				
TN	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	
TQU	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
Totals:	3	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	
Bluegill																				
GN	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
TN	11	0	0	0	0	5	1	0	0	4	0	0	1	0	0	0	0	0	0	
Totals:	12	0	1	0	0	6	1	0	0	4	0	0	1	0	0	0	0	0	0	
Northern Pike																				
GN	6	0	0	0	0	0	1	1	0	1	1	1	0	1	0	0	0	0	0	
TN	7	0	0	0	0	0	1	3	1	0	0	0	1	0	1	0	0	0	0	
Totals:	13	0	0	0	0	0	2	4	1	1	1	1	1	1	1	1	0	0	0	
Pumpkinseed																				
GN	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
TN	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals:	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	
Smallmouth Bass																				
GN	6	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	
TN	5	0	0	0	0	1	0	0	2	2	0	0	0	0	0	0	0	0	0	
TQU	3	0	12	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals:	14	0	12	0	0	7	0	0	2	5	0	0	0	0	0	0	0	0	0	
Walleye																				
GN	51	0	0	0	1	18	5	13	7	1	0	2	0	1	3	0	0	0	0	
TN	6	0	0	0	0	2	2	1	0	0	1	0	0	0	0	0	0	0	0	
Totals:	57	0	0	0	1	20	7	14	7	1	1	2	0	1	3	0	0	0	0	

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

TN = Standard 3/4-in mesh, double frame trap net sets
TQU = 1/4-in 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.

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Field Notes - General Field

In late April, crews from Fond du Lac and the 1854 Treaty Authority assessed the adult Walleye population by spring night electrofishing. All Walleye taken by electrofishing on Caribou Lake were marked with green, unnumbered Floy tags. Five-hundred twenty-two fish, all over 10 inches in length, were marked with green tags.

Walleye collected in the July 2017 survey were examined for the presence of tags from spring sampling. The following tagged fish were taken:

Station - Length (mm) - Length (in) - Serial Number

GN-8 - 388 - 15.3 - 4
GN-8 - 380 - 15.0 - 5
GN-8 - 426 - 16.8 - 8
GN-8 - 477 - 18.8 - 9
GN-6 - 434 - 17.1 - 11
GN-7 - 385 - 15.2 - 28
GN-2 - 493 - 19.4 - 59
GN-1 - 382 - 15.0 - 91

No green-tagged Walleye were taken in trap nets used in this survey.

Based on incremental growth observed among young Walleye collected in the 2017 assessment (1.13 in for age-2 fish), only Walleye 11 inches or greater in length when taken in July 2017 were likely to have been among the pool of fish 10 inches or larger marked during spring electrofishing. Therefore, only the gill and trap net catch and recapture of Walleye 11 inches or larger was used in the calculation of the spring 2017 population estimate.

Based on July gill net recaptures of Walleye marked in the spring, the modified Chapman-Peterson estimate for the number of 10-inch or larger Walleye present in Caribou Lake in late April 2017 was:

2,150 fish (95% confidence at 949 - 3,351 fish; plus or minus 1,201)

Where: M = 522; C = 36; R = 8; C included 32 fish from gill nets and four from trap nets.

Results of spring electrofishing by the 1854 Treaty Authority and the Fond du Lac band used in this report were taken from a report containing summarized catch data for 2017, provided by Brian Borkholder, Fond du Lac (Spring Adult and Fall Juvenile Walleye population Surveys within the 1854 Ceded Territory of Minnesota, 2017).

Recent stocking in Caribou Lake:

Year - Species - Strain - Size - Number - Pounds

2010-2017 - no stocking
2009 - WAE - PR - Fry - 440,000 - 4.4
2008 - no stocking
2007 - WAE - PR - Fry - 440,000 - 4.4
2006 - no stocking
2005 - no stocking
2004 - WAE - SLR - Fry - 440,000 - 4.4

No fish were stocked between 1990 and 2004. Walleye (fry or fingerlings) were stocked several times between 1978 and 1990.

Discussion

Caribou Lake is one of the most heavily developed, and heavily used, lakes in Cook County. It is managed for Walleye and Northern Pike, although it also supports a Smallmouth Bass fishery. The management goal for Walleye in this lake

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Discussion (Continued)

is based on its historic ability to support a dense population of small fish; the catch goal was set at 13.0 fish/gill net set, with no size goal established, in the current (2010) lake management plan. The Northern Pike goal was less ambitious, set at 1.2 fish/gill net set, with some fish over 25 inches present.

The 2017 Walleye gill net catch exceeded the median for the lake class, but fell well short of the goal for this lake. This was the fourth consecutive survey in which the Walleye gill net catch declined, and the 2017 catch was the second lowest ever seen in this lake (Table 1). Walleye taken in gill nets in 2017 ranged in length from 7.3 to 23.7 inches, with most in the eight to nine and 12 to 16-inch length ranges. Ten year classes contributed to the gill and trap net catch, with the strongest apparently produced in 2015 and 2013. Years when fry were most recently stocked (2004, 2007, and 2009) contributed three of the 57 fish taken; the rest were produced naturally. Sampling with 0.25-in-mesh trap nets indicated good numbers of young-of-year (YOY) Walleye were produced in 2017. The catch (2.56 YOY/set) was well above the median of 1.25 YOY/set for Class 6 lakes in this area. Walleye growth had been somewhat faster than average for this area; the mean length at last annulus formation for age-4 fish was 14.2 in, compared to an area mean of 12.7 in for Class 6 lakes (data through 2014).

Four estimates of spring Walleye population sizes have been obtained from Caribou Lake. The 2017 spring Walleye population estimate (2,150 fish 10 inches or longer) appeared to have been lower than estimates obtained in 2005 (4,248 fish 10 inches or longer) and 2008 (4,048 fish 10 inches or longer), but about the same as the estimate obtained for 2014 (2,013 fish 11 inches or longer). Those differences are reflected in gill net catches for the same years. Together, similar trends in population estimates and gill net catches suggest that a real decline in Walleye abundance has occurred in Caribou Lake since 2005.

The 2017 Northern Pike gill net catch failed to meet the long term catch goal for the species in this lake for the first time since 1998; however, the size goal was met by the capture of fish as large as 32.2 inches in 0.75-in-mesh trap nets (Table 1). Nine year classes, none of which appeared to have been exceptionally strong, contributed to the 2017 catch. Growth of young Northern Pike appeared to have been slow; fish reached a mean length of 13.6 inches at age-3 annulus formation (across all year classes), compared to an area average of 18.2 inches for Class 6 lakes (data through 2014).

Smallmouth Bass were first observed in Caribou Lake in 1981, and their abundance may have peaked in late 1990s or early 2000s. The 2017 gill net catch equalled the third quartile for the lake class, but was lower than peak catches seen in Caribou Lake in 1999-2005. Only four year classes (including YOY fish) contributed to catches in all sampling gears in 2017. Growth of young Smallmouth Bass had been faster than average; age-2 fish reached a mean length of 6.1 inches at last annulus formation, compared to an area mean of 5.5 inches in Class 6 lakes (data through 2014).

Caribou is one of a very few lakes in this area to support a few Black Crappie. Catches have never been high in any assessment, and the 2017 catch, while very low, was typical for this lake (Table 2). The 2017 Bluegill trap net catch was the second highest observed to date in this lake, and some larger fish were found (Table 2). Bluegill were first collected in 0.75-in-mesh trap nets in this lake in 2008, and catches had increased in each subsequent assessment, before dropping slightly in 2017. Bluegill collected in 2017 ranged in length from 4.1 to 10.0 inches, with four year classes contributing to the catch. Growth of young Bluegill had been somewhat faster than average for the area; age-2 fish reached a mean length of 3.8 inches at last annulus formation, compared to an area mean of 3.3 inches (all lake classes, data through 2014).

Yellow Perch are probably the primary forage for Walleye and Northern Pike in this lake, but have rarely been present in sizes large enough to have been of interest to anglers. The 2017 gill net catch, while improved compared to 2011, remained low for this lake historically (Table 1). Although no Yellow Perch were aged, length frequency distributions suggested the total catch may have consisted of just three or four year classes. The catch of YOY Yellow Perch in 0.25-in-mesh trap nets (244.6 YOY/set) fell within the first-third quartile range (23.0 - 298.6 YOY/set) for Class 6 lakes in this area, but remained well below levels typically observed in this lake prior to Smallmouth Bass becoming established.

Caribou Lake has at times been the subject of White Sucker removal efforts, due to their perceived effect on Walleye when abundant. White Sucker were not particularly abundant in 2017. The gill net catch was below the median for the lake class, and was not high for this lake historically, where catches prior to 1992 usually exceeded 10 fish/set and often exceeded 20.

LAKE SURVEY REPORT
STANDARD SURVEY DATED 07/05/2017 FOR DOW NUMBER 16-0360-00

Status Of The Fishery

Caribou Lake is one of the most heavily developed, and heavily used, lakes in Cook County. It is managed for Walleye and Northern Pike, although it also supports a Smallmouth Bass fishery. The management goal for Walleye in this lake is based on its historic ability to support a dense population of small fish; the catch goal was set at 13.0 fish/gill net set, with no size goal established, in the current (2010) lake management plan. The Northern Pike goal was less ambitious, set at 1.2 fish/gill net set, with some fish over 25 inches present.

Walleye were fairly abundant in 2017, and the average size of fish taken in gill net sets was the highest seen in this lake since 1977. Nevertheless, the 2017 Walleye gill net catch fell well short of the goal for the species in this lake. This was the fourth consecutive survey in which the Walleye gill net catch declined, and the 2017 catch was the second lowest ever seen in this lake. Walleye taken in gill nets in 2017 ranged in length from 7.3 to 23.7 inches, with most in the eight to nine and 12 to 16-inch length ranges. Ten year classes contributed to the gill and trap net catch, with the strongest apparently produced in 2015 and 2013. Years when Walleye were most recently stocked (2004, 2007, and 2009) contributed just three of the 57 fish taken; the rest were produced naturally. Sampling with 0.25-in-mesh trap nets indicated good numbers of young-of-year (YOY) Walleye were produced in 2017. The YOY catch was well above average for a lake of this type in the Grand Marais area. Walleye growth had been somewhat faster than average for this area; fish reached a mean length of 14.2 inches at the end of their fourth year, compared to an area average of 12.7 inches.

The adult Walleye population in Caribou Lake was assessed by electrofishing done by the Fond du Lac band and the 1854 Treaty Authority in late April 2017. As part of that sampling, 522 Walleye 10-inches or greater in length were given green tags and released. Recaptures of some of those fish in our July survey allowed us to estimate that a total of 2,150 (plus or minus 1,201) Walleye 10 inches or larger were present in Caribou Lake in the spring of 2017.

Northern Pike numbers appeared to have been low in Caribou Lake in 2017, but some larger fish were present. The 2017 gill net catch failed to meet the long term catch goal for the species in this lake for the first time since 1998; however, the size goal was met by the capture of fish as large as 32.2 inches in 0.75-in-mesh trap nets. Nine year classes, none of which appeared to have been exceptionally strong, contributed to the 2017 catch. Growth of young Northern Pike appeared to have been slow; fish reached a mean length of just 13.6 inches by the end of their third year, compared to an area average of 18.2 inches.

Smallmouth Bass were first observed in Caribou Lake in 1981. Their abundance may have peaked in late 1990s or early 2000s; however, good numbers were still present in 2017. The 2017 gill net catch equalled the top of the normal range for a lake of this type. Only four year classes (including YOY fish) contributed to catches in all sampling gears in 2017. Growth of young Smallmouth Bass had been faster than average; two-year-old fish reached an average length of 6.1 inches at the end of their second year, compared to an area mean of 5.5 inches.

Unlike most lakes in Cook County, Caribou Lake offers some panfish-fishing opportunity. It is one of a very few lakes in this area to support a few Black Crappie. Catches have never been high in any assessment, and the 2017 catch, while very low, was typical for this lake. Bluegill are present in fair numbers; the 2017 trap net catch was the second highest observed to date in this lake, and some larger fish were found. Bluegill were first collected in 0.75-in-mesh trap nets in this lake in 2008, and catches had increased in each subsequent assessment, before dropping slightly in 2017. Bluegill collected in 2017 ranged in length from 4.1 to 10.0 inches, with four year classes contributing to the catch.

Yellow Perch are probably the primary forage for Walleye and Northern Pike in this lake, but have rarely been present in sizes large enough to have been of interest to anglers. The 2017 gill net catch, while improved compared to 2011, remained low for this lake historically. The catch of YOY Yellow Perch in 0.25-in-mesh trap nets (244.6 YOY/set) fell within the normal range (23.0 - 298.6 YOY/set) for lakes of this type in the area, but remained well below levels typically observed in this lake prior to Smallmouth Bass becoming established.

Caribou Lake has at times been the subject of White Sucker removal efforts, due to their perceived effect on Walleye when abundant. White Sucker were not particularly abundant in 2017. The gill net catch was about average for this type of lake, and was not high for this lake historically, where catches prior to 1992 usually exceeded 10 fish/set and often exceeded 20.

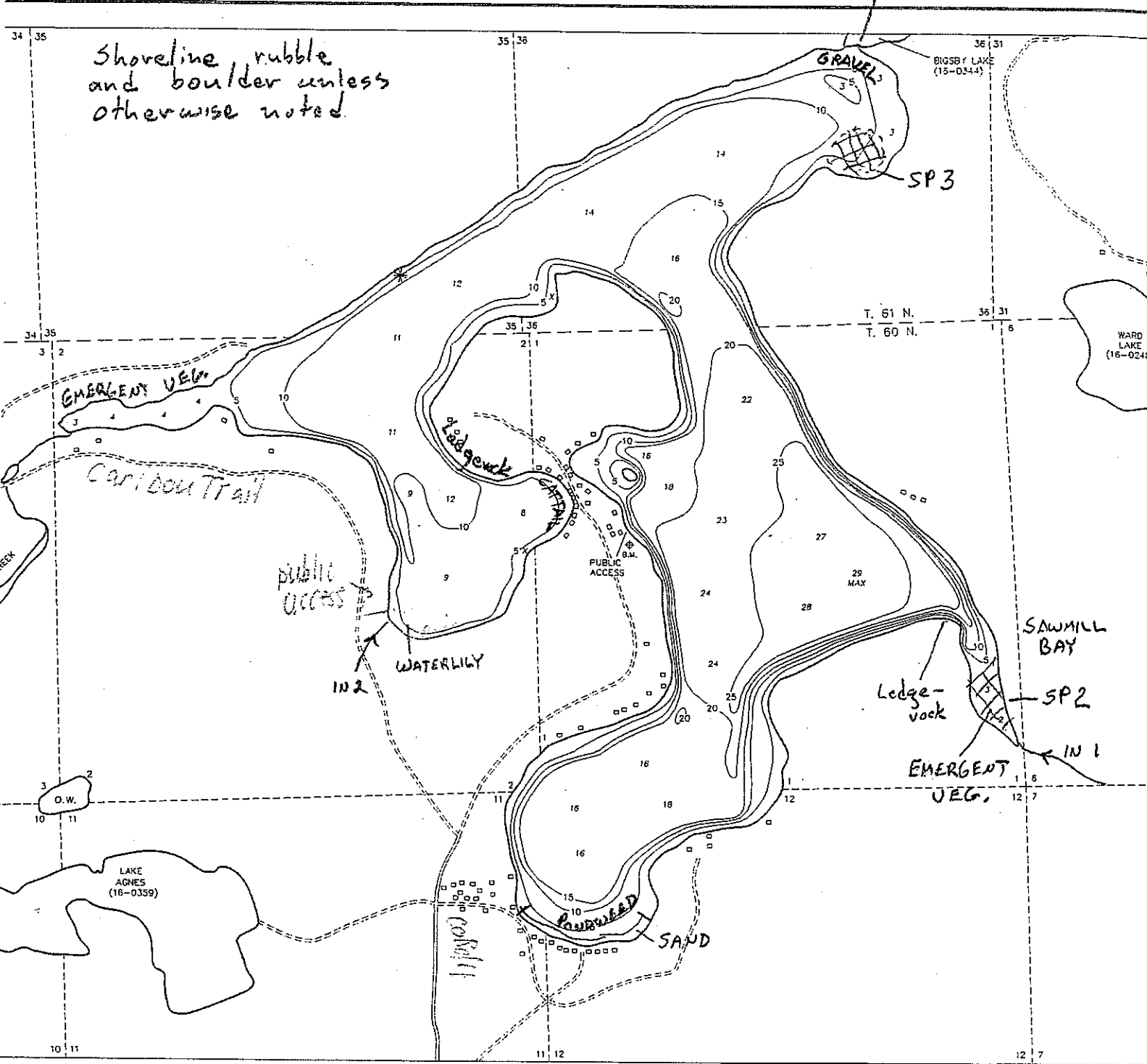
Table 1. Catch (fish/set) and mean weight (lb/fish) of Northern Pike, Walleye, Smallmouth Bass, and Yellow Perch in gill nets set in Caribou Lake (16-0360), Cook County, Minnesota, 1951-2017. Medians and quartiles from statewide data through 1995.

Date	Number of sets	Northern Pike		Walleye		Smallmouth Bass		Yellow Perch	
		Catch	Weight	Catch	Weight	Catch	Weight	Catch	Weight
7/19/1951	5	0.20		69.20	0.74			5.20	0.19
7/16/1956	12	0.08		21.08	0.84			0.33	0.18
7/22/1957	8	0.13		29.38	0.84			1.13	0.34
8/28/1969	4	1.25	1.20	13.50	0.94			2.50	0.50
7/21/1971	3	2.67	1.91	30.67	0.98			2.33	0.31
7/18/1972	3	4.00	1.66	42.67	0.98			11.33	0.25
8/7/1973	3			10.00	0.99			1.00	0.23
7/26/1977	3	3.00	2.52	13.33	1.32			11.67	0.85
7/25/1979	2	2.50	2.80	21.00	0.69			7.00	0.43
8/20/1981	3	1.00	2.23	11.33	0.68	0.67		2.67	0.16
8/3/1984	3	1.33	3.69	13.00	0.65			2.33	0.17
8/20/1986	3	0.67		14.33	0.70	0.33		4.00	0.38
8/8/1989	3	2.67	1.48	22.33	0.38	0.67		3.00	0.28
7/15/1992	9	2.22	2.25	9.44	0.65	0.44	1.02	7.00	0.50
7/17/1995	9	0.78	1.13	7.11	0.75	0.33	0.84	3.00	0.22
7/20/1998	9	0.22		19.67	0.65	2.67	1.14	4.44	0.32
7/21/2003	9	2.11	2.20	5.00	0.77	2.11	1.66	2.89	0.11
7/18/2005	9	1.67	2.48	13.56	0.69	1.56		10.67	0.13
7/14/2008	8	2.13	2.02	8.50	0.84	0.13		3.38	0.19
8/1/2011	9	1.78	1.48	7.44	0.54	0.22		0.22	
7/21/2014	9	1.44	1.91	6.67	0.77			2.44	0.08
7/5/2017	9	0.67	2.40	5.67	1.01	0.67	0.94	2.20	0.10
Class 6									
Median		2.17	1.75	5.25	0.91	0.33	0.94	1.50	0.16
1st quartile		1.16	1.48	2.96	0.68	0.17	0.33	0.53	0.12
3rd quartile		3.88	2.41	13.19	1.30	0.67	2.15	2.78	0.27

Table 2. Catch (fish/set) and mean weight (lb/fish) of White Sucker, Smallmouth Bass, Black Crappie, and Bluegill in 0.75-in-mesh trap nets set in Caribou Lake (16-0360), Cook County, Minnesota, 1956-2017. Medians and quartiles from statewide data through 1995.

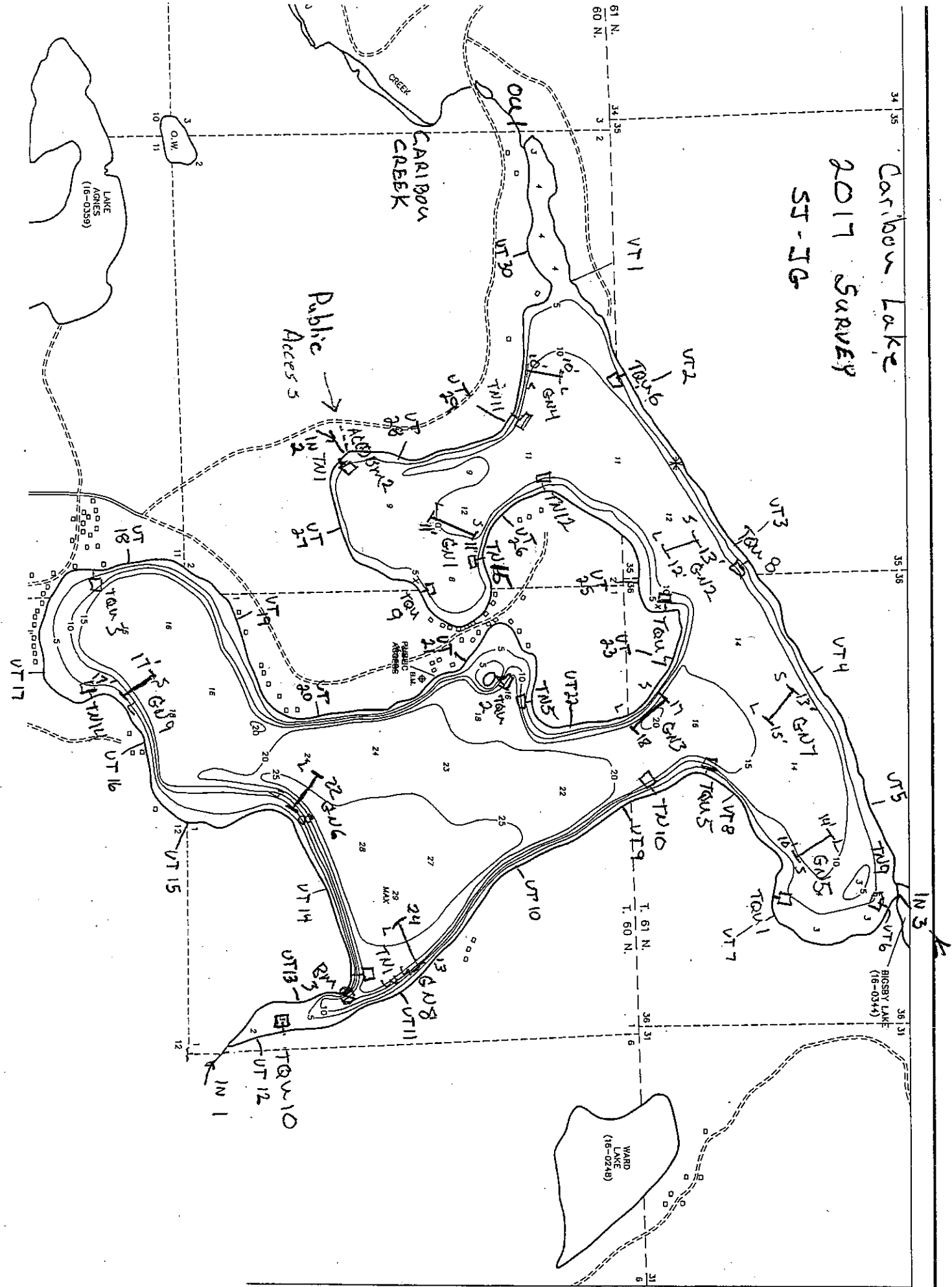
Date	Number of sets	White Sucker		Smallmouth Bass		Black Crappie		Bluegill		
		Catch	Weight	Catch	Weight	Catch	Weight	Catch	Weight	
7/16/1956	8	2.25	3.22			0.13				
7/27/1957	8	0.75	2.70							
8/28/1969	4	1.50	2.65							
7/21/1971	4	0.50				0.25				
7/18/1972	4	1.25	2.04			0.25				
8/7/1973	4	10.25	2.14							
7/26/1977	3	2.00	2.37							
8/20/1981	4	1.50	2.23							
8/3/1984	4	1.25	1.40	2.50	0.10					
8/20/1986	4	2.75	3.05	0.25						
8/8/1989	5	0.60	2.03	1.80	0.37					
7/15/1992	15	0.20	2.00	1.67	0.32					
7/17/1995	9	1.11	2.93	0.44	0.38	0.11				
7/20/1998	9	1.00	3.53	0.11		0.22				
7/21/2003	9	0.33	3.91	0.44	0.56					
7/18/2005	9	0.11		0.22						
7/14/2008	9			0.11		0.78	1.01	0.44	0.17	
8/1/2011	9			0.11		0.11		0.78	0.39	
7/21/2014	9	0.22		0.44	0.33	0.11		2.00	0.21	
7/5/2017	9	0.11		0.56	1.18	0.22		1.22	0.36	
Class 6										
Median		1.08	1.80	0.50	0.30	0.67	0.88	4.50	0.25	
1st quartile		0.69	1.40	0.37	0.18	0.05	0.30	1.44	0.11	
3rd quartile		2.27	2.81	1.90	0.60	0.80	0.92	8.50	0.40	

CARIBOU LAKE
 16-0360
 HABITAT SURVEY
 7/3/2017



CARIBOU LAKE

Caribou Lake 2017 Survey ST-JG



Approval Dates And Notices

Date Approved By Grand Marais Area Fisheries Supervisor: 03/20/2018

Date Approved By Northeast Region Fisheries Manager: _____



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