Minnesota Department of Natural Resources

Fisheries Management

STANDARD LAKE SURVEY REPORT

Lake Name: Colby | **Survey Type: Population Assessment**

DOW Number: 69-0249-00 | **Survey ID Date: 07/12/2010**

Lake Identification

Alternate Lake Name: Partridge (North)
Primary Lake Class ID: 11
DNR Sounding Map Number: C2566
Alternate Lake Class ID: N/A

Lake Location

Primary County: St. Louis
Nearest Town: Hoyt Lakes

Legal Descriptions

Lake Center: Township - 58N Range - 14W Section - 8
PLS Section Lake Center: 5801408

All Legal Descriptions:

St. Louis County: Township - 58N Range - 14W Sections - 4, 5, 6, 7, 8, 9

Area Office

Area Name: Tower
Region Name: Northeast
ORG Code: F214
Region Number: 2

Lake Access

(Information based on Population Assessment dated 07/10/1995)

Station ID	Ownership	Public Use	Type	Location / Comments

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

Lake Characteristics

Lake Area (planimetered acres): 539.00
GIS Lake Area (acres): 517.72
DOW Lake Area (acres): 514.00
Littoral Area (acres): 377.00
Area in MN (acres): 517.72
Maximum Depth (feet): 30.0
Mean Depth (feet): N/A
GIS Shoreline Length (miles): 12.01
Maximum Fetch (miles): 1.90
Fetch Orientation (degrees): 67
USGS Quad Map Number: H21c
USGS Quad 24K GIS Index: 1541

Watershed Characteristics

Major Watershed

Name: St. Louis River
Watershed Number: 3
Watershed size (acres): 1,831,462

Minor Watershed

Name: Partridge R
Watershed Number: 149
Watershed size (acres): 12,151

Surveys And Investigations

Initial Survey: 08/12/1968.
Re-Survey: 07/07/2005, 08/19/1985.
Population Assessment: 07/12/2010, 07/05/2000, 07/10/1995, 08/27/1991, 08/21/1989, 08/21/1987, 08/17/1979.

Fish Diseases And Parasites

	Number of Fish Examined			Examination Results	
Species Examined	Internally	Externally	In Lab	Condition Observed	Number of Fish
black crappie	-	39	-	None observed	39
bluegill	-	49	-	None observed	28
				Neascus (Black Spot)	21
channel catfish	-	25	-	None observed	25
northern pike	-	17	-	None observed	8
				Neascus (Black Spot)	9
rock bass	-	1	-	None observed	1
shorthead redhorse	-	8	-	None observed	8
walleye	-	3	-	None observed	2
				Neascus (Black Spot)	1
white sucker	-	6	-	None observed	6
yellow bullhead	-	3	-	None observed	3
yellow perch	-	19	-	None observed	5
				Neascus (Black Spot)	3
				Yellow grub	12

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	07/12/2010	29.0	Surface	76.1	6.1
			3.0	76.1	6.4
			6.0	76.1	6.5
			9.0	76.1	6.6
			11.0	70.9	4.5
			12.0	66.6	3.5
			13.0	65.5	3.2
			14.0	64.2	2.7
			15.0	61.9	2.0
			16.0	61.3	1.9
			17.0	59.4	1.5
			20.0	55.2	0.9
			25.0	54.1	0.6
			28.0	52.7	0.5

Field Measurements Of Water Quality

Station ID	Sampling Date	Sample Depth (Feet)	Secchi Depth (Feet)	Field pH	Alkalinity (ppm)	Water Color	Color Cause
WQ - 1	07/12/2010	Surface	3.0	7.28	41	Brown	Bog-stain

Net Catch Summary by Numbers for GN

Standard gill net sets

Number of Sets: 9
First Set Date: 07/12/2010
Last Lift Date: 07/15/2010
Target Species: N/A

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 11* 25%	50%	75%
BLC	Black Crappie	22	2.44	0.63	2.25	5.08
BLG	Bluegill	5	0.56	N/A	N/A	N/A
CCF	Channel Catfish	16	1.78	N/A	N/A	N/A
NOP	Northern Pike	13	1.44	1.20	2.96	5.69
SHR	Shorthead Redhorse	1	0.11	0.17	0.29	0.60
WAE	Walleye	3	0.33	0.83	2.75	5.00
WTS	White Sucker	19	2.11	1.63	3.08	7.58
YEB	Yellow Bullhead	6	0.67	0.33	1.00	2.00
YEP	Yellow Perch	101	11.22	2.00	5.67	16.50
		Total Fish/Set:	20.67	* 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 11* 25%	50%	75%
BLC	Black Crappie	4.39	0.49	0.20	0.14	0.20	0.33
BLG	Bluegill	0.64	0.07	0.13	N/A	N/A	N/A
CCF	Channel Catfish	51.74	5.75	3.23	N/A	N/A	N/A
NOP	Northern Pike	50.72	5.64	3.90	1.58	2.11	3.34
SHR	Shorthead Redhorse	2.65	0.29	2.65	0.67	1.19	2.55
WAE	Walleye	7.31	0.81	2.44	0.80	1.30	2.22
WTS	White Sucker	25.06	2.78	1.32	1.23	1.72	2.10
YEB	Yellow Bullhead	3.64	0.40	0.61	0.39	0.60	0.76
YEP	Yellow Perch	9.06	1.01	0.09	0.10	0.13	0.20
		Total Pounds Fish/Set:	17.24		* Quartiles for Mean Weight		

Net Catch Summary by Numbers for TN

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

Number of Sets: 9
First Set Date: 07/12/2010
Last Lift Date: 07/15/2010
Target Species: N/A

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 11* 25%	50%	75%
BLC	Black Crappie	41	4.56	1.75	3.25	9.67
BLG	Bluegill	61	6.78	2.40	5.00	16.00
BRB	Brown Bullhead	2	0.22	0.25	0.75	11.33
CCF	Channel Catfish	28	3.11	N/A	N/A	N/A
HSF	Hybrid Sunfish	1	0.11	N/A	N/A	N/A
NOP	Northern Pike	9	1.00	N/A	N/A	N/A
RKB	Rock Bass	1	0.11	0.32	0.67	2.33
SHR	Shorthead Redhorse	8	0.89	0.50	1.10	1.80
WTS	White Sucker	4	0.44	0.40	1.00	2.00
YEB	Yellow Bullhead	4	0.44	0.38	0.80	2.63
	Total Fish/Set:		17.67	* 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 11* 25%	50%	75%
BLC	Black Crappie	8.34	0.93	0.20	0.19	0.26	0.34
BLG	Bluegill	7.57	0.84	0.12	0.13	0.20	0.31
BRB	Brown Bullhead	1.53	0.17	0.77	0.34	0.70	0.93
CCF	Channel Catfish	73.72	8.19	2.63	N/A	N/A	N/A
HSF	Hybrid Sunfish	0.46	0.05	0.46	N/A	N/A	N/A
NOP	Northern Pike	29.23	3.25	3.25	N/A	N/A	N/A
RKB	Rock Bass	0.09	0.01	0.09	0.15	0.26	0.40
SHR	Shorthead Redhorse	15.34	1.70	1.92	1.24	1.46	3.63
WTS	White Sucker	8.73	0.97	2.18	1.55	2.14	2.60
YEB	Yellow Bullhead	3.79	0.42	0.95	0.63	0.79	1.00
	Total Pounds Fish/Set:		16.53		* Quartiles for Mean Weight		

Natural Reproduction Catch Summary for TQU

1/4-in trap nets

Number of Sets: 10
First Set Date: 07/15/2010
Last Lift Date: 07/16/2010
Target Species: N/A

Abbr	Species	Age	Total Number	Number Measured	Mean Length (inches)	Length Range (inches) Minimum	Length Range (inches) Maximum	CPUE (num/ set)
BLC	Black Crappie	YOY	130	0	N/A	N/A	N/A	13.00
BLC	Black Crappie	≥ 1	25	0	N/A	N/A	N/A	2.50
BLG	Bluegill	All	85	0	N/A	N/A	N/A	8.50
BRB	Brown Bullhead	All	1	0	N/A	N/A	N/A	0.10
CSH	Common Shiner	All	9	0	N/A	N/A	N/A	0.90
LMB	Largemouth Bass	YOY	25	0	N/A	N/A	N/A	2.50
LMB	Largemouth Bass	≥ 1	26	0	N/A	N/A	N/A	2.60
RKB	Rock Bass	All	3	0	N/A	N/A	N/A	0.30
SHR	Shorthead Redhorse	All	1	0	N/A	N/A	N/A	0.10
SPO	Spottail Shiner	All	7	0	N/A	N/A	N/A	0.70
WTS	White Sucker	All	1	0	N/A	N/A	N/A	0.10
YEB	Yellow Bullhead	YOY	1	0	N/A	N/A	N/A	0.10
YEB	Yellow Bullhead	≥ 1	2	0	N/A	N/A	N/A	0.20
YEP	Yellow Perch	YOY	339	0	N/A	N/A	N/A	33.90
YEP	Yellow Perch	≥ 1	12	0	N/A	N/A	N/A	1.20

Length Frequency Distribution For GN

Standard gill net sets

(Field work conducted between 07/12/2010 and 07/15/2010)

	BLC	BLG	CCF	NOP	SHR	WAE	WTS	YEB	YEP
< 3.00	-	-	-	-	-	-	-	-	-
3.00 - 3.49	-	-	-	-	-	-	-	-	-
3.50 - 3.99	-	-	-	-	-	-	-	-	-
4.00 - 4.49	-	-	-	-	-	-	-	-	-
4.50 - 4.99	-	-	-	-	-	-	-	-	-
5.00 - 5.49	2	-	-	-	-	-	-	-	13
5.50 - 5.99	-	4	-	-	-	-	-	-	59
6.00 - 6.49	-	2	-	-	-	-	-	-	27
6.50 - 6.99	4	-	-	-	-	-	-	-	1
7.00 - 7.49	8	-	-	-	-	-	-	-	-
7.50 - 7.99	4	-	-	-	-	-	-	-	-
8.00 - 8.49	3	-	-	-	-	-	-	2	-
8.50 - 8.99	1	-	-	-	-	-	1	-	-
9.00 - 9.49	-	-	-	-	-	1	1	-	-
9.50 - 9.99	-	-	-	-	-	-	-	-	-
10.00 - 10.49	-	-	-	-	-	-	2	1	1
10.50 - 10.99	-	-	-	-	-	-	3	1	-
11.00 - 11.49	-	-	-	-	-	-	-	-	-
11.50 - 11.99	-	-	1	-	-	-	-	1	-
12.00 - 12.99	-	-	-	-	-	-	4	1	-
13.00 - 13.99	-	-	1	-	-	-	-	-	-
14.00 - 14.99	-	-	-	-	-	-	1	-	-
15.00 - 15.99	-	-	-	-	-	-	-	-	-
16.00 - 16.99	-	-	1	-	-	-	1	-	-
17.00 - 17.99	-	-	1	-	-	-	4	-	-
18.00 - 18.99	-	-	2	-	1	1	-	-	-
19.00 - 19.99	-	-	-	-	-	-	2	-	-
20.00 - 20.99	-	-	2	-	-	-	-	-	-
21.00 - 21.99	-	-	3	3	-	-	-	-	-
22.00 - 22.99	-	-	1	1	-	-	-	-	-
23.00 - 23.99	-	-	1	1	-	1	-	-	-
24.00 - 24.99	-	-	-	1	-	-	-	-	-
25.00 - 25.99	-	-	2	3	-	-	-	-	-
26.00 - 26.99	-	-	-	1	-	-	-	-	-
27.00 - 27.99	-	-	-	2	-	-	-	-	-
28.00 - 28.99	-	-	1	-	-	-	-	-	-
29.00 - 29.99	-	-	-	-	-	-	-	-	-
30.00 - 30.99	-	-	-	-	-	-	-	-	-
31.00 - 31.99	-	-	-	-	-	-	-	-	-
32.00 - 32.99	-	-	-	1	-	-	-	-	-
33.00 - 33.99	-	-	-	-	-	-	-	-	-
34.00 - 34.99	-	-	-	-	-	-	-	-	-
35.00 - 35.99	-	-	-	-	-	-	-	-	-
= > 36.00	-	-	-	-	-	-	-	-	-

	BLC	BLG	CCF	NOP	SHR	WAE	WTS	YEB	YEP
Total	22	6	16	13	1	3	19	6	101
Min. Length	5.20	5.51	11.50	21.42	18.58	9.21	8.58	8.27	5.12
Max. Length	8.98	6.14	28.07	32.68	18.58	23.74	19.84	12.83	10.47
Mean Length	7.27	5.79	20.42	25.14	18.58	17.30	13.89	10.39	5.90
# Measured	19	4	16	13	1	3	18	6	76
No Lengths for	3	1	0	0	0	0	1	0	25

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 07/12/2010 and 07/15/2010)

	BLC	BLG	BRB	CCF	HSF	NOP	RKB	SHR	WTS	YEB
< 3.00	-	-	-	-	-	-	-	-	-	-
3.00 - 3.49	-	1	-	-	-	-	-	-	-	-
3.50 - 3.99	-	7	-	-	-	-	-	-	-	-
4.00 - 4.49	1	5	-	-	-	-	-	-	-	-
4.50 - 4.99	-	8	-	-	-	-	-	-	-	-
5.00 - 5.49	1	10	-	-	-	-	1	-	-	-
5.50 - 5.99	-	8	-	-	-	-	-	-	-	-
6.00 - 6.49	3	10	-	-	-	-	-	-	-	-
6.50 - 6.99	12	6	-	-	-	-	-	-	-	-
7.00 - 7.49	14	3	-	-	-	-	-	-	-	-
7.50 - 7.99	4	2	-	-	1	-	-	-	-	-
8.00 - 8.49	1	-	-	-	-	-	-	-	-	-
8.50 - 8.99	2	-	-	-	-	-	-	-	-	-
9.00 - 9.49	1	-	-	-	-	-	-	-	-	-
9.50 - 9.99	1	-	-	-	-	-	-	-	-	-
10.00 - 10.49	1	-	-	-	-	-	-	-	-	-
10.50 - 10.99	-	-	-	-	-	-	-	-	-	-
11.00 - 11.49	-	-	1	-	-	-	-	-	-	1
11.50 - 11.99	-	-	-	-	-	-	-	-	-	2
12.00 - 12.99	-	-	1	-	-	-	-	-	-	-
13.00 - 13.99	-	-	-	-	-	-	-	-	1	1
14.00 - 14.99	-	-	-	-	-	-	-	-	-	-
15.00 - 15.99	-	-	-	1	-	-	-	1	-	-
16.00 - 16.99	-	-	-	2	-	-	-	4	-	-
17.00 - 17.99	-	-	-	3	-	1	-	2	1	-
18.00 - 18.99	-	-	-	4	-	-	-	1	-	-
19.00 - 19.99	-	-	-	5	-	-	-	-	-	-
20.00 - 20.99	-	-	-	6	-	-	-	-	2	-
21.00 - 21.99	-	-	-	1	-	1	-	-	-	-
22.00 - 22.99	-	-	-	3	-	1	-	-	-	-
23.00 - 23.99	-	-	-	3	-	1	-	-	-	-
24.00 - 24.99	-	-	-	-	-	2	-	-	-	-
25.00 - 25.99	-	-	-	-	-	1	-	-	-	-
26.00 - 26.99	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	1	-	-	-	-
33.00 - 33.99	-	-	-	-	-	-	-	-	-	-
34.00 - 34.99	-	-	-	-	-	-	-	-	-	-
35.00 - 35.99	-	-	-	-	-	-	-	-	-	-
= > 36.00	-	-	-	-	-	-	-	-	-	-

	BLC	BLG	BRB	CCF	HSF	NOP	RKB	SHR	WTS	YEB
Total	41	60	2	28	1	9	1	8	4	4
Min. Length	4.13	3.39	11.26	15.47	7.95	17.72	5.08	15.20	13.39	11.26
Max. Length	10.28	7.76	12.13	23.82	7.95	32.68	5.08	18.35	20.39	13.15
Mean Length	7.24	5.44	11.69	19.88	7.95	24.22	5.08	16.90	17.94	12.05
# Measured	41	60	2	28	1	9	1	8	4	4
No Lengths for	0	1	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 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: 25

Length at Capture in 2010 for Each Age Class, with Incremental Lengths for 2010

			Length At Capture				Length Increments	
Year Class	Age	Sampl eSize	Average Length	Maximum Length	Minimum Length	Standard Error	Increment	Standard Error
2008	2	1	4.13	4.13	4.13	N/A	1.36	N/A
2007	3	1	5.39	5.39	5.39	N/A	1.45	N/A
2006	4	1	6.97	6.97	6.97	N/A	0.81	N/A
2005	5	14	7.11	8.90	6.42	0.164	0.60	0.028
2004	6	5	8.20	9.72	7.09	0.451	0.46	0.019
2003	7	1	10.28	10.28	10.28	N/A	0.45	N/A
2002	8	2	8.92	9.37	8.46	0.453	0.29	0.059

Species: Bluegill
Body-Scale Constant: 0.79
Total Sample Size: 47

Length at Capture in 2010 for Each Age Class, with Incremental Lengths for 2010

			Length At Capture				Length Increments	
Year Class	Age	Sampl eSize	Average Length	Maximum Length	Minimum Length	Standard Error	Increment	Standard Error
2008	2	10	3.85	4.21	3.39	0.083	1.01	0.042
2007	3	3	4.38	4.53	4.25	0.080	0.89	0.025
2006	4	18	5.58	7.13	4.80	0.149	0.58	0.048
2005	5	15	6.67	7.76	5.39	0.164	0.40	0.031
2004	6	1	6.02	6.02	6.02	N/A	0.28	N/A

Species: Northern Pike
Body-Scale Constant: 2.09
Total Sample Size: 12

Length at Capture in 2010 for Each Age Class, with Incremental Lengths for 2010

			Length At Capture				Length Increments	
Year Class	Age	Sampl eSize	Average Length	Maximum Length	Minimum Length	Standard Error	Increment	Standard Error
2008	2	1	21.77	21.77	21.77	N/A	3.00	N/A
2007	3	4	23.88	27.56	21.54	1.310	2.49	0.343
2006	4	5	24.57	25.98	21.42	0.818	1.45	0.211
2005	5	2	26.97	27.36	26.57	0.394	1.03	0.265

Length At Capture With Last Incremental Length (Continued)

Species: Walleye
Body-Scale Constant: 1.10
Total Sample Size: 3

Length at Capture in 2010 for Each Age Class, with Incremental Lengths for 2010

Year Class	Age	Sample Size	Length At Capture: Average Length	Length At Capture: Maximum Length	Length At Capture: Minimum Length	Length At Capture: Standard Error	Length Increments: Increment	Length Increments: Standard Error
2008	2	1	9.21	9.21	9.21	N/A	2.26	N/A
2007	3	0	-	-	-	-	-	-
2006	4	0	-	-	-	-	-	-
2005	5	0	-	-	-	-	-	-
2004	6	1	18.94	18.94	18.94	N/A	0.69	N/A
2003	7	0	-	-	-	-	-	-
2002	8	1	23.74	23.74	23.74	N/A	0.78	N/A

Species: Yellow Perch
Body-Scale Constant: 1.18
Total Sample Size: 19

Length at Capture in 2010 for Each Age Class, with Incremental Lengths for 2010

Year Class	Age	Sample Size	Length At Capture: Average Length	Length At Capture: Maximum Length	Length At Capture: Minimum Length	Length At Capture: Standard Error	Length Increments: Increment	Length Increments: Standard Error
2008	2	3	5.29	5.35	5.20	0.047	1.24	0.102
2007	3	11	5.82	6.30	5.31	0.094	0.68	0.051
2006	4	4	6.05	6.65	5.71	0.208	0.66	0.074
2005	5	0	-	-	-	-	-	-
2004	6	1	10.47	10.47	10.47	N/A	0.47	N/A

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

Species: Black Crappie
Gear Type: Combined Gear Types (TN)

Class	Age	N	1	2	3	4	5	6	7	8
2008	2	1	1.64	2.78	-	-	-	-	-	-
			1.64	1.14	-	-	-	-	-	-
2007	3	1	1.80	2.72	3.94	-	-	-	-	-
			1.80	0.92	1.22	-	-	-	-	-
2006	4	1	2.22	4.57	5.32	6.15	-	-	-	-
			2.22	2.35	0.75	0.83	-	-	-	-
2005	5	14	1.70	2.78	4.18	5.39	6.52	-	-	-
			1.70	1.08	1.40	1.21	1.13	-	-	-
2004	6	5	1.73	3.00	4.57	6.23	7.13	7.74	-	-
			1.73	1.27	1.57	1.66	0.90	0.61	-	-
2003	7	1	1.90	3.28	4.75	6.34	7.38	8.69	9.82	-
			1.90	1.38	1.47	1.59	1.04	1.31	1.13	-
2002	8	2	1.67	2.68	4.28	5.84	6.84	7.59	8.32	8.63
			1.67	1.01	1.60	1.56	1.01	0.75	0.73	0.31
Mean Length			1.73	2.90	4.33	5.69	6.72	7.82	8.82	8.63
Mean Increment			1.73	1.17	1.42	1.34	1.06	0.73	0.86	0.31
Total N			25	25	24	23	22	8	3	2

Species: Bluegill
Gear Type: Combined Gear Types (TN)

Class	Age	N	1	2	3	4	5	6
2008	2	10	1.69	2.84	-	-	-	-
			1.69	1.16	-	-	-	-
2007	3	3	1.45	2.42	3.49	-	-	-
			1.45	0.97	1.07	-	-	-
2006	4	18	1.43	2.51	3.82	5.00	-	-
			1.43	1.08	1.31	1.18	-	-
2005	5	15	1.54	2.73	4.22	5.53	6.27	-
			1.54	1.19	1.49	1.30	0.75	-
2004	6	1	1.19	2.16	4.05	4.85	5.36	5.75
			1.19	0.97	1.89	0.80	0.51	0.39
Mean Length			1.52	2.64	3.96	5.23	6.22	5.75
Mean Increment			1.52	1.12	1.38	1.22	0.73	0.39
Total N			47	47	37	34	16	1

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)

Class	Age	N	1	2	3	4	5
2008	2	1	11.72	18.77	-	-	-
			11.72	7.05	-	-	-
2007	3	4	10.76	16.94	21.39	-	-
			10.76	6.18	4.45	-	-
2006	4	5	9.71	16.01	20.26	23.12	-
			9.71	6.29	4.26	2.86	-
2005	5	2	10.83	15.51	19.48	23.54	25.94
			10.83	4.68	3.97	4.06	2.41
Mean Length			10.41	16.46	20.53	23.24	25.94
Mean Increment			10.41	6.05	4.28	3.20	2.41
Total N			12	12	11	7	2

Species: Walleye
Gear Type: Combined Gear Types (GN)

Class	Age	N	1	2	3	4	5	6	7	8
2008	2	1	4.03	6.95	-	-	-	-	-	-
			4.03	2.92	-	-	-	-	-	-
2004	6	1	6.05	8.99	13.80	15.08	16.80	18.24	-	-
			6.05	2.94	4.81	1.28	1.72	1.44	-	-
2002	8	1	6.09	10.05	13.23	16.72	19.34	21.21	22.24	22.96
			6.09	3.96	3.18	3.49	2.62	1.87	1.03	0.72
Mean Length			5.39	8.66	13.52	15.90	18.07	19.73	22.24	22.96
Mean Increment			5.39	3.27	4.00	2.39	2.17	1.66	1.03	0.72
Total N			3	3	2	2	2	2	1	1

Species: Yellow Perch
Gear Type: Combined Gear Types (GN)

Class	Age	N	1	2	3	4	5	6
2008	2	3	2.26	4.05	-	-	-	-
			2.26	1.79	-	-	-	-
2007	3	11	2.45	3.74	5.14	-	-	-
			2.45	1.29	1.40	-	-	-
2006	4	4	2.38	3.67	4.63	5.40	-	-
			2.38	1.29	0.96	0.77	-	-
2004	6	1	2.16	3.47	6.11	8.56	9.53	10.00
			2.16	1.31	2.64	2.45	0.97	0.47
Mean Length			2.39	3.76	5.07	6.03	9.53	10.00
Mean Increment			2.39	1.37	1.37	1.11	0.97	0.47
Total N			19	19	16	5	1	1

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	'10 0	'09 1	'08 2	'07 3	'06 4	'05 5	'04 6	'03 7	'02 8	'01 9	'00 10	'99 11	'98 12	'97 13	'96 14	<'96 15+
Black Crappie																			
TN	25	16	0	0	0	1	1	2	27	7	1	2	0	0	0	0	0	0	0
Bluegill																			
TN	47	14	0	0	0	11	4	28	17	1	0	0	0	0	0	0	0	0	0
Northern Pike																			
GN	12	0	1	0	0	1	4	5	2	0	0	0	0	0	0	0	0	0	0
Walleye																			
GN	3	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0
Yellow Perch																			
GN	19	82	0	0	0	8	71	21	0	1	0	0	0	0	0	0	0	0	0

(1) Key to sampling gear abbreviations:

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

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.

Survey Crew Notes

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Region Signed by user 'jomix' on 03/04/2011

Field Notes - General Field

Tower Area Fisheries IBI Sampling in 2010

Because of the uniqueness of the Tower Fisheries area compared to the rest of the state, different sampling methods were developed. Much of the Tower Fisheries Area is in the geological area called Laurentian Shield. This fisheries area has shoreline substrates that are often times dominated by ledge rock and boulders. These rocky shorelines are difficult to traverse by foot when backpack electrofishing and/or seining. The method of choice would then be to use an electrofishing boat and/or 0.25 inch trap nets. The only drawback in using 0.25 trap nets is that it becomes more labor intensive when it takes two days in sampling: one day to set the nets and another day to lift the nets and work up the sampled fish. If boat electrofishing was also done a lake, it was done on a different day.

The 0.25 inch trap nets were set with varying lengths of lead depending upon the depth of the water at the sampling site. The main intent was to get the top of the frame of the trap net flush with the water surface. If the substrate in the area of the net was mostly composed rocks of different sizes, there was areas below the lead that were not making contact with the bottom thus allowing small fish to swim under it. If the coordinates assigned to a sampling station brought us to a location that wasn't conducive for setting a net, we would move the sampling station to a better location.

In boat electrofishing, we would use the coordinates to navigate to a sampling site. Once we found the sampling site, we would determine a beginning and ending point for the electrofishing run on either side of the sampling site. We would use a 30 meter rope to lay out the electrofishing run. We would go to the beginning point and typically tie the rope to an over-hanging branch. Next, we would fish out the rope to an ending point for the run.

Colby Lake: There were 10 IBI sampling sites established. Only 0.25 inch trap nets were used to sample fish.

Discussion

Colby Lake is a 514-acre lake with a maximum depth of 30 feet located near Hoyt Lakes in eastern St. Louis County. Colby Lake, along with 48 other lakes in northeast Minnesota, is in lake class 11. Typically, lakes in this class are small in size (mean = 161 acres), moderately deep (mean = 30 feet) with high percentage of littoral area (mean = 63%). Colby Lake is a flowage lake on the Partridge River. The lake is used as a water source for the Laskin coal powered electrical plant owned by Minnesota Power. There is a fish screen on the water intake in the main part of the lake. There is a Minnesota Department of Health consumption advisory for fish in Colby Lake due to high levels of mercury. Colby Lake is primarily managed for walleye, bluegill, and black crappie, and secondarily for northern pike.

Colby Lake, along with nine other Tower Fisheries area lakes, was selected for fish index of biotic integrity (IBI) sampling. This index is designed to help determine the overall health of the biological community of the lake. For Colby Lake, IBI sampling was done using 0.25 inch trap nets at 10 sampling locations. Twelve different game and non-game species were identified.

Species typically found in a lake class 11 fish community assemblage were found in Colby Lake, with one exception. Channel catfish, abundant in Colby Lake, is a unique species for class 11 lakes. By weight, channel catfish contributed the most making up almost 50% of pounds sampled in trap nets and 33% of the pounds sampled in gill nets. Catfish ranged in length from 11.5 to 28.1 inches with a mean of 20.4 inches. Catfish gill-net CPUE of 1.8 was above the historical range (0.2 to 1.0). For trap nets, catfish CPUE prior to the last two assessments was only 0.4. The mean for 2005 and 2010 assessments was 3.8. Channel catfish do not have an established quartile range for either gill net or trap net in lake class 11. This important species to the Colby Lake fish community does not have any established long range management goals.

Northern pike was second behind channel catfish in terms of contribution to the gill-net catch (32.7% by weight). In

Discussion (Continued)

2010, northern pike GN CPUE of 1.4 was comparable to the historical median (1.5) but down from the 2005 findings of 5.4. The next highest GN CPUE for pike was 2.9 in 1989. The 2010 pike GN CPUE was comparable to the 25th percentile value (1.2) for lake class 11. The 16 pike sampled ranged in length from 21.4 inches to 32.7 inches with a mean of 25.1 inches. This was the highest mean length of any assessment conducted on Colby. Four year classes were identified with the 2006 year class (age 4) comprising 42% of the aged sample. Growth was slightly above average. By the development of the third annulus, a Colby Lake pike was 20.5 inches long compared to the Tower area lake class 11 mean value of 19.5 inches (n=304; SE=0.2).

Bluegill TN CPUE for the first seven investigations on Colby Lake (1968-1995) averaged 4.6/trap net which is comparable to the median value (5.0) for lake class 11. All of these earlier investigations were conducted in late August or early September when bluegill are less likely to be caught in trap nets. In 2000, 2005, and 2010, trap netting was moved to July, and TN CPUEs, with the exception of 2010 (6.8), had increased to values greater than the 75th percentile value (16.0). In 2010, bluegill sampled ranged in length from 3.4 to 7.8 with a mean of 5.4 inches. The 2005 (age 5) and 2006 (age 4) year classes combined made up 74% of the aged sample. Length-at-capture for 2005 year class was 6.7 inches. The long range goal for bluegill of a mean length of 7.0 inches was not attained. However, the long range goal for TN CPUE of 6.0 was attained.

In 2010, black crappie TN CPUE of 4.6 was higher than the historical median (2.9) but lower than 2005 findings (8.9) which was the highest ever recorded. Crappie captured ranged in length from 4.1 inches to 10.3 inches with a mean of 7.2 inches. The 2010 mean length was typical of past findings where it seldom exceeded 8 inches. Anecdotal information from local anglers indicates that there is heavy angling pressure on black crappie. This pressure may be limiting crappie from attaining larger size. Growth for Colby crappie is below average. At the development of the third annulus, Colby crappie were 4.3 inches long compared to the Tower area lake class 11 mean value of 6.6 inches (n=664; SE=0.04). IBI sampling captured 130 YOY black crappie.

In the past, walleye abundance has been highly variable in Colby Lake, ranging from 0.7/gill net to 5.0/gill net with a mean of 1.6/gill net. In 2010, walleye GN CPUE of 0.3/gill net was the lowest recorded and below the 25th percentile value (0.8) for lake class 11. Colby Lake has a long and varied history of walleye stocking with limited success. Both fry and fingerling stocking has been attempted. A variety of walleye stocking regimes from 1958 to 1991 resulted in a median walleye catch of 1.7/gill net. Stocked year classes were generally no stronger than non-stocked year classes.

In 2010, yellow perch abundance of 11.2/gill net fell between the median and 75th percentile values. Perch ranged in length from 2.1 to 10.5 inches with only one perch greater than eight inches. Natural reproduction check using 0.25 inch trap nets captured 339 YOY perch suggesting good recruitment.

Status Of The Fishery

Colby Lake is a 514-acre lake with a maximum depth of 30 feet located at Hoyt Lakes in eastern St. Louis County. Based on physical and chemical characteristics, Colby, along with 48 other northeastern Minnesota lakes, is categorized in lake class 11. Typically, lakes in this class are small in size (mean = 161 acres), moderately deep (mean = 30 feet) and have a high percentage of littoral area (mean = 63%). The lake is used as a water source for the Laskin coal powered electrical plant owned by Minnesota Power. There is a fish screen on the water intake in the main part of the lake preventing fish from entering the plant. There is a Minnesota Department of Health consumption advisory for fish In Colby Lake due to higher levels of mercury. Go to the www.mndnr.gov website and Lakefinder to view guidelines for consumption of fish on Colby Lake.

Channel catfish, by weight, were the most abundant fish sampled in 2010. Catfish sampled ranged in length from 11.5 to 28.1 inches with an average of 20.4 inches. Catfish are not normally sampled in lake class 11.

There is a low-density, quality-sized population of northern pike in Colby Lake. In 2010, pike sampled ranged in length from 21.0 inches to 32.7 inches with an average of 25.0 inches. This was the highest average length of any assessment conducted on Colby Lake. Because there are few pike in the lake, anglers should practice selective harvest. Keep the small pike for eating, but release the bigger mature spawners. This practice will help maintain a quality size structure and protect spawning pike.

Panfish species present in Colby include bluegill, black crappie, and yellow perch. Bluegill up to 8 inches and crappie up to 10 inches in length were sampled in 2010.

Walleye abundance in Colby Lake has been highly variable. Colby Lake has a long and varied history of walleye stocking with limited success. Both fry and fingerling stocking has been attempted, but stocked year classes were generally no stronger than non-stocked year classes. For this reason, stocking was discontinued.

Approval Dates And Notices

Date Approved By Tower Area Fisheries Supervisor: 02/10/2011

Date Approved By Northeast Region Fisheries Manager: 12/04/2012