

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

Survey Type: Targeted Survey  
Survey ID Date: 05/21/2018

**TARGETED SURVEY**  
**Trap Netting targeting Bluegill All Ages**  
**Lake Access Observation**

**Lake Identification**

Alternate Lake Name: N/A  
Primary Lake Class ID: 22  
DNR Sounding Map Number: B0231  
Alternate Lake Class ID: N/A

**Lake Location**

Primary County: Otter Tail  
Nearest Town: Dent

**Legal Descriptions**

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

**All Legal Descriptions:**

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

**Area Office**

Area Name: Fergus Falls  
Region Name: Northwest  
ORG Code: F115  
Region Number: 1

**Lake Access**

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

**Lake Characteristics**

Lake Area (planimetered acres): 4,721.00  
GIS Lake Area (acres): 4,485.87  
DOW Lake Area (acres): 4,809.00  
Littoral Area (acres): 2,813.00  
Area in MN (acres): 4,454.01  
Maximum Depth (feet): 94.0  
Mean Depth (feet): N/A  
GIS Shoreline Length (miles): 38.49  
Maximum Fetch (miles): 2.70  
Fetch Orientation (degrees): 67  
USGS Quad Map Number: L06d  
USGS Quad 24K GIS Index: 2312

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**Watershed Characteristics**

**Major Watershed**

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

**Minor Watershed**

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

**Surveys and Investigations**

**Initial Survey:** 09/11/1961.

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

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

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

**Creel Survey:** 05/16/1987.

**External Management Survey:** 06/16/2008.

**Targeted Survey:** 07/16/2018, 05/21/2018, 07/10/2017, 07/13/2015.

**Water Level History - Readings**

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

**Water Level History - Station Summary**

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

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**Net Catch Summary by Numbers for STN**

Special sampling with trap nets

Number of Sets: 8  
 First Set Date: 05/21/2018  
 Last Lift Date: 05/22/2018  
 Target Species: All ages bluegill

Abbr	Species	Total Fish	Number Per Set	Quartiles for Lake Class 22*		
				25%	50%	75%
BLG	Bluegill	309	38.63	N/A	N/A	N/A
		Total Fish/Set:	38.63	* Quartiles for Number Per Set		

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**Net Catch Summary by Weight for STN**

Special sampling with trap nets

Abbr	Species	Total Weight (Pounds)	Pounds Per Set	Mean Weight	Quartiles for Lake Class 22*		
					25%	50%	75%
BLG	Bluegill	116.41	14.55	0.38	N/A	N/A	N/A
		Total Pounds Fish/Set:	14.55	* Quartiles for Mean Weight			

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**Length Frequency Distribution for STN**

**Special sampling with trap nets**

(Field work conducted between 05/21/2018 and 05/22/2018)

	<u>BLG</u>
< 3.00	-
3.00 - 3.49	-
3.50 - 3.99	1
4.00 - 4.49	-
4.50 - 4.99	3
5.00 - 5.49	-
5.50 - 5.99	3
6.00 - 6.49	15
6.50 - 6.99	38
7.00 - 7.49	67
7.50 - 7.99	61
8.00 - 8.49	63
8.50 - 8.99	43
9.00 - 9.49	15
9.50 - 9.99	1
10.00 - 10.49	-
10.50 - 10.99	-
11.00 - 11.49	-
11.50 - 11.99	-
12.00 - 12.99	-
13.00 - 13.99	-
14.00 - 14.99	-
15.00 - 15.99	-
16.00 - 16.99	-
17.00 - 17.99	-
18.00 - 18.99	-
19.00 - 19.99	-
20.00 - 20.99	-
21.00 - 21.99	-
22.00 - 22.99	-
23.00 - 23.99	-
24.00 - 24.99	-
25.00 - 25.99	-
26.00 - 26.99	-
27.00 - 27.99	-
28.00 - 28.99	-
29.00 - 29.99	-
30.00 - 30.99	-
31.00 - 31.99	-
32.00 - 32.99	-
33.00 - 33.99	-
34.00 - 34.99	-
35.00 - 35.99	-
= > 36.00	-

	<u>BLG</u>
Total	310
Min. Length	3.62
Max. Length	9.65
Mean Length	7.69
# Measured	173
No Lengths for	136

**Note:** Unless all fish were measured in the catch, totals shown for some length-frequency distributions may differ from the total number of fish in the catch, due to rounding of fractions used in the estimation of length frequency from a subsample of measured fish

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**Length At Capture with Last Incremental Length**

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

**Species:** Bluegill

**Body-Scale Constant:** 0.79

**Total Sample Size:** 47

**Length at Capture in 2018 for Each Age Class, with Incremental Lengths for 2018**

Year Class	Age	Sample Size	Length At Capture			Standard Error	Length Increments	
			Average Length	Maximum Length	Minimum Length		Increment	Standard Error
2016	2	2	4.11	4.61	3.62	0.492	1.84	0.381
2015	3	14	6.56	7.68	5.67	0.139	1.85	0.100
2014	4	17	7.90	9.09	6.85	0.158	1.53	0.054
2013	5	14	8.59	9.45	7.32	0.163	1.06	0.032

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

**Species:** Bluegill

**Gear Type:** Combined Gear Types (STN)

Class	Age	N	1	2	3	4	5
2016	2	2	2.28	4.12	-	-	-
			2.28	1.84	-	-	-
2015	3	14	2.54	4.71	6.56	-	-
			2.54	2.17	1.85	-	-
2014	4	17	2.37	4.44	6.37	7.90	-
			2.37	2.07	1.93	1.53	-
2013	5	14	2.18	3.91	5.89	7.53	8.59
			2.18	1.73	1.99	1.63	1.06
Mean Length			2.36	4.35	6.28	7.73	8.59
Mean Increment			2.36	1.99	1.92	1.58	1.06
Total N			47	47	45	31	14

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**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	'18	'17	'16	'15	'14	'13	'12	'11	'10	'09	'08	'07	'06	'05	'04	<'04
<b>Bluegill</b>				0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
STN	47	261	1	0	0	4	75	142	87	0	0	0	0	0	0	0	0	0	0

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

STN = Special sampling with trap nets

**(2) Notes:**

Number of Fish Aged: Fish that were aged from bony parts.

Number of Fish Keyed: Fish assigned an age with an age-length key or by expansion of mesh or station age distributions.

Number of Fish Unaged: Fish that were not aged and were not assigned an age.

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**Discussion**

A target survey (spring trapnetting) was conducted to analyze the Bluegill population of Star Lake. Eight trap nets were utilized to obtain a representative Bluegill sample. Six spring trapnetting assessments for Bluegill have been conducted from 2003 to 2018. A reduced daily bag limit regulation for sunfish (10 per day) was implemented in 2005. The objective of this regulation is to maintain the quality of the Bluegill size structure. Star Lake is included in class 22 of the MN DNR lake classification scheme.

Three hundred-nine Bluegills were sampled for a trap net catch per unit effort (CPUE) of 38.6 per net. Historically, Bluegill spring trap net CPUE has ranged from 27.4 to 53.4 per net. The Bluegill PSD-P value was 40, which exceeds the regulation objective. Previous PSD-P values ranged from 23 to 50. Age data indicate that Bluegill recruitment continues to be consistent. Bluegills attain a mean length of 8.6 inches at age-V. Growth rate estimates are much faster than mean Bluegill growth rates for class 22 lakes in the Fergus Falls Management Area.

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## **Status Of The Fishery**

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

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

A reduced daily bag limit regulation for sunfish (10 per day) was implemented in 2005 to maintain the quality of the Bluegill population. Catch and length data from special spring assessments indicate that the regulation is maintaining a quality Bluegill population. Sixty-five percent of the Bluegill sample was 8.0 inches or greater in length. Bluegills attain an average length of 8.6 inches at five years of age.

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

Star Lake is not listed as an infested water. Aquatic invasive species are threatening Minnesota waters. Aquatic invasive species can potentially harm water quality, water recreation, aquatic habitat, native species, and fish populations. Anglers can help prevent the introduction and spread of invasive species by following watercraft transportation laws.

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**Approval Dates And Notices**

Date Approved By Fergus Falls Area Fisheries Supervisor: 03/12/2019

Date Approved By Northwest Region Fisheries Manager: \_\_\_\_\_



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Lake Survey Report revision: 20190123-RJE. Data Date: 04/02/2019 at 9:27 am .