

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-46

Name: Lost Lake **County (ies):** Minnehaha
Legal Description: T103N-R52W-Sec 34
Location from nearest town: 2 miles north of Humboldt, SD

Dates of present survey: August 28-29, 2013
Date last surveyed: July 13-14, 2005

| Game Species | Other Species |
|----------------|------------------------|
| Yellow Perch | Common Carp |
| Black Bullhead | White Sucker |
| | Orange Spotted Sunfish |

PHYSICAL DATA

Surface Area: 163 acres **Watershed area:** No data
Maximum depth: 11 feet **Mean depth:** 4 feet
Volume: No data **Shoreline length:** No data
Contour map available: No **Date mapped:** NA
Lake elevation observed during the survey: Full
Beneficial use classifications: (6) marginal fish life propagation, (7) immersion recreation, (8) limited-contact recreation and (9) fish and wildlife propagation and stock watering.

Introduction

Lost Lake is a small, shallow lake located north of Humboldt in west central Minnehaha County. It was named Lost Lake because it's surrounded by hills and not visible until you get close to the shore.

Ownership of the Lake and Adjacent Lakeshore Property

Lost Lake is listed as a meandered lake in the State of South Dakota Listing of Meandered lakes. The fishery is managed by the South Dakota Department of Game, Fish and Parks (GFP). Most of the eastern shoreline lies within a Waterfowl Production Area (WPA) owned and managed by the United States Fish and Wildlife Service (USFWS). The remainder of the shoreline is privately owned.

Fishing Access

There is a short stretch of sandy shoreline on the east side of the lake suitable for launching small boats with a four-wheel drive vehicle. This area is also suitable for shore fishing.

Field Observations of Water Quality and Aquatic Vegetation

The water in Lost Lake was stained green by a blue-green algae bloom during the survey. There was no vegetation observed and the Secchi depth measurement was 0.23 m (9 in.).

BIOLOGICAL DATA

Methods:

Lost Lake was sampled on August 28-29, 2013, with three overnight gill net sets. The gill nets are 45.7 m long x 1.8 m deep (150 ft. long x 6 ft. deep) with one 7.6 m (25 ft.) panel each of 13, 19, 25, 32, 38 and 51-mm-bar-mesh ($\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 in) monofilament netting.

Results and Discussion:

Gill-Net Catch

Black bullheads and common carp comprised the majority of the gill net sample (Table 1). The only game fish caught were two yellow perch.

Table 1. Total catch from three overnight gill net sets at Lost Lake, Minnehaha County, August 28-29, 2013.

| Species | Number | Percent | CPUE | 80% C.I. | PSD | RSD-P | Mean Wr |
|-----------------------|--------|---------|------|--------------|-----|-------|------------|
| Black Bullhead | 153 | 89.0 | 51.0 | <u>+23.8</u> | 8 | 0 | 82 |
| Common Carp | 15 | 8.7 | 5.0 | <u>+3.9</u> | -- | -- | -- |
| Yellow Perch | 2 | 1.2 | 0.7 | <u>+0.4</u> | -- | -- | -- |
| White Sucker | 1 | 0.6 | 0.3 | <u>+0.4</u> | -- | -- | -- |
| O.S. Sunfish | 1 | 0.6 | 0.3 | <u>+0.4</u> | -- | -- | -- |

Discussion

Lost Lake has been stocked many times with several species of fish since 1990 in attempts to create a fishery or at least raise fish for restocking other waters (Table 2). All attempts have failed so far. Even the stocking of 17,415 adult yellow perch in 2012 failed to provide more than a few hours of ice fishing use that winter. The adult northern pike stocked in 2003 were sampled in good numbers in 2005 but anglers did not seem interested in fishing for them.

It has been assumed that the inability to create a viable fishery in Lost Lake has been due to poor water quality and frequent fish kills. However, there are several other waters in the southeast region with similar conditions and it has been possible to at least use these to rear walleyes or yellow perch. Perhaps there is something else going on with the water chemistry or physical conditions in the lake that prevent fish survival.

MANAGEMENT RECOMMENDATIONS

1. Make one last attempt to rear yellow perch in the lake by stocking eggs in 2014.
2. If the attempt to rear yellow perch fails, stock adult northern pike periodically to provide pike fishing opportunity close to Sioux Falls for the few people who might appreciate it.

Table 2. Stocking record for Lost Lake, Minnehaha County, 1990-2013.

| Year | Number | Species | Size |
|-------------|---------------|----------------|------------------|
| 1990 | 250 | Northern Pike | Adult |
| 1993 | 850,000 | Walleye | Fry |
| 1994 | 591 | Black Crappie | Adult |
| 1995 | 805 | Black Crappie | Adult |
| | 1,260 | Black Crappie | Fingerling |
| 1997 | 4,500 | Walleye | Fingerling |
| | 230 | Yellow Perch | Adult |
| | 14,300 | Yellow Perch | Fingerling |
| 1998 | 1,647 | Yellow Perch | Adult |
| 1999 | 8,164 | Yellow Perch | Juvenile |
| 2000 | 1,630 | Yellow Perch | Adult |
| 2003 | 1,610 | Northern Pike | Adult |
| 2007 | 74,760 | Walleye | Small Fingerling |
| 2008 | 150,000 | Walleye | Fry |
| 2010 | 148,230 | Walleye | Fry |
| 2012 | 17,415 | Yellow Perch | Adult |

Appendix A. A brief explanation of catch per unit effort (CPUE), proportional stock density (PSD), relative stock density (RSD) and relative weight (Wr).

Catch Per Unit Effort (CPUE) is the catch of animals in numbers or in weight taken by a defined period of effort. Can refer to trap-net nights of effort, gill-net nights of effort, catch per hour of electrofishing, etc.

Proportional Stock Density (PSD) is calculated by the following formula:

$$\text{PSD} = \frac{\text{Number of fish} > \text{quality length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

Relative Stock Density (RSD-P) is calculated by the following formula:

$$\text{RSD-P} = \frac{\text{Number of fish} > \text{preferred length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

PSD and RSD-P are unitless and usually calculated to the nearest whole digit.

Size categories for selected species found in Region 3 lake surveys, in centimeters.

| Species | Stock | Quality | Preferred | Memorable | Trophy |
|--------------------|-------|---------|-----------|-----------|--------|
| Walleye | 25 | 38 | 51 | 63 | 76 |
| Sauger | 20 | 30 | 38 | 51 | 63 |
| Yellow perch | 13 | 20 | 25 | 30 | 38 |
| Black crappie | 13 | 20 | 25 | 30 | 38 |
| White crappie | 13 | 20 | 25 | 30 | 38 |
| Bluegill | 8 | 15 | 20 | 25 | 30 |
| Largemouth bass | 20 | 30 | 38 | 51 | 63 |
| Smallmouth bass | 18 | 28 | 35 | 43 | 51 |
| Northern pike | 35 | 53 | 71 | 86 | 112 |
| Channel catfish | 28 | 41 | 61 | 71 | 91 |
| Black bullhead | 15 | 23 | 30 | 38 | 46 |
| Common carp | 28 | 41 | 53 | 66 | 84 |
| Bigmouth buffalo | 28 | 41 | 53 | 66 | 84 |
| Smallmouth buffalo | 28 | 41 | 53 | 66 | 84 |

For most fish, 30-60 or 40-70 are typical objective ranges for “balanced” populations. Values less than the objective range indicate a population dominated by small fish while values greater than the objective range indicate a population comprised mainly of large fish.

Relative weight (Wr) is a condition index that quantifies fish condition (i.e., how much does a fish weigh for its length). A Wr range of 90-100 is a typical objective for most fish species. When mean Wr values are well below 100 for a size group, problems may exist in food and feeding relationships. When mean Wr values are well above 100 for a size group, fish may not be making the best use of available prey.