

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Staum Dam, Beadle County
2102-F-21-R-47
2014



Figure 1. Staum Dam, Beadle County

Legal Description: T113N- R59W- Sec14

Location from nearest town: 3 miles south, 1 mile east of Carpenter, SD

Surface Area: 46 acres

Meandered (Y/N): no

OHWM elevation: no data

Outlet elevation: no data

Max. depth at outlet elevation: 16 feet

Observed water level: full

Contour map available (Y/N): yes

Watershed area: 9,000 acres

Shoreline length: 2.8 miles

Date set: no data

Date set: no data

Mean depth at outlet elevation: 6.5 feet

Lake volume: Unknown

Date mapped: 1970

DENR beneficial use classifications: (5) warmwater semipermanent fish life propagation, (7) immersion recreation, (8) limited-contact recreation, and (9) fish and wildlife propagation, recreation, and stock watering

Introduction

General

Staum Dam was constructed by the Works Progress Administration (WPA) around 1934. It was likely named for Edward Staum, who was the owner of the land the dam was constructed on. Staum, and other landowners, also provided public access easements for land underneath and surrounding the lake.

Ownership of Lake and Adjacent Lakeshore Properties

Staum Dam is an artificial impoundment owned and managed by the South Dakota Department of Game, Fish, and Parks (GFP). Nearly the entire lake lies within a Game Production Area owned and managed by GFP.

Fishing Access

Staum Dam has a single lane, concrete boat ramp located on the southeast corner of the lake. The entire shoreline is publicly owned and accessible to shore fishing.

Water Quality and Aquatic Vegetation

The water in Staum Dam is usually clear which allows submerged aquatic vegetation to become very abundant in shallow areas at times (Table 1).

Table 1. Water temperature, Secchi depth and observations/comments on water quality and aquatic vegetation in Staum Dam, Beadle County, 2005-2014.

Year	Water Temp °C (°F)	Secchi Depth cm (in)	Observations/Comments (algae, aquatic vegetation, water quality, etc.)
2014	22 (72)	-- (--)	No observations were recorded
2012	22 (72)	53 (21)	No observations were recorded
2010	23 (74)	35 (14)	Heavy vegetation around entire shoreline
2008	19 (66)	150 (59)	Heavy sago pondweed and Chara algae
2006	23 (74)	-- (--)	No observations were recorded

Fish Community

Only five fish species are found in Staum Dam (Table 2).

Table 2. Fish species commonly found in Staum Dam, Beadle County.

Game Species	Other Species
Largemouth Bass Bluegill Black Bullhead Hybrid Sunfish Green Sunfish	

Fish Management

Although Staum Dam has experienced occasional winterkills (Table 3), they have not been severe enough to require restocking. No fish have been stocked in Staum Dam since 2002 (Table 4).

Table 3. Fish kill history for Staum Dam, Beadle County.

Year	Severity	Comments
2008	Light	April 29 - dead bass reported
2001	Light	Winterkill – test nets caught many fish
1997	Severe	Winterkill – only bullheads and fathead minnows found alive

Table 4. Stocking history for Staum Dam, Beadle County, 2005-2014.

Year	Number	Species	Size

Methods

Staum Dam was sampled on May 27, 2014 with 1 hour and 20 minutes of nighttime electrofishing. The entire shoreline was sampled in this time period.

Results and Discussion

Electrofishing Results

Large black bullheads and small bluegills were the most abundant fish sampled in 2014 (Table 5 and 6).

Table 5. Total catch from one hour and 20 minutes of nighttime electrofishing in Staum Dam, Beadle County, May 27, 2014.

Species	#	%	CPUE¹	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	408	61.9	306.8	+29.6	113.9	100	44	--
Bluegill	216	32.8	162.4	+26.1	146.6	59	3	124
Largemouth Bass	18	2.7	13.5	+1.5	73.2	100	57	111
Green Sunfish	17	2.6	12.8	+2.9	3.0	0	0	107

*10 years (2005-2014)

Table 6. CPUE by length category for selected species sampled with electrofishing in Staum Dam, Beadle County, May 27, 2014.

Species	Substock	Stock	S-Q	Q-P	P+	All sizes	80% C.I.
Black Bullhead	21.1	285.7	--	158.6	127.1	306.8	+29.6
Bluegill	118.8	43.6	18.0	24.1	1.5	162.4	+26.1
Largemouth Bass	8.3	5.2	--	2.2	3.00	13.5	+1.5
Green Sunfish	1.5	11.3	11.3	--	--	12.8	+2.9

Length categories can be found in Appendix A.

¹ See Appendix A for definitions of CPUE, PSD, RSD, RSD-P and mean Wr.

Table 7. Electrofishing CPUE for selected fish species sampled in Staum Dam, Beadle County, 2005-2014.

<i>Species</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>
Bluegill		66.0		2.3		19.5		483.0		162.0
Black Bullhead		9.8		20.3		29.3		204.0		306.8
Green Sunfish		2.3		--		--		--		12.8
Hybrid Sunfish		0.8		--		--		--		--
Largemouth Bass		51.8		11.3		29.3		260.0		13.5

Largemouth Bass

Management Objective

- maintain a largemouth bass population with a total electrofishing CPH of at least 20

Management Strategy

- stock small fingerling largemouth bass at the rate of 100/acre (4,600) if needed to restore the fishery following a winterkill or stock juvenile fish at the rate of 10/acre (460) if needed to achieve the management objective

Largemouth bass abundance has decreased in Staum Dam from 260 per hour in 2012 to only 13.5 in 2014 (Table 8). It is uncertain what caused the reduction, but it could have been a winterkill that went undetected.

Table 8. CPUE, PSD, RSD-P, and mean Wr for all largemouth bass sampled with electrofishing in Staum Dam, Beadle County, 2005-2014. Stocked years are shaded.

	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>
CPUE		51.8		11.3		29.3		260.0		13.5
PSD		77		100		83		10		100
RSD-P		52		46		71		6		57
Mean Wr		104		100		104		109		111

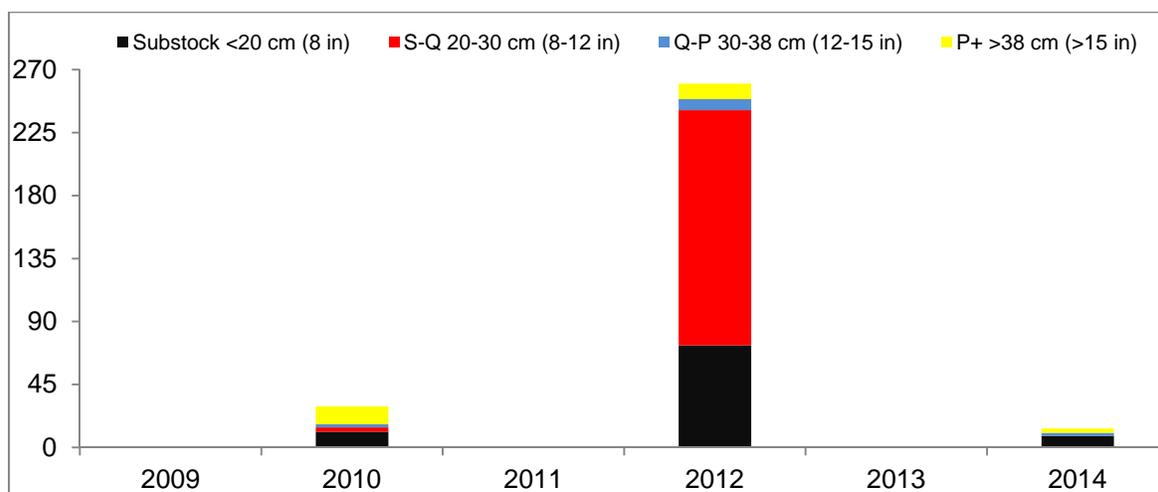


Figure 2. CPUE by length category for largemouth bass sampled by electrofishing in Staum Dam, Beadle County, 2009-2014.

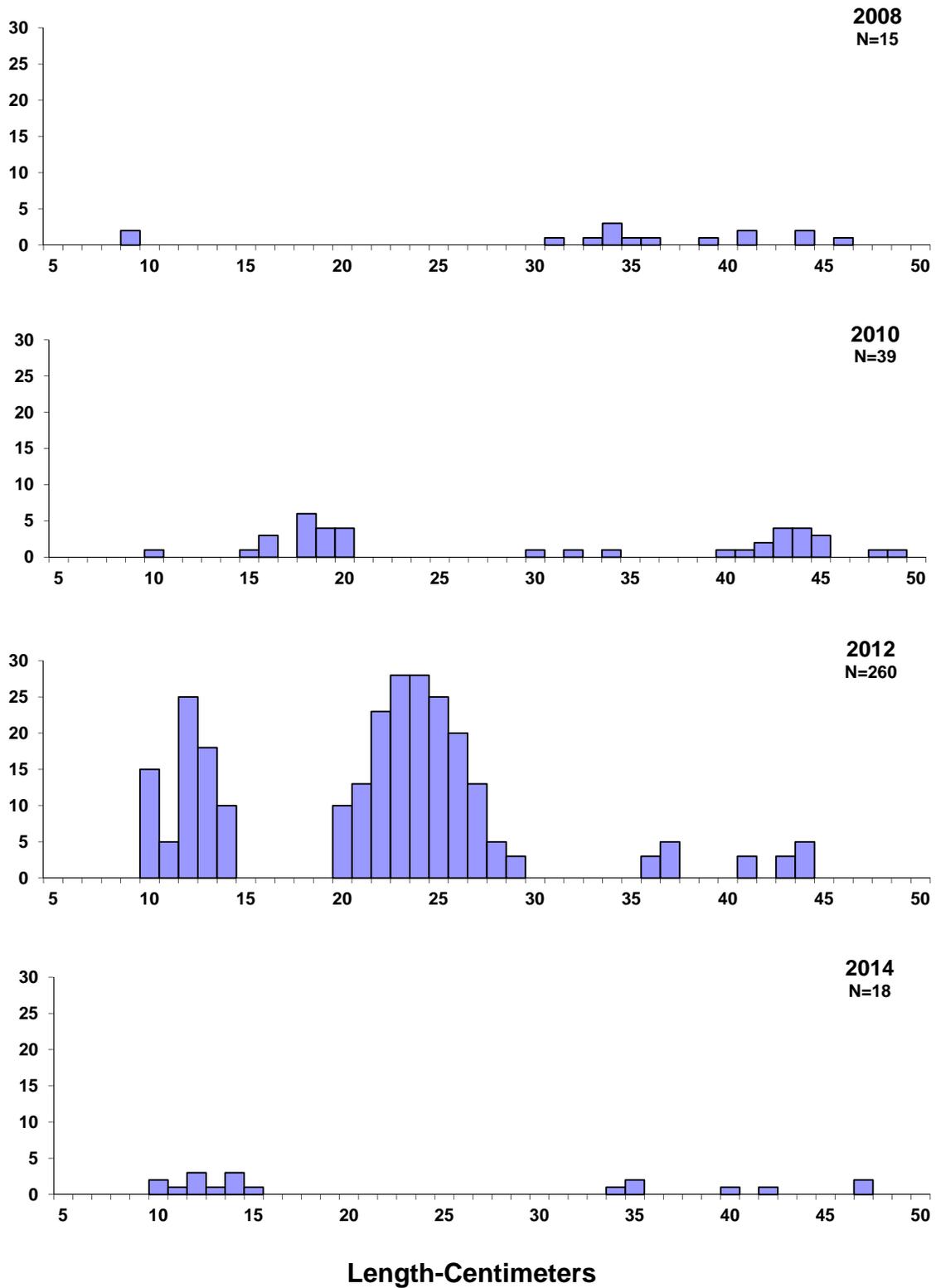


Figure 3. Length frequency histograms for largemouth bass sampled by electrofishing in Staum Dam, Beadle County, 2008, 2010, 2012 and 2014.

Bluegill

Management Objective

- maintain a bluegill population with a total electrofishing CPH of at least 50

Management Strategy

- stock adult bluegills at the rate of 10/acre (460) if needed to restore the fishery following a winterkill or if needed to achieve the management objective

Staum Dam often produces large year classes of bluegills and abundance frequently surpasses the management objective (Table 9). However, past surveys show that although bluegill growth is good, very few ever exceed 20 cm (8 in) in length (Figures 4, 5).

Table 9. CPUE, PSD, RSD-P, and mean *Wr* for all bluegill sampled with electrofishing in Staum Dam, Beadle County, 2005-2014. Stocked years are shaded.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CPUE		66.0		2.3		19.5		483.0		162.4
PSD		7		--		24		26		59
RSD-18		5		--		0		5		10
RSD-P		0		--		0		1		3
Mean <i>Wr</i>		132		--		105		121		124

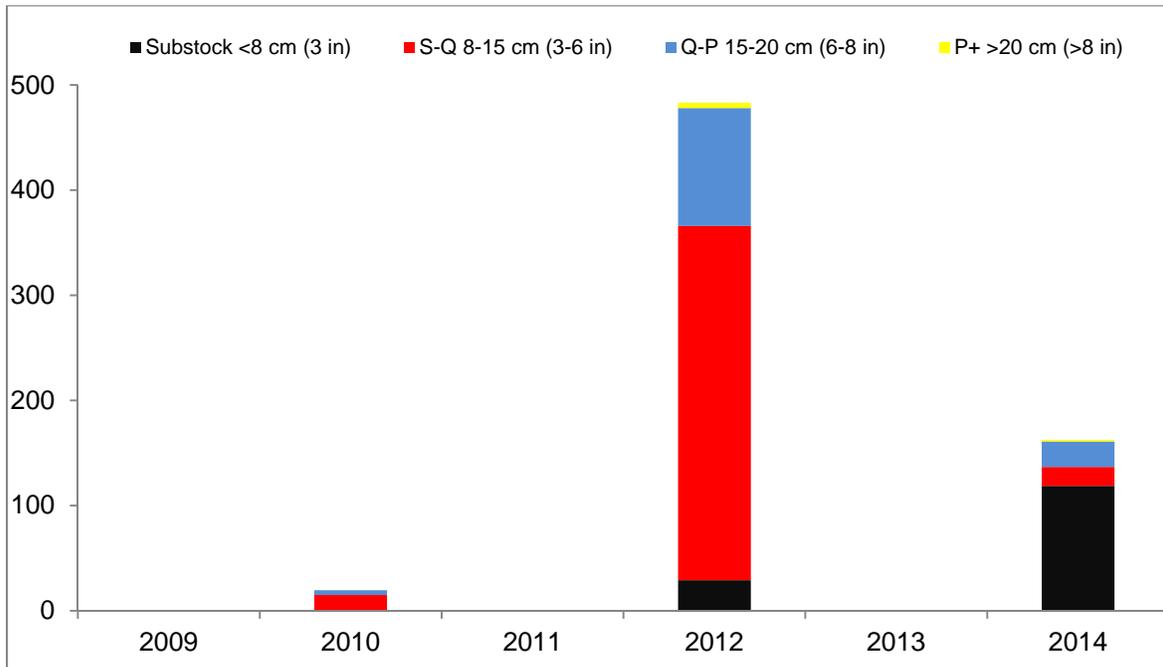


Figure 4. CPUE by length category for bluegill sampled with electrofishing in Staum Dam, Beadle County, 2009-2014.

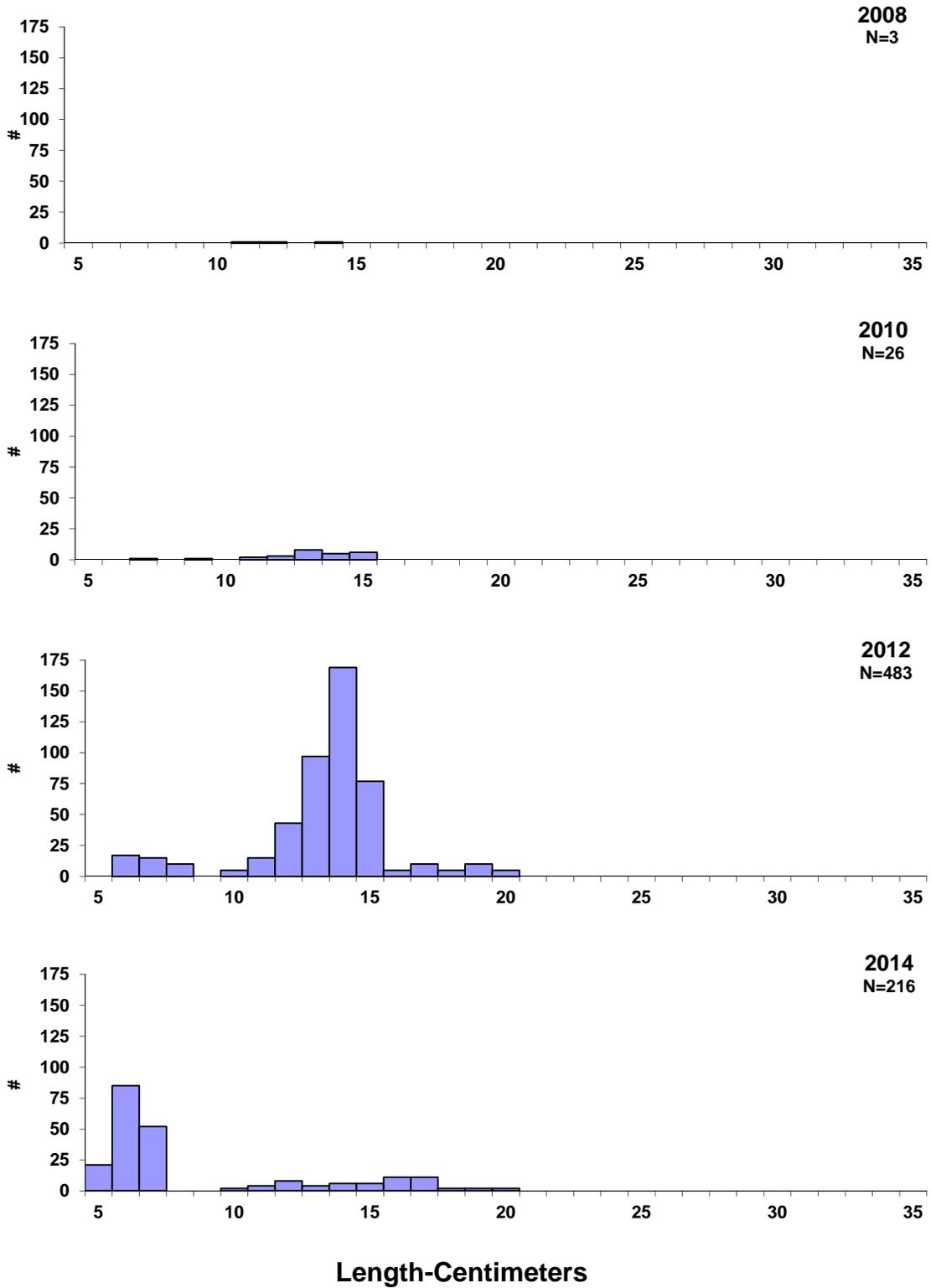


Figure 5. Length frequency histograms for bluegills sampled by electrofishing in Staum Dam, Beadle County, 2006, 2008, 2010, and 2012.

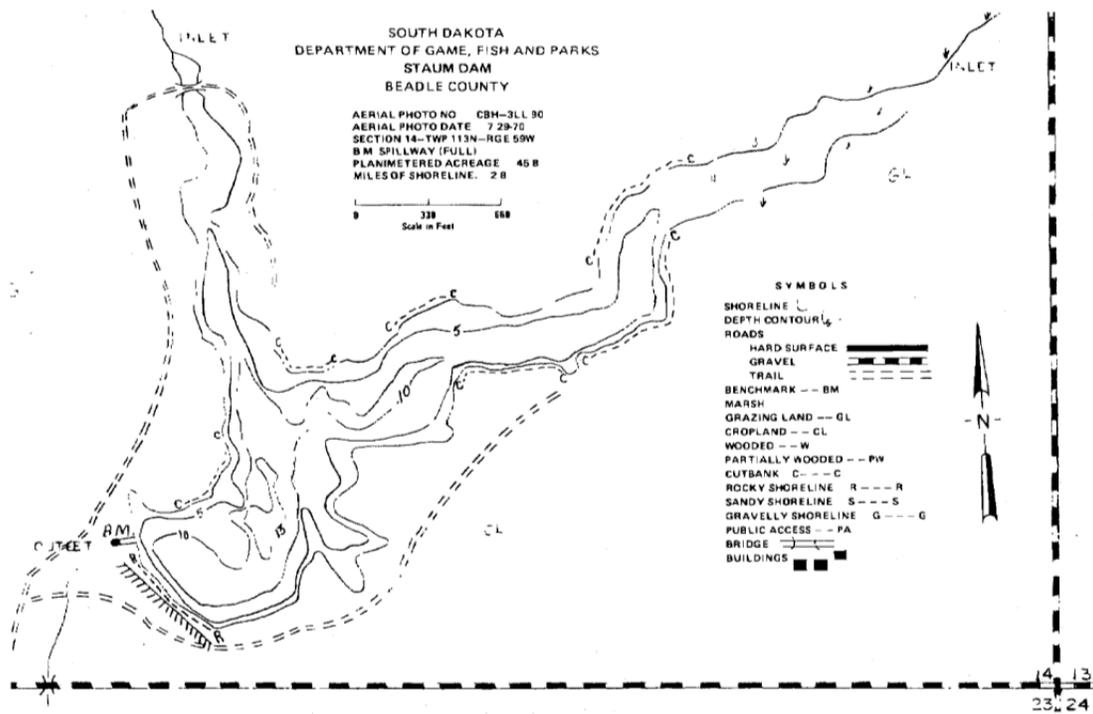


Figure 6. Contour map of Staum Dam, Beadle County. (insert appropriate lake contour map above as in example)

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 (Inches in parenthesis).

Species	Stock	Quality	Preferred	Memorable	Trophy
Walleye	25 (10)	38 (15)	51 (20)	63 (25)	76 (30)
Yellow perch	13 (5)	20 (8)	25 (10)	30 (12)	38 (15)
Black crappie	13 (5)	20 (8)	25(10)	30 (12)	38 (15)
White crappie	13 (5)	20 (8)	25(10)	30 (12)	38 (15)
Bluegill	8 (3)	15 (6)	20 (8)	25 (10)	30 (12)
Largemouth bass	20 (8)	30 (12)	38 (15)	51 (20)	63 (25)
Smallmouth bass	18 (7)	28 (11)	35(14)	43 (17)	51 (20)
Northern pike	35 (14)	53 (21)	71 (28)	86 (34)	112 (44)
Channel catfish	28 (11)	41 (16)	61 (24)	71 (28)	91 (36)
Black bullhead	15 (6)	23 (9)	30 (12)	38 (15)	46 (18)
Common carp	28 (11)	41 (16)	53 (21)	66 (26)	84 (33)
Bigmouth buffalo	28 (11)	41 (16)	53 (21)	66 (26)	84 (33)

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.