Cookstove Dam Survey Summary

Cookstove Dam is 6.5 acre impoundment located approximately 11 miles south and 1 mile west of Fort Pierre, South Dakota. The dam grade and the western third of the pond are located on Fort Pierre National Grassland, US Department of Agriculture. The Eastern 2/3 of the pond is located on private property with an access agreement for public use from high water mark plus 50 feet zone around the entire impoundment. Maximum depth is approximately 13 feet with an average depth of 6 feet. Cookstove Dam is completely encircled with cattails and bulrushes making public access difficult except along the dam grade. Much of the impoundment has submergent vegetation, providing cover for fish but making fishing difficult. Boat access is limited to carry in along the dam grade.

At the time of survey, water quality and dissolved oxygen was good above the established thermocline at 6 feet. Below the thermocline there was no dissolved oxygen. Water clarity was about 72 inches.

Largemouth Bass, Bluegill and Yellow Perch are the dominant fish species within Cookstove Dam. Bluegill was the dominant species caught with size range of 3.5 to 7.8 inches collected and the average size at 6 inches. Plumpness of the Bluegill was good. Growth rates were near the statewide average for the region. Bluegill sizes and numbers have remained the same over time for fish greater than stock length.

Yellow Perch abundance has decreased to 1.3 fish/net-night, which is lower than 2015 (11.5 fish/net-night). The proportion of larger fish has remained the same over time with the average size being 10 inches. Yellow perch ranged 8.8 to 12.0 inches in length. Growth of Yellow Perch was good in Cookstove Dam.

Largemouth Bass were collected but a full survey of for Largemouth Bass is difficult due to boat access into Cookstove Dam.

Cookstove Dam is a great public impoundment on the Fort Pierre National Grasslands that provide great fishing for Bluegill, Yellow Perch and Largemouth Bass open water and through the ice.

For more information, please contact South Dakota Game, Fish and Parks Ft. Pierre office – (605) 223-7700.

Prepared 01-10-2019 by KDP

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Cookstove Dam, Stanley County
BAD-Lake-373-000
2018

Lake Information

Name: Cookstove Dam

County: Stanley

Surface Area: 6 Acres

Surveys and Investigations

Survey methods used by gear type, date, and effort.

Gear	Date	Effort
frame net (std 3/4 in)	Jun 26, 2018	4 net-nights
frame net (std 3/4 in)	Jun 27, 2018	4 net-nights

Common Fish Species Present

Largemouth Bass

Bluegill

Yellow Perch

Terminology

Catch per unit effort (**CPUE**) refers to the relative abundance of a species. It is defined as the number of fish captured per unit of effort (i.e., number of fish captured per net-night or number of fish captured per hour electrofishing). In this report CPUE is typically given for only stock-length fish (see length categories table for stock lengths).

A statewide effort to help make netting efforts comparable to all waters sampled across the state, occurred in 2017, with a switch to American Fisheries Society gill nets. Past gill netting efforts were completed with different style/types of nets and are not comparable side by side.

- **AFS std gill net** – 80 ft experimental gill net containing eight panels (10 ft each) of varying monofilament meshes of 0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25 and 2.50 inches.
- **std experimental gill net for non-Missouri River waters** - 150 ft experimental gill net containing six panels (25 ft each) of varying monofilament meshes of 0.5, 0.75, 1.00, 1.25, 1.50 and 2.00 inches.
- s**td experimental gill net for Missouri River reservoirs** – 300 ft experimental gill net containing six panels (50 ft each) of varying multifilament meshes of 0.5, 0.75, 1.00, 1.25, 1.50 and 2.00 inches.

$$CPUE = \frac{number\ of\ fish}{effort}$$

Population size structure is quantified using the indices proportional size distribution of quality-length fish (**PSD**) and proportional size distribution of preferred-length fish (**PSD-P**). These indices indicate the proportion of stock-length fish that are equal to or greater than a given length. Minimum lengths for stock, quality and preferred length fish are given in the length categories table.

$$PSD = \left(\frac{number\ of\ fish \geq quality\ length}{number\ of\ fish \geq stock\ length}\right) \text{x } 100$$

$$PSD - P = \left(\frac{number\ of\ fish \geq preferred\ length}{number\ of\ fish \geq stock\ length}\right) \text{x } 100$$

Relative weight (**Wr**) is used to quantify fish plumpness. Relative weight is the ratio of what a fish weighs (W) compared to a length-specific standard weight (Ws) multiplied by 100. Relative weight values of 95-105 are commonly cited as optimum values, but values in the 80s are common during summer sampling in South Dakota.

$$Wr = \left(\frac{W}{Ws}\right) \text{x } 100$$

Confidence intervals (**CI**) are provided for many of the estimates calculated in this report. The confidence interval provides a range in which the true mean is expected to fall. For example, with an 80% CI we are 80% confident that the interval contains the true value.

Length categories include stock (**S**), quality (**Q**), preferred (**P**), memorable (**M**) and trophy (**T**). Length categories for most species have been defined based on a percentage of the world record length for that species. Some species mentioned in this report do not have defined length categories. Length categories for species used in this report are provided in the following table. Measurements are the minimum total length for each category and are reported in inches (in) and centimeters (cm).

	Stock		Quality		Preferred		Memorable		Trophy	
Species Name	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)
Black Bullhead	6	15	9	23	12	30	15	38	18	46
Black Crappie	5	13	8	20	10	25	12	30	15	38
Bluegill	3	8	6	15	8	20	10	25	12	30
Brown Trout	6	15	9	23	12	30	15	38	18	46
Channel Catfish	11	28	16	41	24	61	28	71	36	91
Freshwater Drum	8	20	12	30	15	38	20	51	25	63
Lake Trout	12	30	20	50	26	65	31	80	39	100
Largemouth Bass	8	20	12	30	15	38	20	51	25	63
Muskellunge	20	51	30	76	38	97	42	107	50	127
Northern Pike	14	35	21	53	28	71	34	86	44	112
Pumpkinseed	3	8	6	15	8	20	10	25	12	30
Rainbow Trout	10	25	16	40	20	50	26	65	31	80
Rudd	6	15	10	25	12	30	15	38	19	48
Sauger	8	20	12	30	15	38	20	51	25	63
Smallmouth Bass	7	18	11	28	14	35	17	43	20	51
Walleye	10	25	15	38	20	51	25	63	30	76
White Bass	6	15	9	23	12	30	15	38	18	46
White Crappie	5	13	8	20	10	25	12	30	15	38
Yellow Bullhead	4	10	7	18	9	23	11	28	14	36
Yellow Perch	5	13	8	20	10	25	12	30	15	38

Catch Summary of Stock Length Fish

Catch per unit effort (CPUE), proportional size distribution (PSD), proportional size distribution of preferred length fish (PSD-P), and relative weight (Wr) for species sampled in survey with 80% confidence interval (CI-80).

*** Methods/Species that ignore stock length**

		Abundance		Stock Density Indices				Condition	
Gear	Species	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
frame net (std 3/4 in)	Bluegill	14.1	7.2	63	4	0		105	1
	Largemouth Bass	0.1	0.1	0		0			
	Yellow Perch	1.3	0.7	100		50	18	99	2

10-Year Catch Per Unit Effort by Gear and Species

Catch per unit effort (CPUE) and average (Avg) of species across 10 years using different gear types.

		CPUE										
Gear	Species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg
frame net (std 3/4 in)	Bluegill	12.5			12.4			12.5			14.1	12.9
	Largemouth Bass	1.1			0.4			0.0			0.1	0.4
	Yellow Perch	2.8			8.5			11.5			1.3	6.0

10-Year Size Structure and Condition Statistics by Gear and Species

Species proportional size distribution (PSD), proportional size distribution of preferred length fish (PSD-P), and relative weight (Wr) collected by different gear types across 10 years.

			Year									
Gear	Species	Index	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
frame net (std 3/4 in)	Bluegill	PSD	61			100			1			63
		PSD-P	4			8			1			0
		Wr	95			97			104			105
	Largemouth Bass	PSD	0			0			0			0
		PSD-P	0			0			0			0
		Wr	107			101						
	Yellow Perch	PSD	68			51			16			100
		PSD-P	9			12			12			50
		Wr	85			84			97			99

Back-Calculated Lengths

Mean species back-calculated total length (mm) at age, standard error (SE), and sample size (N).

Species: Bluegill

			Mean back-calculated length (SE) at age									
Year Class	Age	N	1	2	3	4	5	6	7	8	9	10
2016	2	17	42 (3.5)	93 (4)								
2015	3	11	40 (2.6)	83 (5.7)	124 (7.6)							
2014	4	10	43 (2.4)	85 (3.9)	125 (6.7)	156 (4.5)						
2013	5	6	39 (1.8)	83 (3.9)	130 (5)	156 (5)	174 (2.8)					
Weighted Mean		44	41	87	126	156	174					

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2016	2	17										
2015	3	11										
2014	4	10										
2013	5	6										
Weighted Mean		44										

Species: Yellow Perch

			Mean back-calculated length (SE) at age									
Year Class	Age	N	1	2	3	4	5	6	7	8	9	10
2014	4	5	88 (5.6)	140 (7)	178 (7.5)	209 (9.5)						
2013	5	3	95 (6.4)	150 (4.5)	180 (8.7)	202 (11.7)	230 (5.4)					
Weighted Mean		8	91	144	179	206	230					

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2014	4	5										
2013	5	3										
Weighted Mean		8										

Length at Capture

Mean length at capture by age across years sampled, sample size (N).

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2018	112		127 (33)	155 (27)	176 (37)	186 (16)					
2015	100		122 (99)								230 (1)
2012	99						177 (51)	189 (40)	205 (8)	220 (1)	
2009	100		120 (33)	143 (8)	172 (20)	179 (37)	204 (2)				

Fish Condition

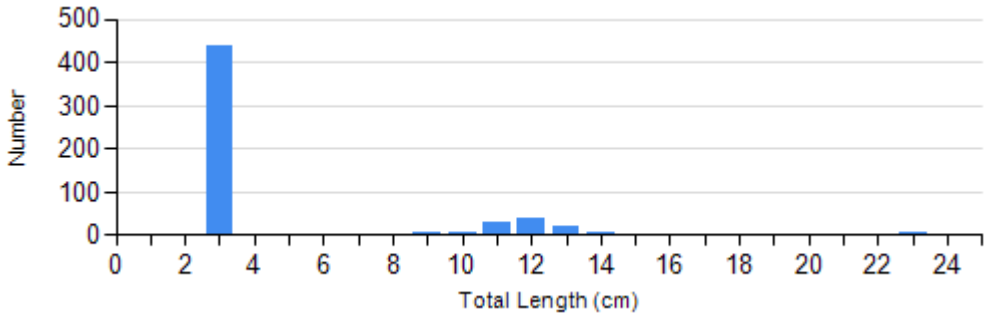
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Bluegill Frame Net	2015	99	104 (0.9)	0		1	103	0	
	2018	42	105 (2.4)	71	106 (1.2)	0		0	

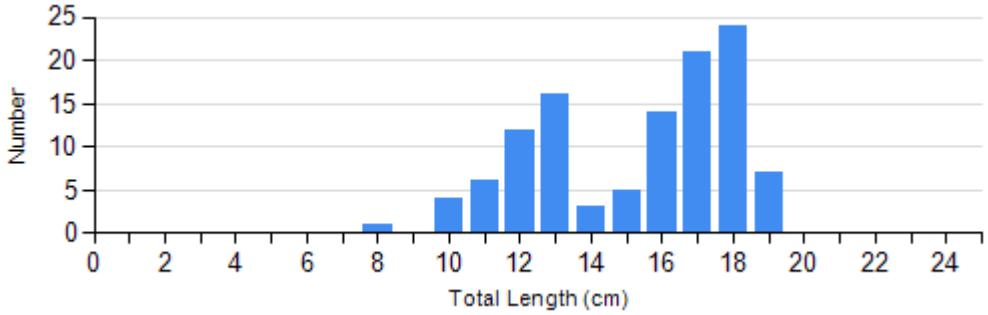
Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Bluegill
Gear: frame net (std 3/4 in)



2015



2018

Historic Fish Sizes and Relative Abundance

Size distribution per net by color for species sampled by year.

Species: Bluegill
Gear: frame net (std 3/4 in)