SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Center, Custer County

MCS-Lake-1-000

2021

Lake Information

Name: Center

County: Custer

Surface Area: 26 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Aug 18, 2021	2 net-nights
frame net (std 3/4 in)	Aug 18, 2021	4 net-nights

Common Fish Species Present

Rainbow Trout

White Sucker

Tiger Trout

Cutthroat Trout (lentic)

Creek Chub

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	8	20	12	30	16	40	20	50	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	Sample Size (n)	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
AFS std gill net	Rainbow Trout	1	0.5	1.5	0		0		81	
	White Sucker	1	0.5	1.5	100		100		104	
frame net (std 3/4 in)	Creek Chub	5	0.0	0.0						
	Cutthroat Trout (lentic)	171	0.0	0.0						
	Rainbow Trout	1	0.3	0.4	0		0		57	
	Tiger Trout	3	0.0	0.0						
	White Sucker	18	4.5	1.9	28	18	0		79	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.

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

		CPUE										
Gear	Species	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
AFS std gill net	Rainbow Trout										0.5	0.50
	White Sucker										0.5	0.50
frame net (1/4 inch)	Brook Trout		0.0			0.0						0.00
	Creek Chub		0.0			0.0						0.00
	Fathead Minnow		0.0			0.0						0.00
	Rainbow Trout		0.0			0.0						0.00
	White Sucker		1.0			9.0						5.00
frame net (std 3/4 in)	Brook Trout		0.0			0.0					0.0	0.00
	Creek Chub		0.0			0.0					0.0	0.00
	Cutthroat Trout (lentic)		0.0			0.0					0.0	0.00
	Rainbow Trout		3.3			8.3					0.3	3.97
	Tiger Trout		0.0			0.0					0.0	0.00
	White Sucker		14.0			42.7					4.5	20.40

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	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AFS std gill net	Rainbow Trout	PSD										0
		PSD-P										0
		Wr										81
	White Sucker	PSD										100
		PSD-P										100
		Wr										104
frame net (1/4 inch)	Rainbow Trout	PSD		0								
		PSD-P		0								
	White Sucker	PSD		100			33					
		PSD-P		0			0					
		Wr		76			82					
frame net (std 3/4 in)	Rainbow Trout	PSD		0			0					0
		PSD-P		0			0					0
		Wr		62			62					57
	White Sucker	PSD		86			30					28
		PSD-P		33			4					0
		Wr		85			86					79

Fish Condition

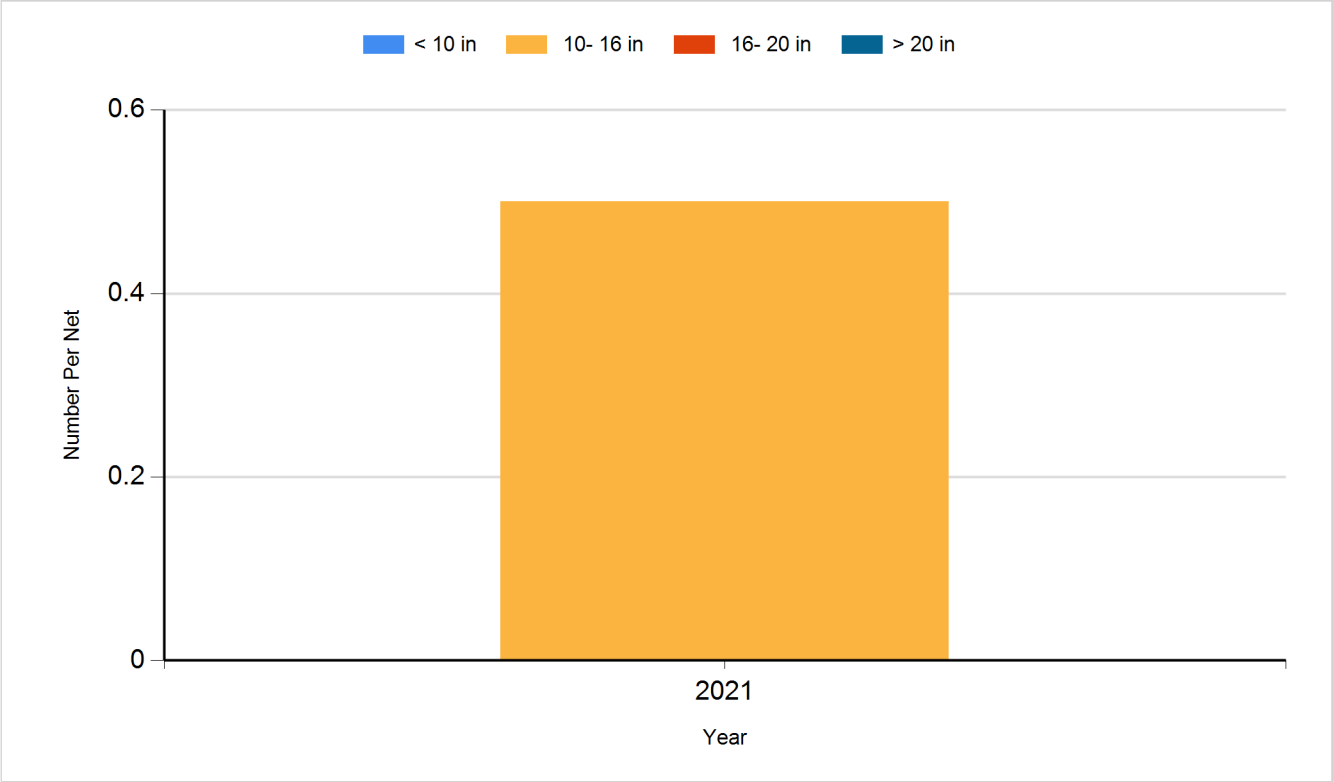
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Rainbow Trout Gill Net	2021	1	81	0		0		0	
White Sucker Gill Net	2021	0		0		1	104	0	

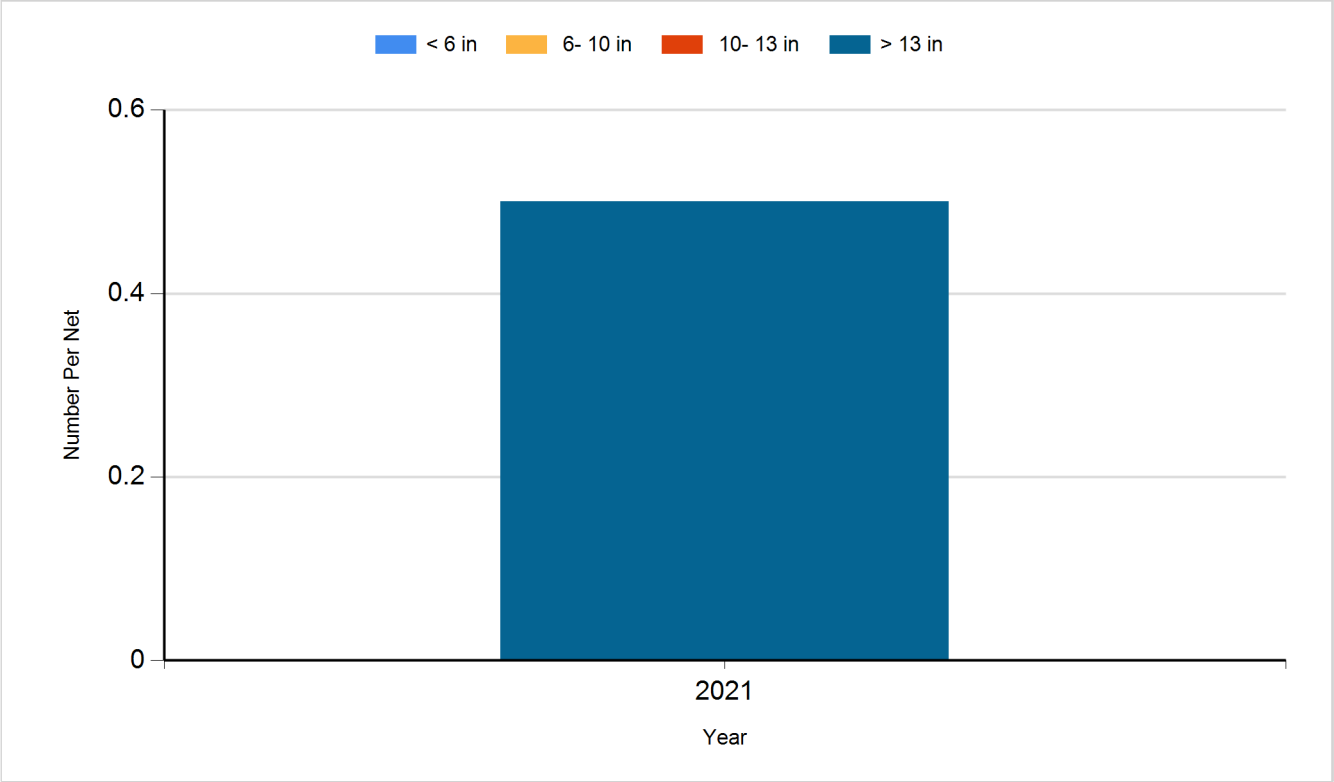
Historic Fish Sizes and Relative Abundance

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

Species: Rainbow Trout
Gear: AFS std gill net



Species: White Sucker
Gear: AFS std gill net



Fish Stocking

Number of fish stocked by year, species, and size.

Year	Species	Size	Number
2010	Rainbow Trout (Erwin x Arlee)	Catchable	1,100
2010	Rainbow Trout (Erwin)	Catchable 15"	450
2010	Rainbow Trout (Shasta)	Catchable	6,000
2011	Rainbow Trout (Erwin x Arlee)	Catchable	955
2011	Rainbow Trout (Erwin x Arlee)	Catchable 15"	375
2011	Rainbow Trout (Shasta)	Catchable	5,400
2012	Rainbow Trout (Erwin x Arlee)	Catchable	2,000
2012	Rainbow Trout (Erwin x Arlee)	Catchable 15"	375
2012	Rainbow Trout (Shasta)	Catchable	4,400
2013	Rainbow Trout (Erwin x Arlee)	Catchable	75
2013	Rainbow Trout (Erwin x Arlee)	Catchable 15"	375
2013	Rainbow Trout (Shasta)	Catchable	7,400
2014	Rainbow Trout (Erwin x Arlee)	Catchable	1,000
2014	Rainbow Trout (Erwin x Arlee)	Catchable 15"	392
2014	Rainbow Trout (Shasta)	Catchable	5,400
2015	Rainbow Trout (Erwin x Arlee)	Catchable	2,000
2015	Rainbow Trout (Erwin x Arlee)	Catchable 15"	425
2015	Rainbow Trout (Shasta)	Catchable	4,400
2016	Rainbow Trout (Erwin x Arlee)	Catchable	2,000
2016	Rainbow Trout (Erwin x Arlee)	Catchable 15"	375
2016	Rainbow Trout (Shasta)	Catchable	4,400
2016	Tiger Trout (Story)	Fingerling	3,012
2017	Rainbow Trout (Eagle Lake)	Catchable	1,000
2017	Rainbow Trout (Erwin x Arlee)	Catchable	4,000
2017	Rainbow Trout (Erwin x Arlee)	Catchable 15"	150
2017	Rainbow Trout (Shasta)	Catchable	1,400
2017	Rainbow Trout (Shasta)	Catchable 15"	150
2018	Rainbow Trout (Erwin x Arlee)	Catchable 11"	1,000
2018	Rainbow Trout (Shasta)	Catchable 11"	5,400
2018	Rainbow Trout (Shasta)	Catchable 15"	300
2019	Rainbow Trout (Erwin x Arlee)	Catchable 11"	3,400
2019	Rainbow Trout (Erwin x Arlee)	Catchable 15"	300
2019	Rainbow Trout (Shasta)	Catchable 11"	4,000
2019	Tiger Trout (Utah)	Large Fingerling	3,785
2020	Cutthroat Trout (lotic)	Catchable 11"	18,001
2020	Rainbow Trout (Arlee)	Catchable 11"	3,200

2020	Rainbow Trout (Shasta)	Catchable 15"	1,050
2021	Cutthroat Trout (lotic)	Adult	7,325
2021	Cutthroat Trout (lotic)	Catchable 11"	18,156