SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Tisdale Dam, Meade County

MCE-Lake-44-000

2018

Lake Information

Name: Tisdale Dam

County: Meade

Surface Area: 27 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 28, 2018	2 net-nights
frame net (std 3/4 in)	Jun 28, 2018	4 net-nights

Common Fish Species Present

Largemouth Bass

Bluegill

Northern Pike

Channel Catfish

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	Northern Pike	11	5.5	13.9	100		18		78	2
frame net (std 3/4 in)	Channel Catfish	1	0.3	0.4	100		100		128	
	Northern Pike	16	4.0	4.5	88		13		76	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
AFS std gill net	Northern Pike										5.5	5.5
frame net (std 3/4 in)	Black Bullhead						0.3					0.3
	Bluegill				87.0		69.5					78.3
	Channel Catfish										0.3	0.3
	Largemouth Bass				1.0		1.3					1.2
	Northern Pike				0.3		1.0				4.0	1.8
	Yellow Perch				1.8							1.8
rod and reel	Largemouth Bass						2.3					2.3
std exp gill net	Bluegill				2.0		1.0					1.5
	Northern Pike				5.0		2.0					3.5
	Yellow Perch				7.0		4.0					5.5

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
AFS std gill net	Northern Pike	PSD										100
		PSD-P										18
		Wr										78
frame net (std 3/4 in)	Bluegill	PSD				38		42				
		PSD-P				14		2				
		Wr				110		105				
	Channel Catfish	PSD										100
		PSD-P										100
		Wr										128
	Largemouth Bass	PSD				0		0				
		PSD-P				0		0				
		Wr				114		86				
	Northern Pike	PSD				0		100				88
		PSD-P				0		50				13
		Wr				82		86				76
rod and reel	Largemouth Bass	PSD						28				
		PSD-P						0				
		Wr						96				
std exp gill net	Bluegill	PSD				0		100				
		PSD-P				0		0				
		Wr				121		96				
	Northern Pike	PSD				80		100				
		PSD-P				20		50				
		Wr				109		83				

Fish Condition

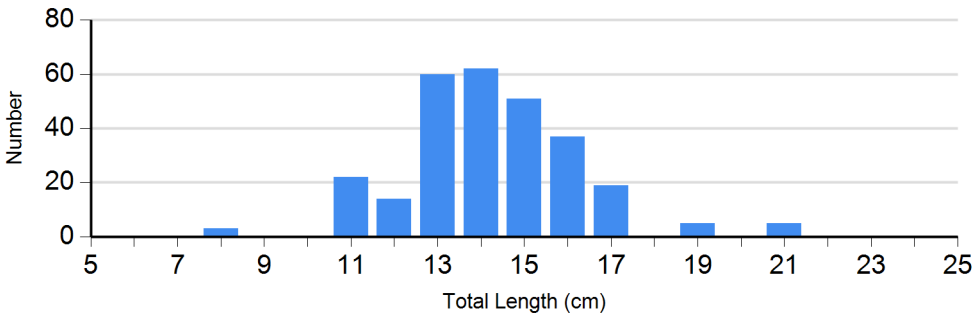
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2014	161	110 (1.7)	112	101 (1.5)	5	85 (1.8)	0	
Northern Pike Gill Net	2014	0		1	73	1	94	0	
	2018	0		9	78 (1.7)	2	76 (2.7)	0	

Length Frequency Distribution

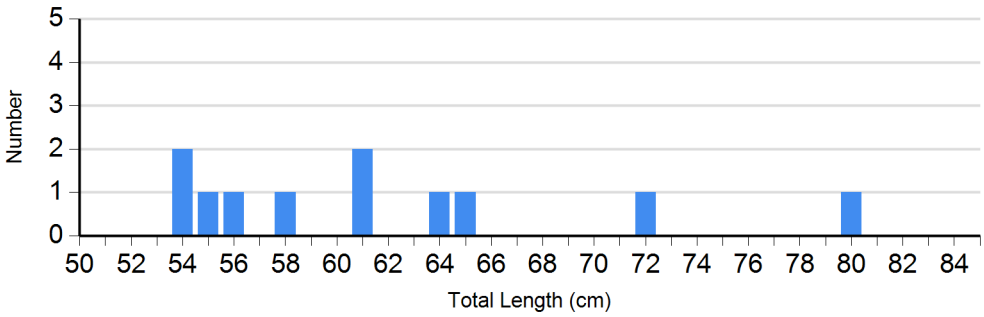
Length frequency histogram of species sampled by year.

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



2014

Species: Northern Pike
Gear: AFS std gill net

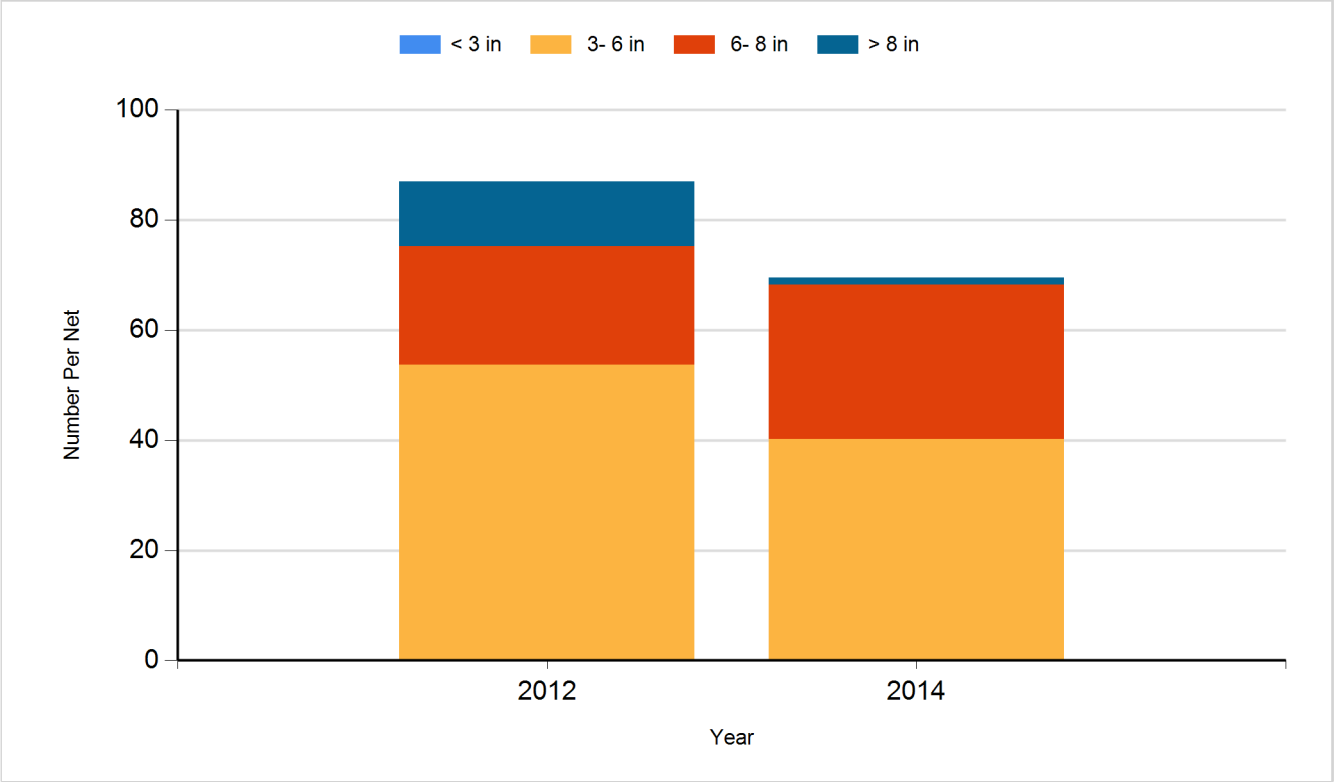


2018

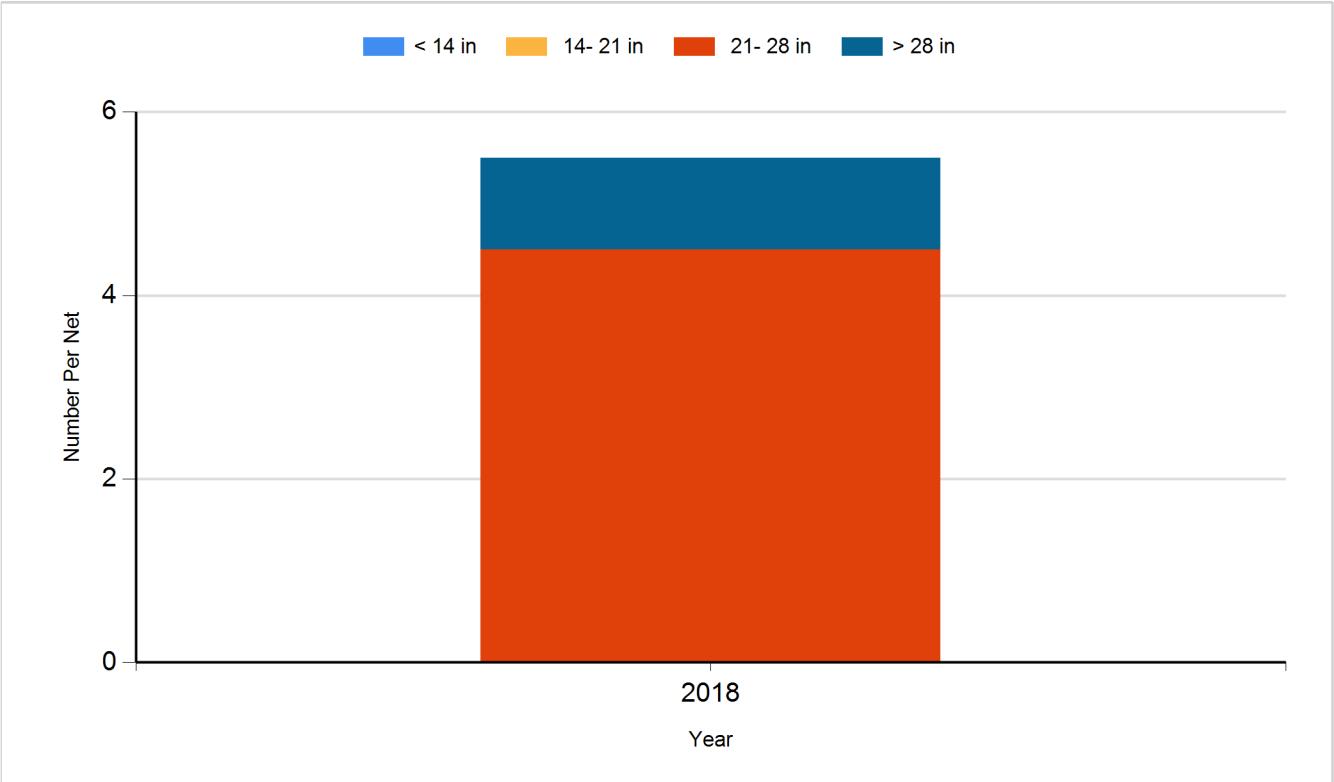
Historic Fish Sizes and Relative Abundance

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

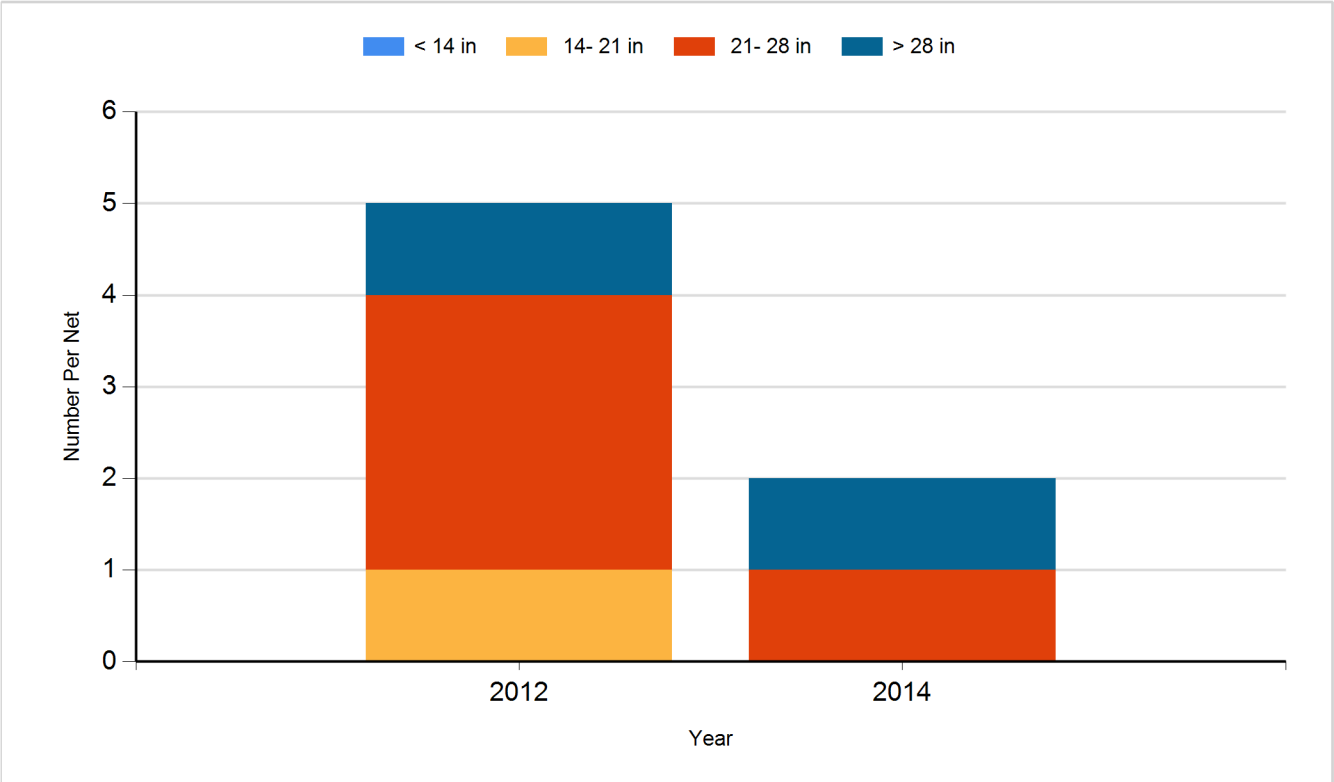
Species: Bluegill
Gear: frame net (std 3/4 in)



Species: Northern Pike
Gear: AFS std gill net



Species: Northern Pike
Gear: std exp gill net



Fish Stocking

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

Year	Species	Size	Number
2008	Bluegill	Fingerling	10,000
2008	Fathead Minnow	Large	3,000
2008	Largemouth Bass	Fingerling	2,000
2009	Largemouth Bass	Catchable	3,000
2011	Northern Pike	Fry	20,000
2012	Golden Shiner	Adult	100
2012	Yellow Perch	Adult	423
2014	Channel Catfish	Adult	155
2015	Largemouth Bass	Fingerling	2,000
2015	Northern Pike	Adult	50
2015	Yellow Perch	Adult	400
2018	Black Crappie		50
2018	Black Crappie	Adult	69
2018	Bluegill	Adult	102