

**SOUTH DAKOTA STATEWIDE FISHERIES SURVEY**  
**Bismark, Custer County**  
**MCS-Lake-7-000**  
**2016**

**Lake Information**

**Name:** Bismark  
**County:** Custer  
**Surface Area:** 23 Acres

**Surveys and Investigations**

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

Gear	Date	Effort
frame net (std 3/4 in)	September 08, 2016	4 net-nights

## **Common Fish Species Present**

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Yellow Perch

Rainbow Trout

Largemouth Bass

Black Crappie

Black Bullhead

Smallmouth Bass

Brown Trout

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## 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).

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

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.

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

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

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.

$$Wr = \left( \frac{W}{W_s} \right) \times 100$$

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).

Species Name	Stock		Quality		Preferred		Memorable		Trophy	
	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)
Bigmouth Buffalo	11	28	18	46	24	61	30	76	37	94
Black Bullhead	6	15	9	23	12	30	15	38	18	46
Black Crappie	5	13	8	20	10	25	12	30	15	38

Species Name	Stock		Quality		Preferred		Memorable		Trophy	
	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)
Blue Catfish	12	30	20	51	30	76	35	89	45	114
Bluegill	3	8	6	15	8	20	10	25	12	30
Bluegill X Gr. Sunfish Hybrid	3	8	6	15	8	20	10	25	12	30
Brown Bullhead	5	13	8	20	11	28	14	36	17	43
Burbot	8	20	15	38	21	53	26	67	32	82
Channel Catfish	11	28	16	41	24	61	28	71	36	91
Common Carp	11	28	16	41	21	53	26	66	33	84
Flathead Catfish	14	35	20	51	28	71	34	86	40	102
Freshwater Drum	8	20	12	30	15	38	20	51	25	63
Gizzard Shad	7	18	11	28						
Green Sunfish	3	8	6	15	8	20	10	25	12	30
Lake Herring	5	13	8	20	11	28	14	35	17	43
Largemouth Bass	8	20	12	30	15	38	20	51	25	63
Longnose Gar	16	41	27	69	36	91	45	114	55	140
Muskellunge	20	51	30	76	38	97	42	107	50	127
Northern Pike	14	35	21	53	28	71	34	86	44	112
Paddlefish	16	41	26	66	33	84	41	104	51	130
Pumpkinseed	3	8	6	15	8	20	10	25	12	30
Redear Sunfish	4	10	7	18	9	23	11	28	13	33
River Carpsucker	7	18	11	28	14	36	18	46	22	56
Rock Bass	4	10	7	18	9	23	11	28	13	33
Rudd	6	15	10	25	12	30	15	38	19	48
Sauger	8	20	12	30	15	38	20	51	25	63
Saugeye	9	23	14	35	18	46	22	56	27	69
Shorthead Redhorse	6	15	10	25	13	33	16	41	20	51
Smallmouth Bass	7	18	11	28	14	35	17	43	20	51
Smallmouth Buffalo	11	28	18	46	24	61	30	76	37	94
Spotted Bass	7	18	11	28	14	35	17	43	20	51
Striped Bass	12	30	20	51	30	76	35	89	45	114
Striped Bass Hybrid (wiper)	8	20	12	30	15	38	20	51	25	63
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
White Perch	5	13	8	20	10	25	12	30	15	38
White Sucker	6	15	10	25	13	33	16	41	20	51
Yellow Bass	4	10	7	18	9	23	11	28	13	33
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).

Gear	Species	Abundance		Stock Density Indices			Condition	
		CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr
frame net (std 3/4 in)	Black Bullhead	14.8	23.1	12	7	3	96	4
	Black Crappie	0.3	0.4	100		100		
	Brown Trout	0.0	0.0					
	Rainbow Trout	0.0	0.0					
	Smallmouth Bass	4.5	3.2	44	19	0	118	6
	Yellow Perch	3.0	1.8	75		67	92	3

## 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.

Gear	Species	CPUE										Avg
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
frame net (std 3/4 in)	Black Bullhead										14.8	14.8
	Black Crappie										0.3	0.3
	Brown Trout										0.0	0.0
	Rainbow Trout										0.0	0.0
	Smallmouth Bass										4.5	4.5
	Yellow Perch										3.0	3.0

## **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.

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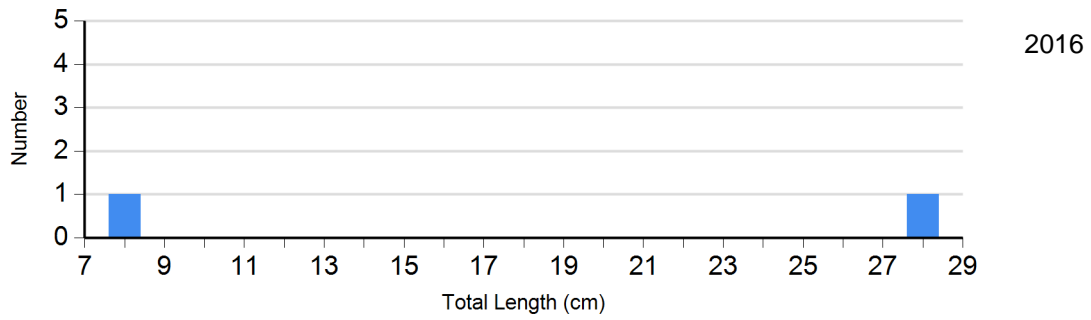
Gear	Species	Index	Year										
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
frame net (std 3/4 in)	Black Crappie	PSD											100
		PSD-P											100
	Yellow Perch	PSD											75
		PSD-P											67
		Wr											92

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## Length Frequency Distribution

Length frequency histogram of species sampled by year.

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



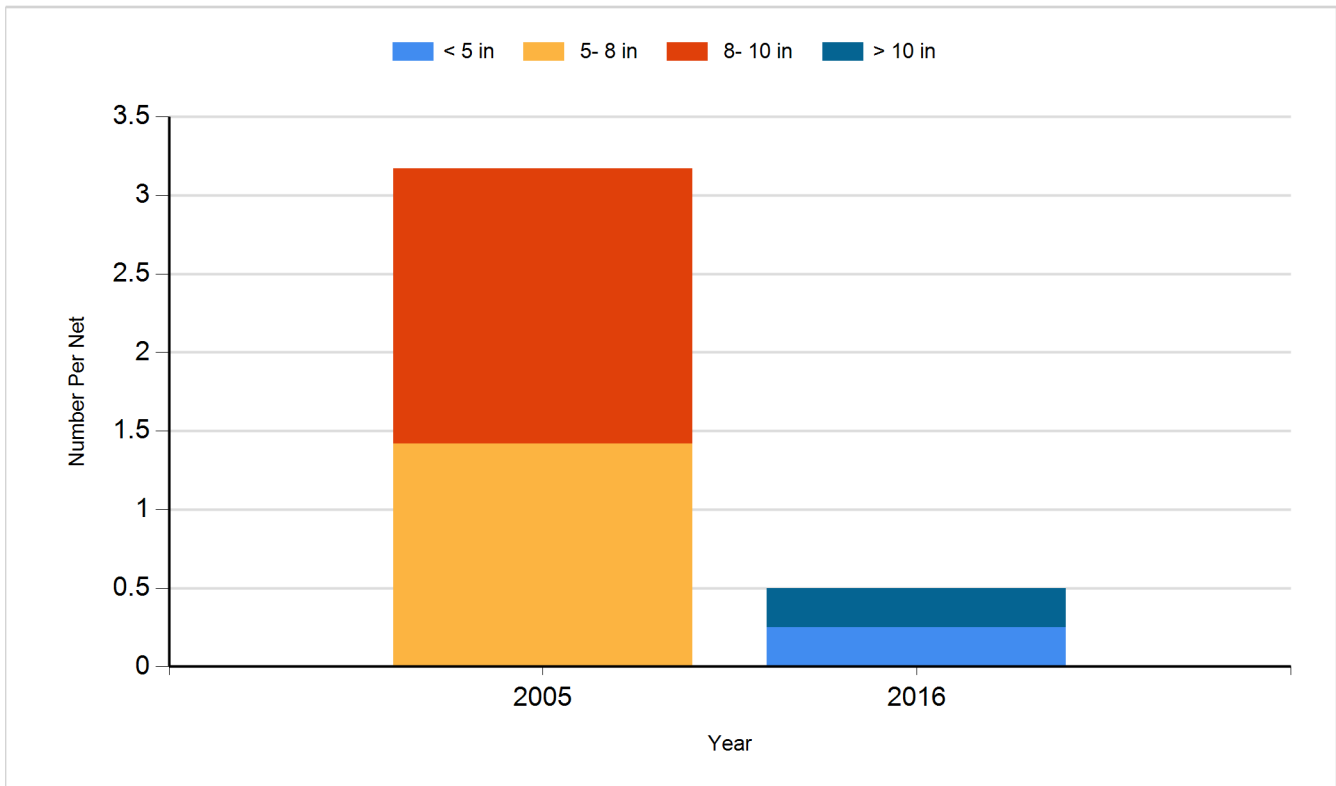


## Historic Fish Sizes and Relative Abundance

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

Species: Black Crappie

Gear: Frame Net



## **Fish Stocking**

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

Year	Species	Size	Number
2005	Brown Trout (Soda Lake)	Catchable	625
2005	Rainbow Trout (Cleghorn)	Adult	85
2005	Rainbow Trout (Eagle Lake)	Adult	85
2005	Rainbow Trout (Eagle Lake)	Catchable	700
2005	Rainbow Trout (Ennis)	Catchable	1,610
2005	Rainbow Trout (McConaugRainbow Trout)	Catchable	700
2005	Rainbow Trout (Shasta)	Catchable	1,400
2006	Rainbow Trout (Erwin)	Adult	285
2006	Rainbow Trout (Erwin)	Catchable	700
2006	Rainbow Trout (Shasta)	Catchable	3,385
2007	Brown Trout (Soda Lake)	Catchable 11"	600
2007	Rainbow Trout (Erwin)	Catchable	1,680
2007	Rainbow Trout (Erwin)	Catchable 11"	200
2007	Rainbow Trout (Erwin)	Catchable 15"	30
2007	Rainbow Trout (Shasta)	Catchable 11"	2,240
2008	Rainbow Trout (Erwin)	Catchable 15"	42
2008	Rainbow Trout (Shasta)	Catchable 11"	2,240
2008	Rainbow Trout (Utah)	Catchable	1,400
2009	Rainbow Trout (Erwin)	Catchable	700
2009	Rainbow Trout (Shasta)	Catchable 11"	4,800
2009	Rainbow Trout (Shasta)	Catchable 15"	85
2009	Rainbow Trout (Utah)	Catchable 15"	170
2010	Rainbow Trout (Erwin x Arlee)	Catchable	1,400
2010	Rainbow Trout (Erwin)	Catchable 15"	70
2010	Rainbow Trout (Shasta)	Catchable	3,500
2010	Rainbow Trout (Shasta)	Catchable 15"	35
2011	Rainbow Trout (Erwin x Arlee)	Catchable	1,316
2011	Rainbow Trout (Erwin x Arlee)	Catchable 15"	105
2011	Rainbow Trout (Shasta)	Catchable	3,500
2012	Rainbow Trout (Erwin x Arlee)	Catchable	1,400
2012	Rainbow Trout (Erwin x Arlee)	Catchable 15"	70
2012	Rainbow Trout (Shasta)	Catchable	3,500
2013	Rainbow Trout (Erwin x Arlee)	Catchable	1,400
2013	Rainbow Trout (Erwin x Arlee)	Catchable 15"	115

2013	Rainbow Trout (Shasta)	Catchable	4,350
2014	Rainbow Trout (Erwin x Arlee)	Catchable 15"	70
2014	Rainbow Trout (Shasta)	Catchable	4,200
2015	Black Crappie	Adult	60
2015	Brown Trout	Fingerling	1,500
2015	Rainbow Trout (Erwin x Arlee)	Catchable	700
2015	Rainbow Trout (Erwin x Arlee)	Catchable 15"	70
2015	Rainbow Trout (Shasta)	Catchable	3,500
2015	Smallmouth Bass	Adult	380
2016	Brown Trout (Plymouth Rock)	Catchable 11"	700
2016	Rainbow Trout (Erwin x Arlee)	Catchable	1,400
2016	Rainbow Trout (Erwin x Arlee)	Catchable 15"	105
2016	Rainbow Trout (Shasta)	Catchable	3,500
2016	Redear Sunfish	Small Fingerling	6,450
2016	Smallmouth Bass	Adult	300
2016	Smallmouth Bass	Juvenile	300

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