Murdo Railroad Dam Survey Summary

Murdo Railroad Dam is a small prairie impoundment located just to the south of the City of Murdo, South Dakota, south of I-90, and just to the west of SD DOT maintenance shop. Access to the water is excellent for a shore angler with the shoreline open to public use. The City of Murdo owns the entire shoreline and access to the water. In the southeast corner of the impoundment there is a small craft launch, ideal for a small boat There is no formal boat ramp existing. Access during the winter months can be difficult depending on snow amounts.

At time of survey water quality was good. Dissolved oxygen was adequate from surface to bottom. Water clarity was good at 53 inches. Murdo Railroad contains several species of submerged vegetation (clasping pondweed, northern watermilfoil, etc.) providing fish cover throughout the impoundment.

Murdo Railroad Dam is managed for Largemouth Bass and Bluegill but at the time of survey none were collected. The primary fish collected were Green Sunfish and Black Bullhead. Green Sunfish average size was small at 4.7 inches (3.0 to 8.0 range) and Black Bullhead size around 7.5 inches (6.0 to 11.0 range). All fish collected seemed plump. The Green Sunfish population has increased dramatically since the first documented sighting in 2015. Black Crappie numbers have dropped from 18.6 to 0.2 fish/net-night. Crappie numbers are cyclical and may rebound in the future.

Largemouth bass were not collected but were seen swimming within the pond survey. Due to the high conductivity of the water (3500+ µS), electrofishing cannot be conducted on Murdo Railroad Dam.

Future management activities for Murdo Railroad would include stocking additional Largemouth bass, Bluegill and Black Crappie to boost their numbers to help to control the population of Green Sunfish and Black Bullhead.

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
Murdo Railroad, Jones County
LWH-Lake-1079-002
2018

Lake Information

Name: Murdo Railroad

County: Jones

Legal Description: T2-R28-S12

Surface Area: 13 Acres

Maximum Depth: 20 Feet

Mean Depth: 9 Feet

Surveys and Investigations

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

Gear	Date	Effort
frame net (std 3/4 in)	Jun 12, 2018	5 net-nights

Common Fish Species Present

Bluegill

Largemouth Bass

Green Sunfish

Black Bullhead

Black Crappie

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)	Black Bullhead	33.4	25.8	9	3	0		100	4
	Black Crappie	0.2	0.3	0		0		117	
	Green Sunfish	35.0	34.2	14	4	4	2	116	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)	Black Bullhead	1.8			12.3			19.4			33.4	16.7
	Black Crappie				0.0			18.6			0.2	6.3
	Channel Catfish	0.0										0.0
	Golden Shiner							0.0				0.0
	Green Sunfish							3.4			35.0	19.2

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)	Black Bullhead	PSD	0			15			2			9
		PSD-P	0			1			0			0
		Wr	95			96			100			100
	Black Crappie	PSD				0			12			0
		PSD-P				0			0			0
		Wr							116			117
	Channel Catfish	PSD	0									
		PSD-P	0									
	Green Sunfish	PSD							71			14
		PSD-P							0			4
		Wr							123			116

Length at Capture

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

Species: Black Crappie

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	106	112 (13)	187 (92)	241 (1)							

Fish Condition

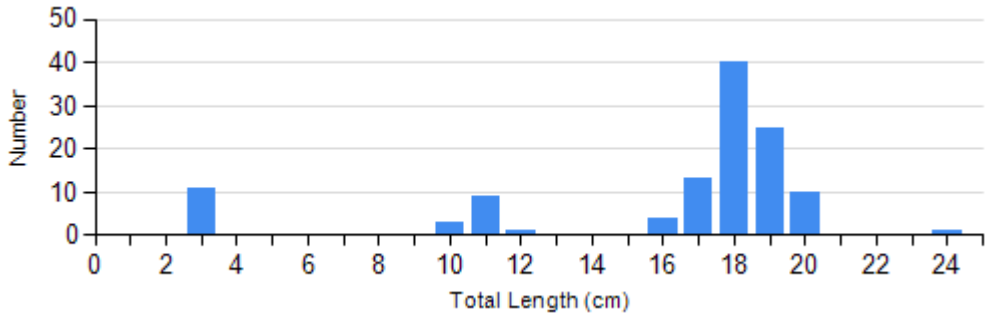
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2015	82	117 (1.0)	11	112 (1.2)	0		0	
	2018	1	117	0		0		0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

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

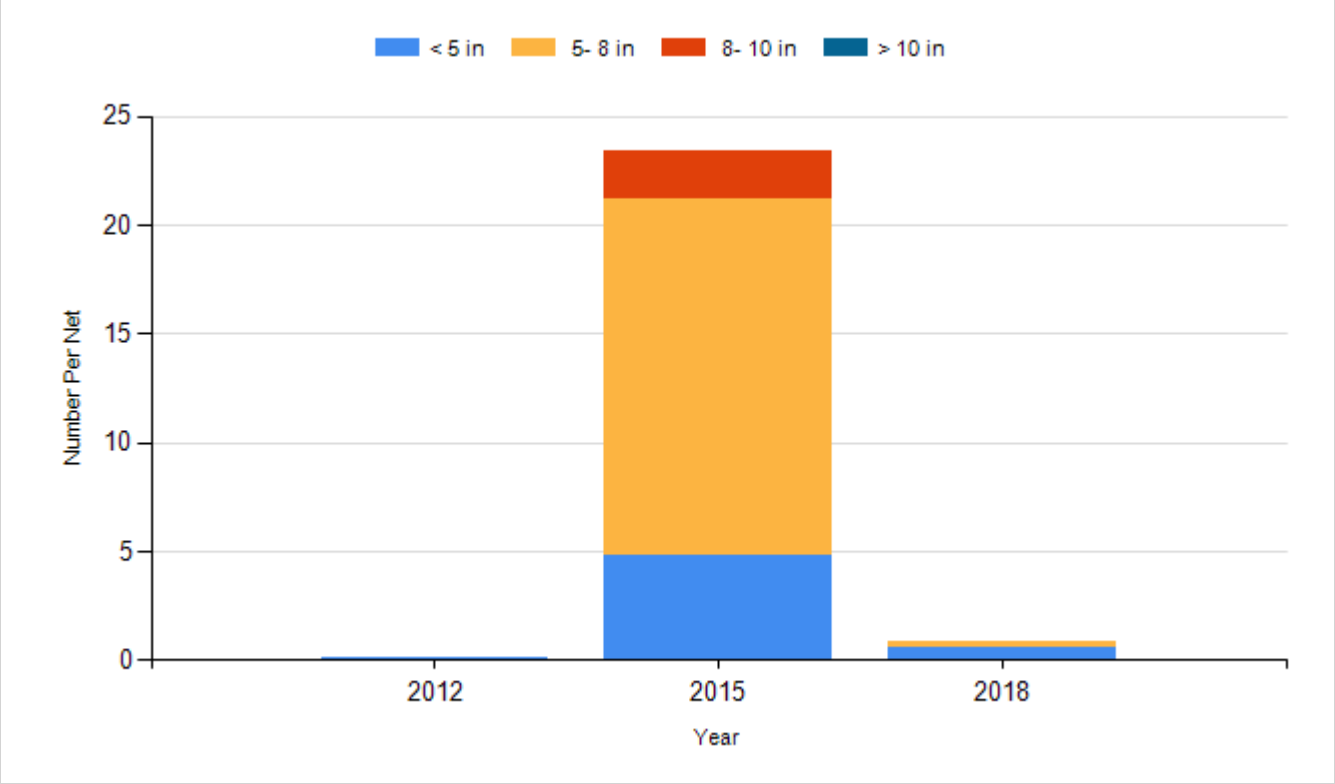


2015

Historic Fish Sizes and Relative Abundance

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

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



Fish Stocking

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

Year	Species	Size	Number
2009	Largemouth Bass	Fingerling	1,800
2010	Largemouth Bass	Juvenile	75
2012	Largemouth Bass	Juvenile	60