2023 West Morristown Lake Survey Summary

Water: West Morristown Lake

County: Corson

Legal Description: T23N-R19W-S34

GPS: 45.918464, -101.759703

Surface Area: 110 Acres

Class: Warm Water Marginal

Maximum Depth: 18 feet

Mean Depth: 8 feet

West Morristown Lake is a 110-acre impoundment on Hay Creek, 2 miles east and 1 mile south of Morristown in northwest Corson County. A gravel trail provides access from a county road to the west end of the dam grade. There are no boat launch or other public use facilities at West Morristown Lake.

Primary game fish managed at West Morristown are Yellow Perch and Largemouth Bass. Northern Pike and Black Bullhead also have a historical presence. Water levels at West Morristown fluctuate dramatically. A combination of decreased water levels and snow cover during the winter of 2018-19 resulted in significant fish loss due to insufficient dissolved oxygen levels (winterkill). Low water levels prevented restocking efforts until the spring 2022 when Largemouth Bass adults were reintroduced.

East Morristown Lake was surveyed on June 29, 2023, utilizing ¾ inch standard frame nets sets. Largemouth Bass and Yellow Perch were the only fish species observed during the 2023 survey.

- **Yellow Perch:** 7 fish were sampled during netting efforts. Most of the perch observed were between 6 and 7 inches with two larger individuals at 11 inches. Relative condition (weight at length) was above average.

- **Largemouth Bass:** Surprisingly, 2 Largemouth Bass were also captured in the 5 frame net sets. The bass were both just under 10 inches and likely fish that had been stocked via trap and transfer the year before. Given that bass are rarely observed in frame nets, it is hoped that the relocation of adult fish was successful and, with a lack of predator species, produced a strong year-class in 2023.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Morristown West, Corson County
CED-Lake-41-000
2023

Lake Information

Name:	Morristown West	**Maximum Depth:**	18 Feet
County:	Corson	**Mean Depth:**	8 Feet
Legal Description:	T23-R19-S34		
Surface Area:	105 Acres		

Surveys and Investigations

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

Gear	Date	Effort
frame net (std 3/4 in)	Jun 27, 2023	5 net-nights

Common Fish Species Present

Yellow Perch

Largemouth Bass

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
frame net (std 3/4 in)	Largemouth Bass	2	0.4	0.4	0		0		128	8
	Yellow Perch	7	1.4	1.1	29		29		105	7

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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Avg
AFS std frame net	Largemouth Bass				0.6							0.60
	Yellow Perch				1.6							1.60
AFS std gill net	Largemouth Bass				0.3							0.30
	Northern Pike				0.3							0.30
	Yellow Perch				11.5							11.50
boat shocker (night)	Largemouth Bass	40.5										40.50
frame net (std 3/4 in)	Largemouth Bass										0.4	0.40
	Yellow Perch										1.4	1.40

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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AFS std frame net	Largemouth Bass	PSD				100						
		PSD-P				0						
		Wr				116						
	Yellow Perch	PSD				25						
		PSD-P				13						
		Wr				111						
AFS std gill net	Largemouth Bass	PSD				0						
		PSD-P				0						
		Wr				136						
	Yellow Perch	PSD				28						
		PSD-P				15						
		Wr				110						
boat shocker (night)	Largemouth Bass	PSD	67									
		PSD-P	63									
		Wr	131									
frame net (std 3/4 in)	Largemouth Bass	PSD										0
		PSD-P										0
		Wr										128
	Yellow Perch	PSD										29
		PSD-P										29
		Wr										105

Back-Calculated Lengths

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

Species: Largemouth Bass

Year Class	Age	N	Mean back-calculated length (SE) at age 1	2	3	4	5	6	7	8	9	10
2020	3	1	113	173	227							
2019	4	1	98	138	194	227						
Weighted Mean		2	106	156	211	227						

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2020	3	1										
2019	4	1										
Weighted Mean		2										

Species: Yellow Perch

Year Class	Age	N	Mean back-calculated length (SE) at age 1	2	3	4	5	6	7	8	9	10
2021	2	2	118 (10.7)	146 (9.5)								
2020	3	1	81	126	139							
2019	4	2	103 (.4)	133 (4.5)	148 (2.1)	164 (3.9)						
2018	5	1	116	152	207	224	245					
Weighted Mean		6	107	139	161	184	245					

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2021	2	2										
2020	3	1										
2019	4	2										
2018	5	1										
Weighted Mean		6										

Length at Capture

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

Species: Largemouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2014	54	230 (18)		372 (2)	404 (14)	423 (18)	445 (2)				

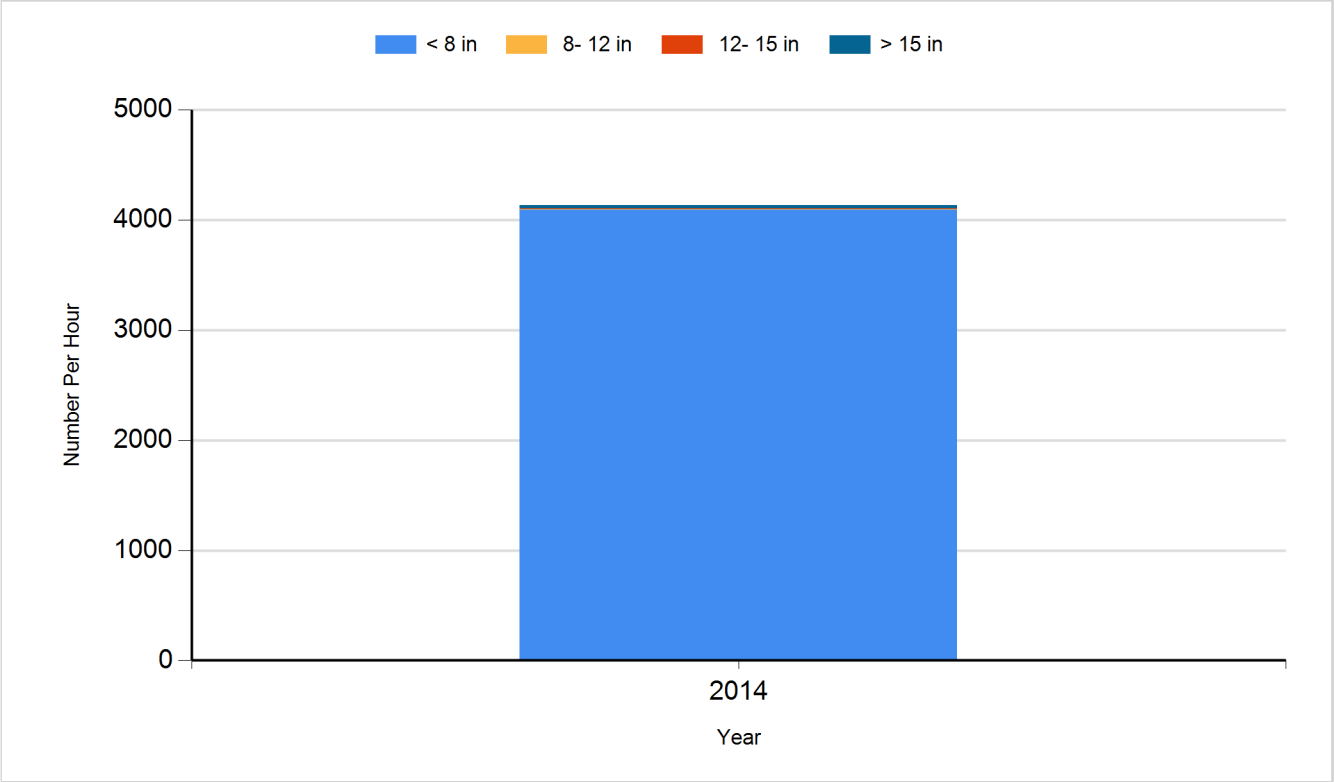
Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	49	133 (24)	191 (16)	257 (4)	291 (4)	312 (1)					

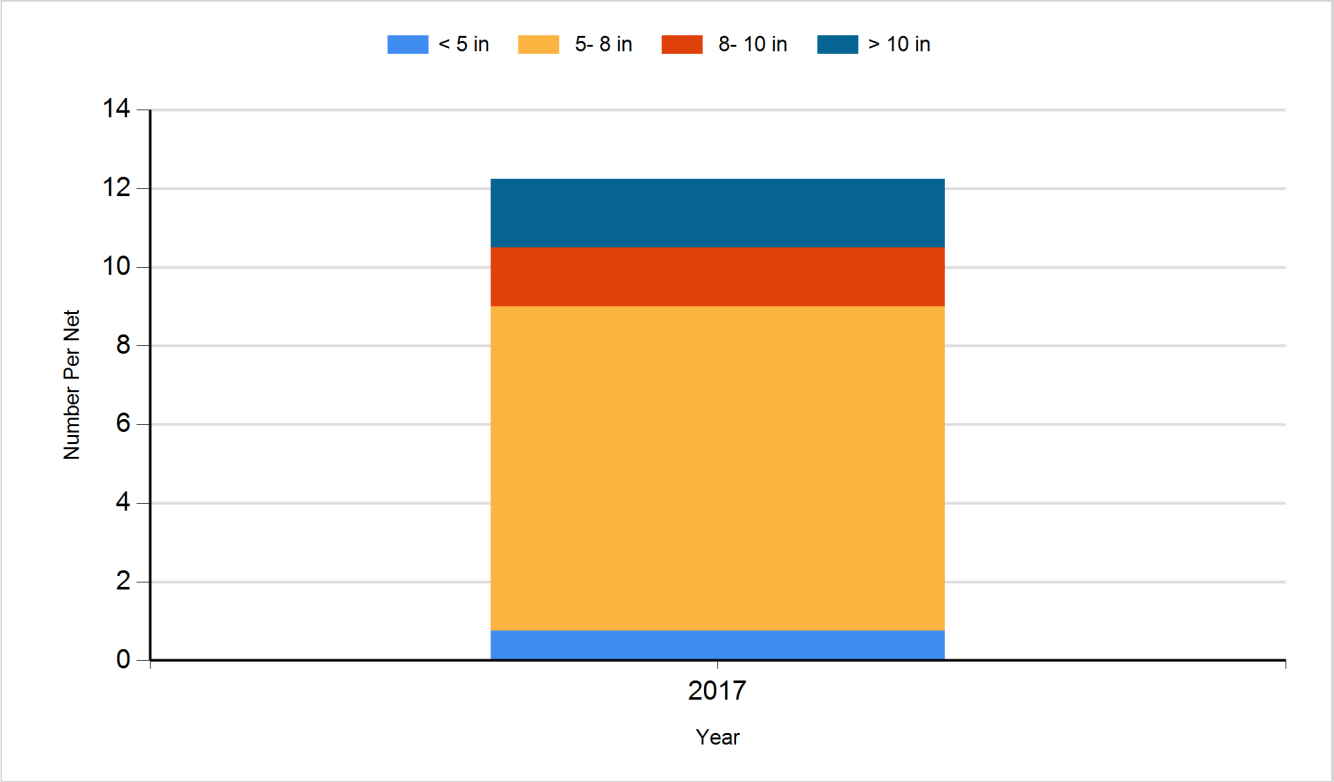
Historic Fish Sizes and Relative Abundance

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

Species: Largemouth Bass
Gear: boat shocker (night)



Species: Yellow Perch
Gear: AFS std gill net



Fish Stocking

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

Year	Species	Size	Number
2022	Largemouth Bass	Adult	40