2023 East Morristown Lake Survey Summary

Water: East Morristown Lake

County: Corson

Legal Description: T23N-R20W-S27&28

GPS: 45.930036, -101.643882

Surface Area: 96 Acres

Class: Warm Water Semi-Permanent

Maximum Depth: 26 feet

Mean Depth: 12 feet

East Morristown Lake is a 96-acre impoundment on an unnamed tributary of Hay Creek, 4 miles east and ½ mile south of Morristown in northwest Corson County. Dirt trails provide access to the lake from gravel county roads on the east and south. The trails become impassable during wet or snow-covered conditions. A concrete plank ramp on the southeast side of the lake provides boat access during normal lake levels but is unusable in low water periods. There are no other public use facilities at East Morristown Lake.

Primary game fish managed at East Morristown are Northern Pike, Black Crappie and Yellow Perch. Smallmouth Bass and Black Bullhead also have a historical presence. 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). Restocking efforts included Smallmouth Bass, Bluegill and Black Crappie. Heavy snow depth and extended ice cover during the winter of 2022-23 again lead to winterkill.

East Morristown Lake was surveyed on June 27-28, 2023, utilizing ¾ inch standard frame net sets and AFS standard gill net sets. Northern Pike was the only fish species observed during the 2023 survey.

- **Northern Pike:** 29 individuals were sampled during netting efforts. Average length was just under 20 inches indicating the population was comprised of young fish that survived the winterkill event. Northern Pike relative condition (weight at length) was above average.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Morristown East, Corson County
CED-Lake-55-000
2023

Lake Information

Name: Morristown East
County: Corson
Legal Description: T23-R20-S27
Surface Area: 95 Acres
Maximum Depth: 26 Feet
Mean Depth: 12 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 27, 2023	2 net-nights
frame net (std 3/4 in)	Jun 27, 2023	5 net-nights
frame net (std 3/4 in)	Jun 28, 2023	5 net-nights

Common Fish Species Present

Largemouth Bass

Black Crappie

Northern Pike

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	1	0.5	1.5	0		0		113	
frame net (std 3/4 in)	Northern Pike	28	2.8	1.0	18	12	4		94	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.

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

		CPUE										
Gear	Species	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Avg
AFS std frame net	Black Crappie				0.5							0.50
	Northern Pike				1.5							1.50
	Yellow Perch				1.7							1.70
AFS std gill net	Northern Pike				4.5		0.8				0.5	1.93
	Smallmouth Bass				0.5		0.0				0.0	0.17
	Yellow Perch				0.8		0.0				0.0	0.27
frame net (std 3/4 in)	Black Crappie		0.0				0.0				0.0	0.00
	Northern Pike		2.6				3.0				2.8	2.80
	Smallmouth Bass		0.1				0.0				0.0	0.03
	Yellow Perch		2.2				0.1				0.0	0.77
std exp gill net	Northern Pike		2.5									2.50
	Yellow Perch		6.5									6.50

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	Black Crappie	PSD				60						
		PSD-P				20						
		Wr				101						
	Northern Pike	PSD				100						
		PSD-P				13						
		Wr				85						
AFS std gill net	Northern Pike	PSD				89		100				0
		PSD-P				6		0				0
		Wr				90		77				113
frame net (std 3/4 in)	Black Crappie	PSD		0				0				
		PSD-P		0				0				
	Northern Pike	PSD		65				97				18
		PSD-P		0				0				4
		Wr		99				67				94
std exp gill net	Northern Pike	PSD		80								
		PSD-P		0								
		Wr		85								

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+
2017	5		160 (2)	239 (3)							
2015	14	118 (14)									

Fish Condition

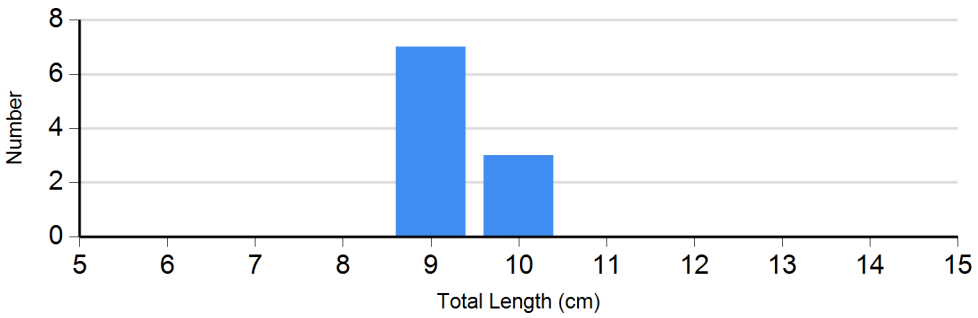
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2019	0		0		0		0	
Northern Pike Gill Net	2019	0		3	77 (2.5)	0		0	
	2023	1	113	0		0		0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

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

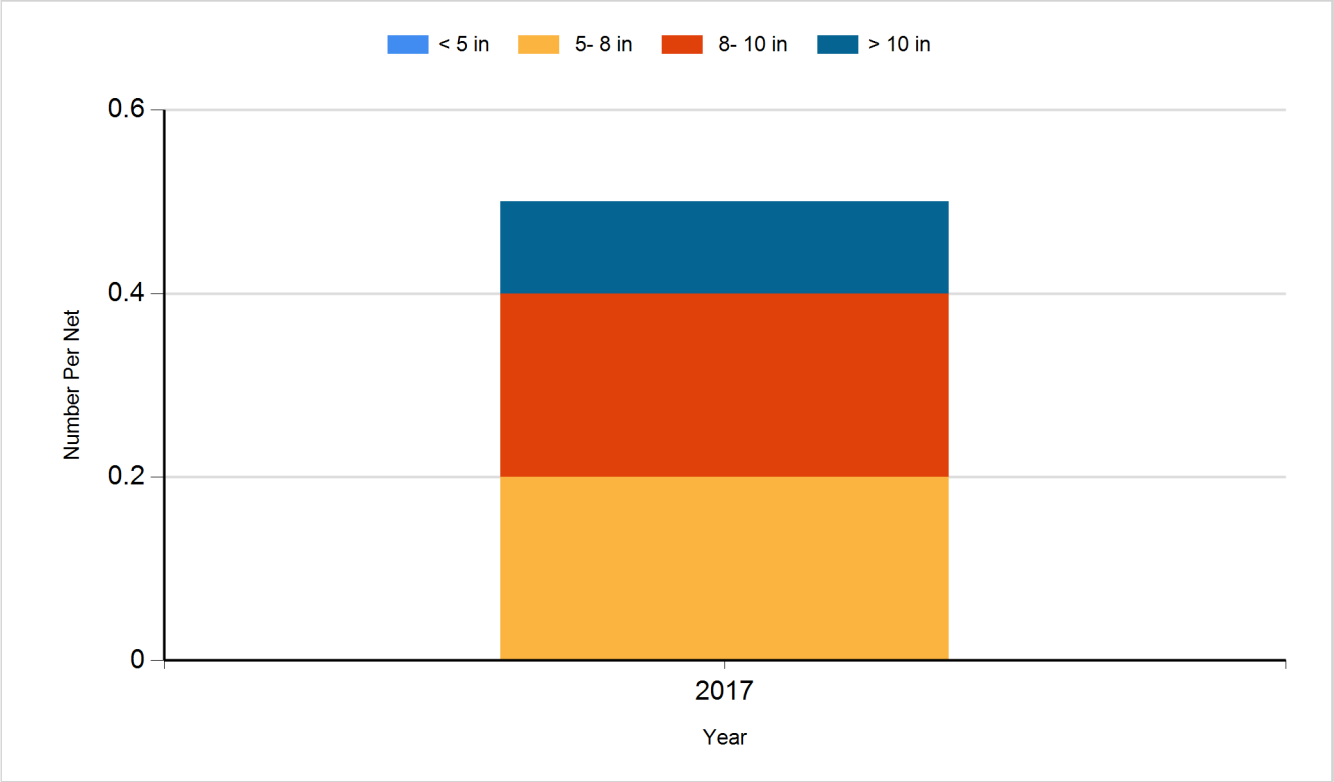


2019

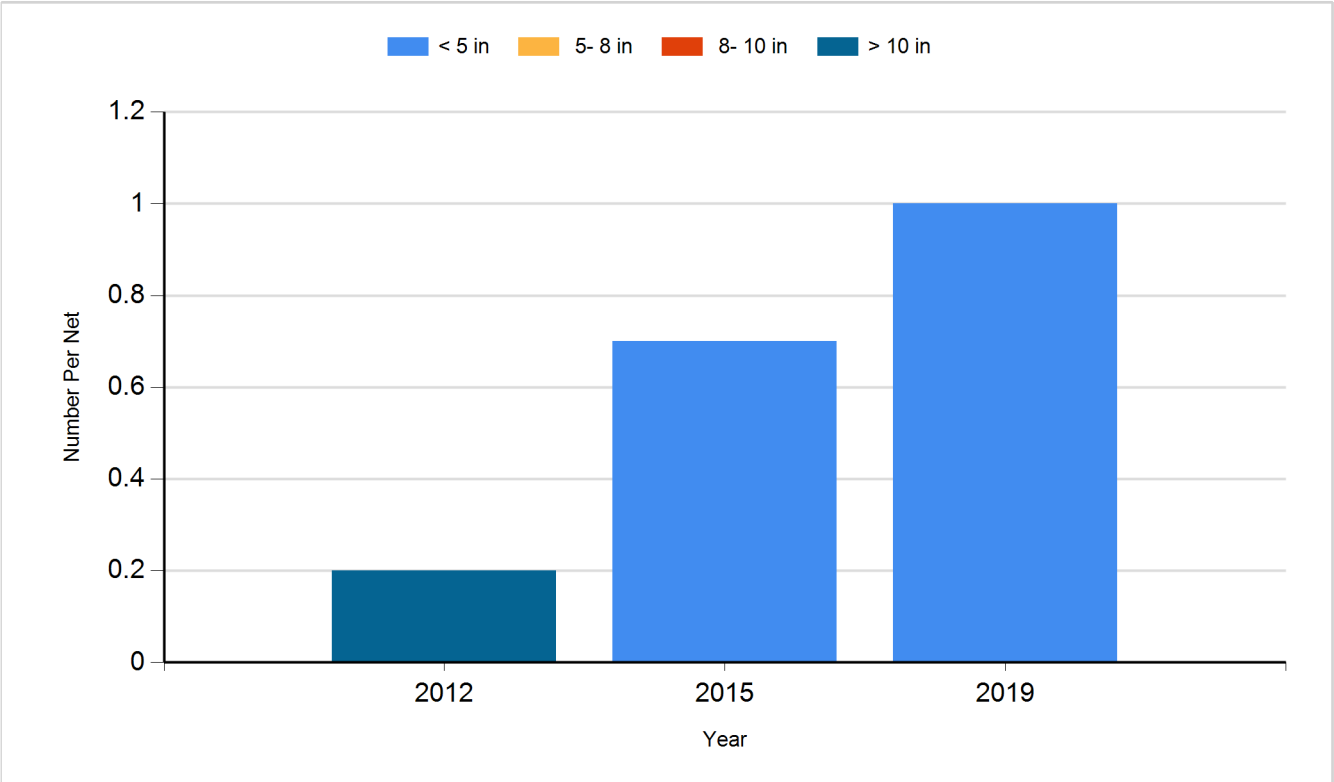
Historic Fish Sizes and Relative Abundance

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

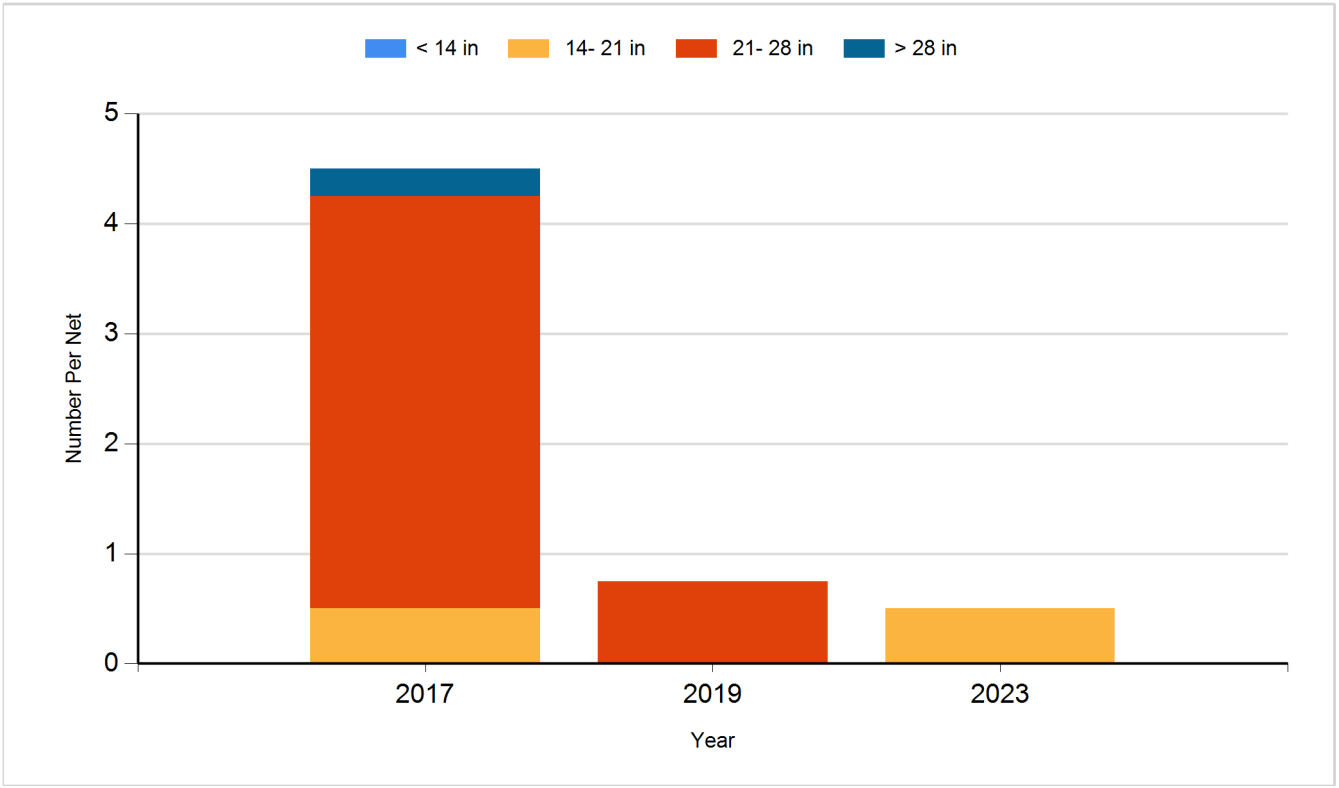
Species: Black Crappie
Gear: AFS std frame net



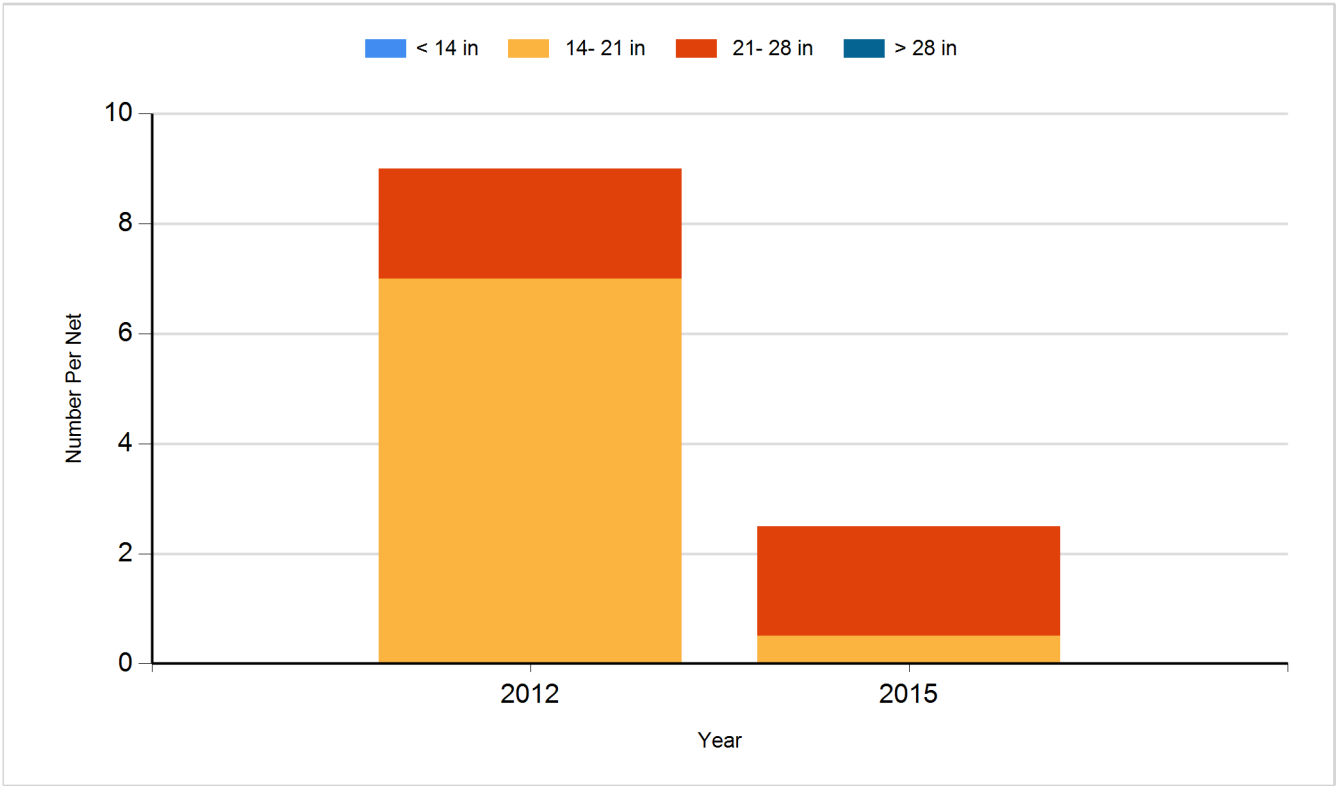
Species: Black Crappie
Gear: frame net (std 3/4 in)



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
2012	Smallmouth Bass	Adult	16
2012	Smallmouth Bass	Juvenile	120
2012	Walleye	Small Fingerling	9,730
2012	Yellow Perch	Adult	300
2016	Black Crappie	Adult	80
2016	White Crappie	Adult	80
2018	Black Crappie	Adult	125
2019	Bluegill	Adult	50
2019	Smallmouth Bass	Juvenile	190
2020	Smallmouth Bass	Juvenile	137
2021	Black Crappie	Adult	350
2022	Bluegill	Adult	100
2022	Smallmouth Bass	Adult	98