2024 Lake Molstad Survey Summary

Water: Lake Molstad

County: Walworth

Legal Description: T124N R78W S8,17

GPS: 45.567 -100.300

Surface Area: 100 acres

Class: Warm Water Semi-Permanent

Maximum Depth: 18 feet

Mean Depth: 7 feet

Lake Molstad is a 100-acre impoundment on the lower portion of Blue Blanket Creek 5 miles east and 2 miles north of Mobridge in northwest Walworth County. A county gravel road north of US HWY 12 provides access to the lake. A concrete plank ramp provides boat and ice fishing access on the west shoreline. No other public use facilities are available at Lake Molstad.

Primary game fish managed at Lake Molstad are Largemouth Bass, Bluegill and Yellow Perch. Northern Pike and Black Bullhead also have a historical presence. Low water levels and abundant aquatic vegetation, in combination with heavy snow cover during the winter of 2021-22, resulted in total fish loss due to depleted dissolved oxygen levels (winterkill). In 2022 the lake was stocked with Largemouth Bass and Bluegill. Electrofishing during the spring of 2023 documented small bass and perch present. Largemouth Bass were again stocked that summer and a supplemental stocking of Bluegill was completed in 2024. Molstad was at spillway level at the time of the 2024 survey, but water levels decline dramatically during drought conditions or periods of limited runoff.

Lake Molstad was surveyed on May 28-30, 2024, utilizing 10, ¾ inch standard frame nets sets. Bluegill, Black Bullhead, Yellow Perch, and Largemouth Bass were observed and recorded. Electrofishing was not completed in 2024 to monitor the bass population, however several small largemouth were visually observed at the time of the survey.

- **Bluegill:** Catch rates were high with 29.1 individuals sampled per frame net. Bluegills ranging from 2 to 10 inches were present with the most abundant size group of fish just over 6 inches. Condition was above the statewide average.

- **Black Bullhead:** For the first time since 1998 bullheads were present during the 2024 netting efforts with 19.2 adult fish per net captured. Almost all of the fish observed were from 6 to 8 inches with an occasional very large individual.

- **Other Species:** Yellow Perch densities were lower than expected with 21 fish sampled in 10 frame nets. A few small perch were present, but most were over 8 inches with the largest at 11 inches. 3 Largemouth Bass were also netted in addition to several that were visually observed in shallow areas of the lake.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Molstad, Walworth County
ULO-Lake-370-000
2024

Lake Information

Name: Molstad

County: Walworth

Legal Description: T124-R78-S8

Surface Area: 97 Acres

Maximum Depth: 20 Feet

Mean Depth: 8 Feet

Surveys and Investigations

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

Gear	Date	Effort
frame net (std 3/4 in)	May 29, 2024	5 net-nights
frame net (std 3/4 in)	May 30, 2024	5 net-nights

Common Fish Species Present

Yellow Perch

Largemouth Bass

Bluegill

Black Bullhead

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)	Black Bullhead	102	10.0	6.1	1		1		112	1
	Bluegill	272	22.5	6.7	44	5	0		129	2
	Largemouth Bass	3	0.3	0.3	67		0		127	9
	Yellow Perch	21	2.0	1.3	90		5		93	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.

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

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
boat shocker (night)	Largemouth Bass	129.0			28.0	36.5	52.5					61.50
frame net (std 3/4 in)	Black Bullhead	0.0			0.1			0.2			10.0	2.58
	Bluegill	10.0			57.0			4.2			22.5	23.43
	Largemouth Bass	0.3			0.1			0.0			0.3	0.18
	Yellow Perch	8.4			1.3			4.0			2.0	3.93

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
boat shocker (night)	Largemouth Bass	PSD	30			88	85	78				
		PSD-P	6			9	55	67				
		Wr	104			100	103	109				
frame net (std 3/4 in)	Black Bullhead	PSD				100			100			1
		PSD-P				100			100			1
		Wr				102			144			112
	Bluegill	PSD	91			38			10			44
		PSD-P	11			9			5			0
		Wr	128			126			151			129
	Largemouth Bass	PSD	67			100						67
		PSD-P	67			0						0
		Wr	123			88						127
	Yellow Perch	PSD	90			100			15			90
		PSD-P	18			92			10			5
		Wr	105			92			109			93

Back-Calculated Lengths

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

Species: Bluegill

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2023	1	2	72 (3.3)									
2022	2	17	65 (1.6)	98 (2.8)								
2021	3	8	62 (1.9)	100 (1.2)	127 (1.5)							
2020	4	14	64 (2.4)	89 (4.4)	122 (3.5)	144 (4.4)						
2019	5	4	56 (3.9)	81 (5.5)	117 (6.1)	142 (7.1)	168 (4)					
2018	6	1	76	105	133	160	179	203				
2016	8	1	73	73	94	94	115	115	140	140		
Weighted Mean		47	64	94	122	142	161	159	140	140		

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2023	1	2										
2022	2	17										
2021	3	8										
2020	4	14										
2019	5	4										
2018	6	1										
2016	8	1										
Weighted Mean		47										

Species: Largemouth Bass

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2021	3	1	135	193	234							
2020	4	1	127	160	203	255						
2019	5	1	89	164	229	283	318					
Weighted Mean		3	117	172	222	269	318					

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

Species: Yellow Perch

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2023	1	1	101									
2022	2	2	75 (5.2)	112 (4.7)								
2021	3	3	114 (10.1)	152 (6.6)	195 (7.1)							
2020	4	10	86 (6.3)	124 (7.6)	159 (6.6)	199 (6.5)						
2019	5	1	93	140	176	202	236					
2018	6	1	83	83	138	138	194	194				
2016	8	1	87	87	142	142	181	181	225	225		
Weighted Mean		19	90	124	164	190	204	188	225	225		

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2023	1	1										
2022	2	2										
2021	3	3										
2020	4	10										
2019	5	1										
2018	6	1										
2016	8	1										
Weighted Mean		19										

Length at Capture

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

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2024	264	77 (58)	112 (59)	140 (39)	159 (84)	170 (18)	215 (1)		154 (5)		
2018	570	87 (15)	127 (90)	146 (357)	179 (4)	184 (6)	191 (25)	199 (70)		220 (4)	
2015	100	105 (2)	154 (15)	174 (62)	204 (11)	192 (8)	195 (1)				

Species: Largemouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	101		214 (23)	306 (3)	314 (3)	350 (2)	377 (2)	403 (41)	400 (26)		485 (1)
2018	56		206 (10)		322 (14)	352 (28)	344 (3)		439 (2)		
2015	293	170 (172)	286 (80)	300 (28)	285 (5)	439 (6)	424 (1)	455 (1)			

Fish Condition

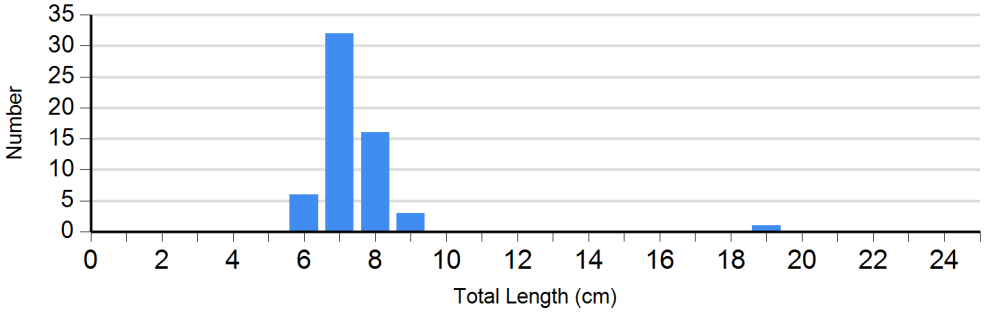
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Bluegill Frame Net	2021	19	152 (2.0)	1	140	0		1	
	2024	125	124 (1.0)	99	135 (2.8)	1	116	0	
Largemouth Bass Electro Fishing	2020	23	109 (1.2)	12	113 (0.8)	70	108 (0.8)	0	

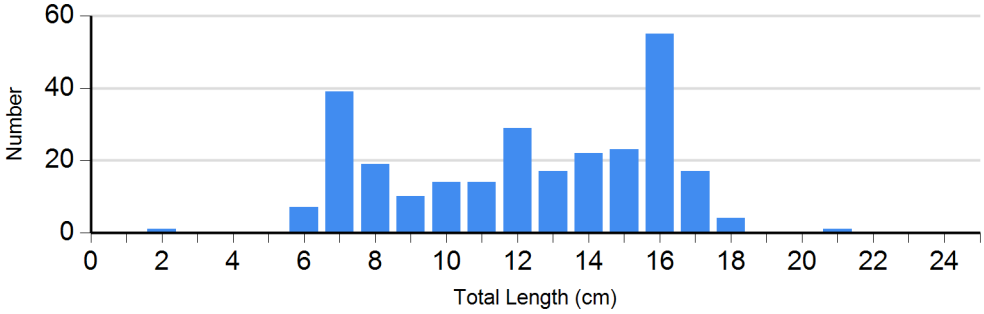
Length Frequency Distribution

Length frequency histogram of species sampled by year.

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

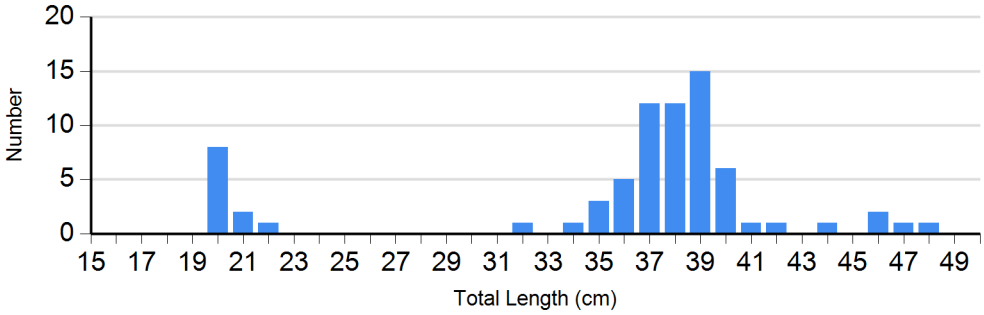


2021

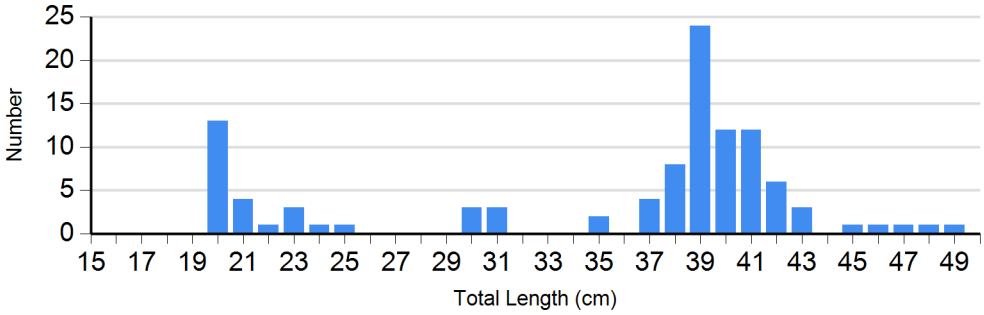


2024

Species: Largemouth Bass
Gear: boat shocker (night)



2019

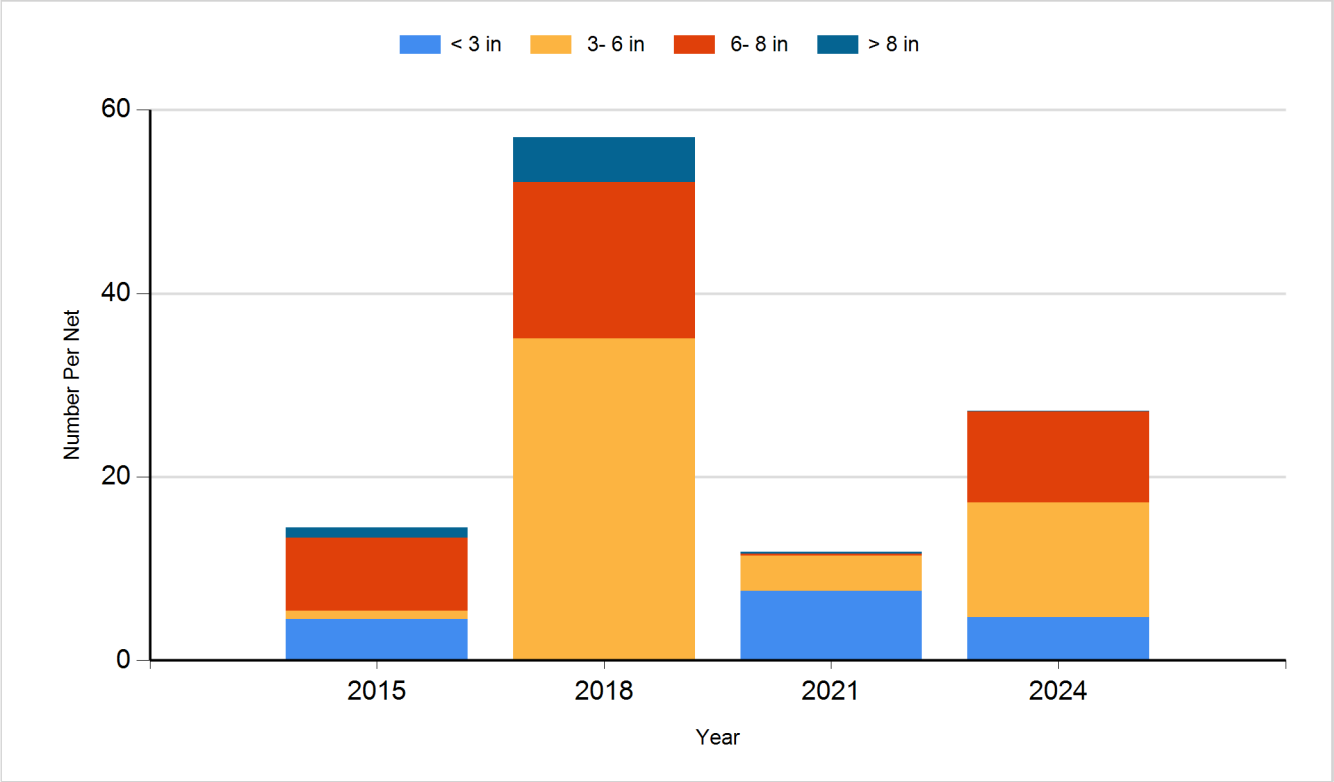


2020

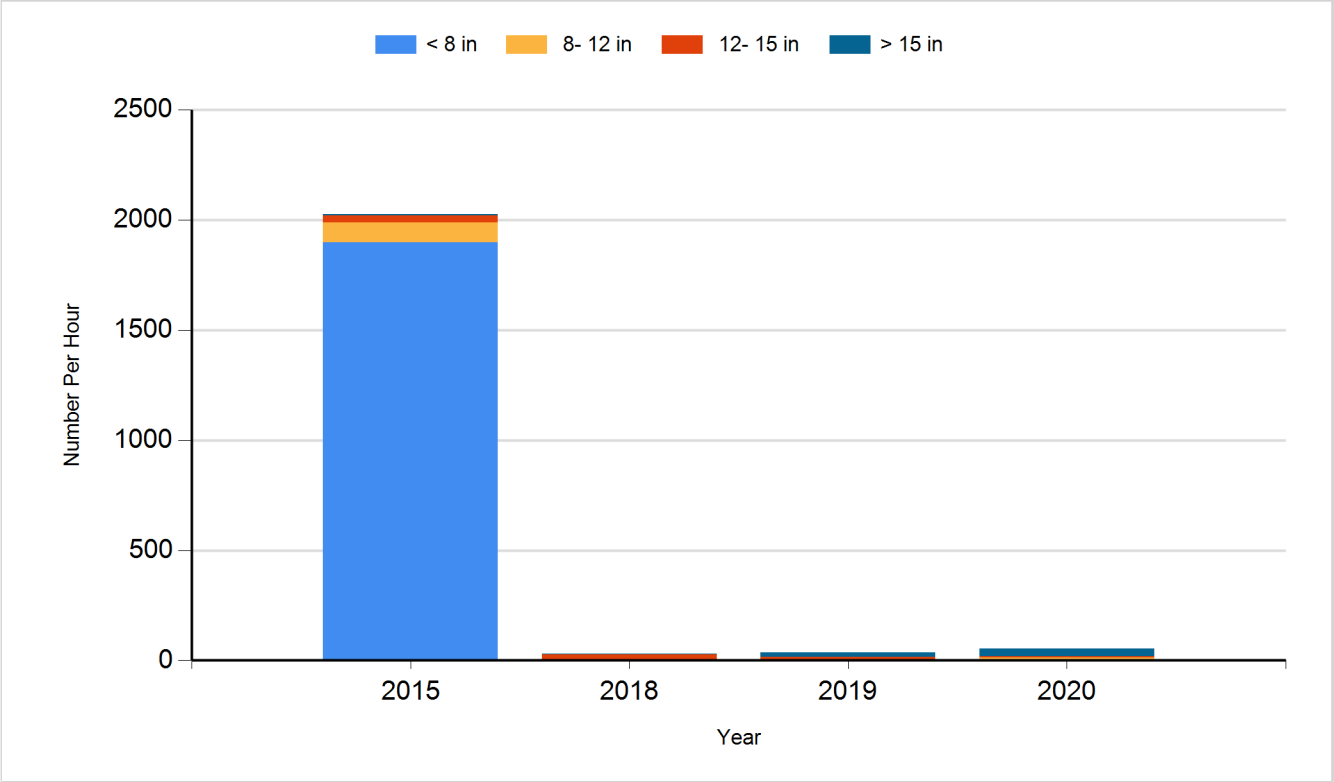
Historic Fish Sizes and Relative Abundance

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

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



Species: Largemouth Bass
Gear: boat shocker (night)



Fish Stocking

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

Year	Species	Size	Number
2014	Bluegill	Adult	150
2015	Bluegill	Adult	150
2015	Yellow Perch	Fingerling	3,240
2022	Bluegill	Adult	140
2022	Largemouth Bass	Juvenile	1,000
2023	Largemouth Bass	Juvenile	100
2024	Bluegill	Adult	200