

Common Fish Species Present

Walleye

Black Bullhead

White Crappie

Common Carp

Bluegill

Black Crappie

Northern Pike

Channel Catfish

White Sucker

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	CI-80
std exp gill net	Black Bullhead	5.3	1.3	0		0			
	Black Crappie	1.0	0.0	0		0		92	1
	Channel Catfish	0.3	0.6	0		0		85	
	Common Carp	10.3	5.6	6		0			
	Northern Pike	2.0	2.2	100		33		78	6
	White Crappie	1.0	1.1	0		0		95	8
std frame net (3/8 inch)	Black Bullhead	42.2	28.3	0		0			
	Black Crappie	4.6	3.3	9		9		96	3
	Bluegill	8.0	11.1	65	11	0		108	2
	Channel Catfish	0.0	0.0	0		0			
	Northern Pike	1.4	1.3	100		57		79	3
	Walleye	0.4	0.6	0		0		86	3
	White Crappie	13.4	11.4	3		1		103	3
	White Sucker	0.2	0.3	100		100			

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		
boat shocker (night)	Black Bullhead						165.6						165.6
	Black Crappie						3.6						3.6
	Bluegill						159.6						159.6
	Channel Catfish						0.6						0.6
	Common Carp						51.6						51.6
	Largemouth Bass						12.0						12.0
	Northern Pike						21.6						21.6
	White Crappie						5.4						5.4
	Yellow Perch						12.6						12.6
large frame net	Black Bullhead				38.6								38.6
	Black Crappie		5.5		4.8								5.2
	Bluegill		3.3		5.0								4.2
	Channel Catfish		0.5		0.2								0.4
	Common Carp		1.5		0.8								1.2
	Largemouth Bass		0.3										0.3
	Northern Pike		5.0		1.0								3.0
	White Crappie		2.0		17.2								9.6
	Yellow Perch		0.5		0.4								0.5
std exp gill net	Black Bullhead								2.0	0.0	5.3		2.4
	Black Crappie									1.3	1.0		1.2
	Bluegill								0.7				0.7
	Channel Catfish								0.3	0.7	0.3		0.4
	Common Carp								2.0	3.3	10.3		5.2
	Northern Pike								1.7	4.0	2.0		2.6
	White Crappie									0.3	1.0		0.7
	White Sucker								0.3	0.3			0.3
std frame net (3/8 inch)	Black Bullhead								30.8	70.4	42.2		47.8
	Black Crappie								1.4	4.4	4.6		3.5
	Bluegill								7.8	2.4	8.0		6.1
	Channel Catfish									0.0	0.0		0.0
	Common Carp								0.4	0.4			0.4
	Northern Pike								0.4	0.6	1.4		0.8
	Walleye											0.4	0.4

		CPUE										
Gear	Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg
std frame net (3/8 inch)	White Crappie								1.2	0.6	13.4	5.1
	White Sucker										0.2	0.2
	Yellow Perch									0.8		0.8

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.

Gear	Species	Index	Year											
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016		
boat shocker (night)	Black Crappie	PSD							50					
		PSD-P							17					
		Wr							108					
	Northern Pike	PSD								6				
		PSD-P								0				
		Wr								84				
	Yellow Perch	PSD								0				
		PSD-P								0				
		Wr								82				
large frame net	Black Crappie	PSD		100		38								
		PSD-P		55		29								
		Wr		107		93								
	Northern Pike	PSD		55		60								
		PSD-P		0		0								
		Wr		80		71								
	Yellow Perch	PSD		0		0								
		PSD-P		0		0								
		Wr		88		83								
std exp gill net	Black Crappie	PSD									0	0		
		PSD-P									0	0		
		Wr									83	92		
	Northern Pike	PSD									40	100	100	
		PSD-P									40	25	33	
		Wr									78	88	78	
	std frame net (3/8 inch)	Black Crappie	PSD									14	41	9
			PSD-P									14	18	9
			Wr									87	89	96
Northern Pike		PSD										100	100	100
		PSD-P										50	0	57
		Wr										66	86	79
Walleye		PSD												0

Gear	Species	Index	Year										
			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
std frame net (3/8 inch)	Walleye	PSD-P											0
		Wr											86
	Yellow Perch	PSD										100	
		PSD-P											0
		Wr										73	

Fish Condition

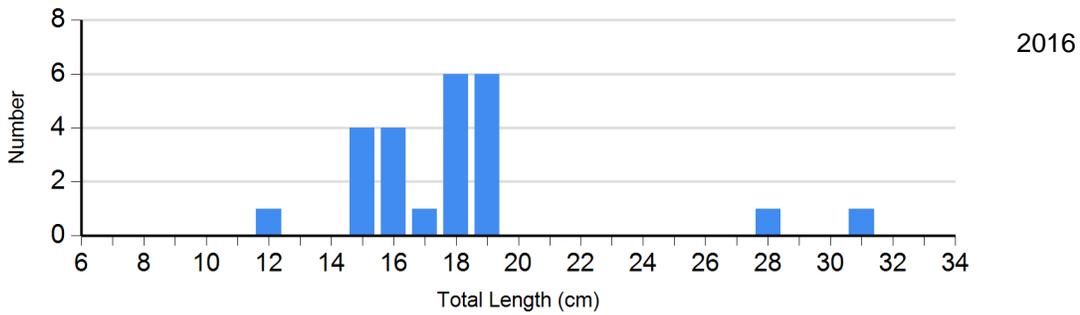
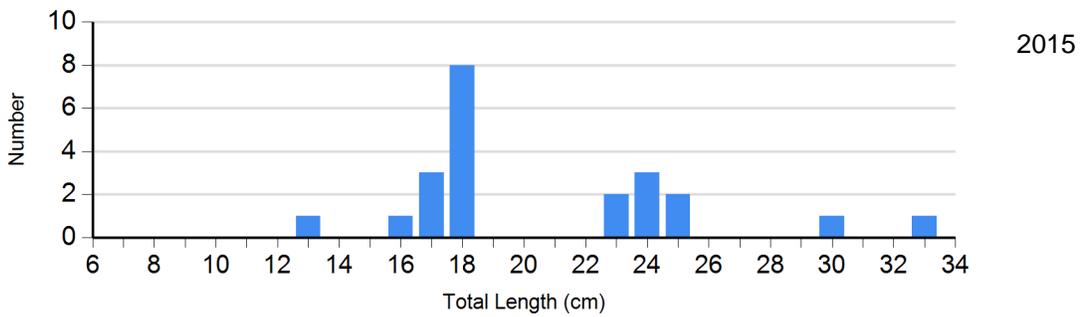
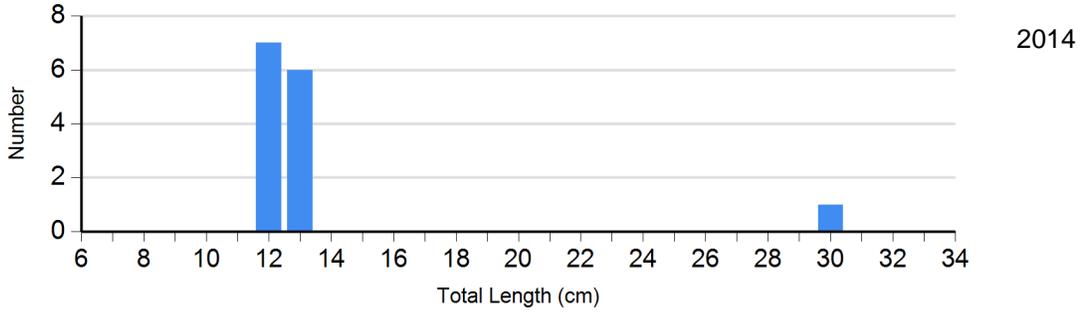
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2014	6	91 (4.4)	0		0		1	66
	2015	13	92 (1.3)	5	87 (3.4)	2	83 (1.8)	2	76 (1.7)
	2016	21	98 (1.3)	0		1	64	1	73
Northern Pike Gill Net	2014	3	70 (0.7)	0		2	89 (1.5)	0	
	2015	0		9	89 (4.7)	2	78 (5.7)	1	98
	2016	0		4	71 (3.1)	2	91 (4.7)	0	

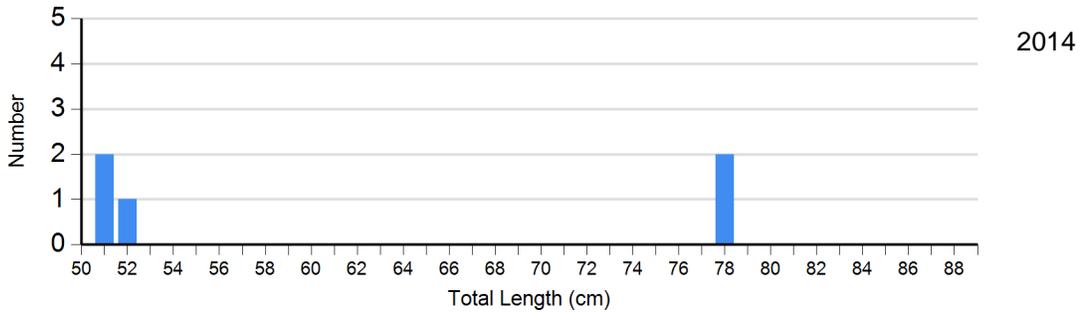
Length Frequency Distribution

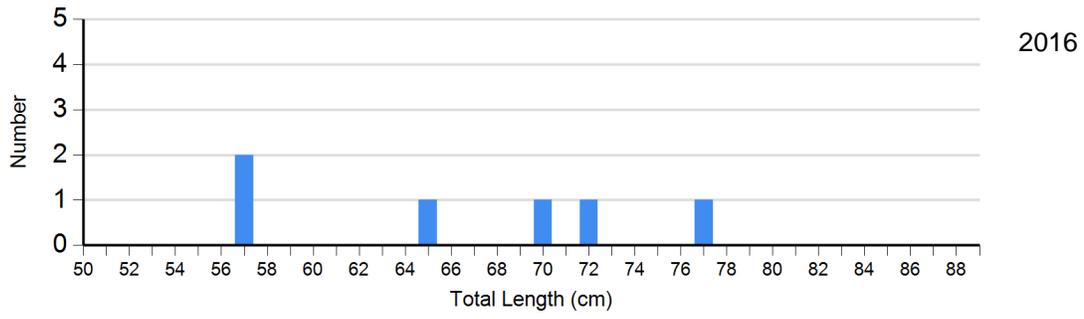
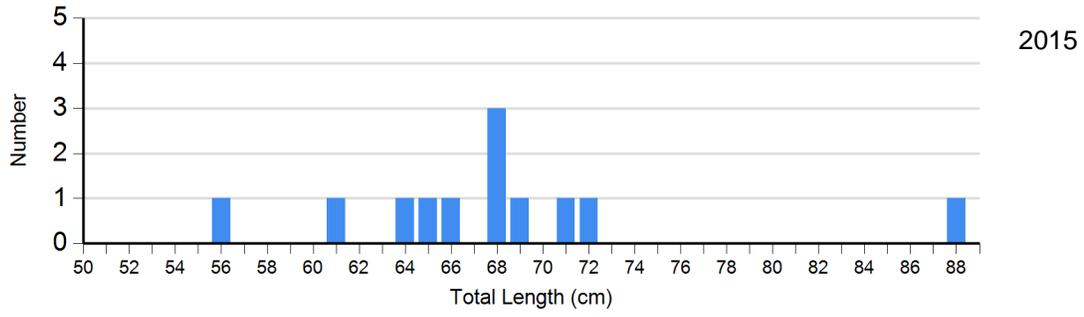
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: std frame net (3/8 inch)



Species: Northern Pike
Gear: std exp gill net

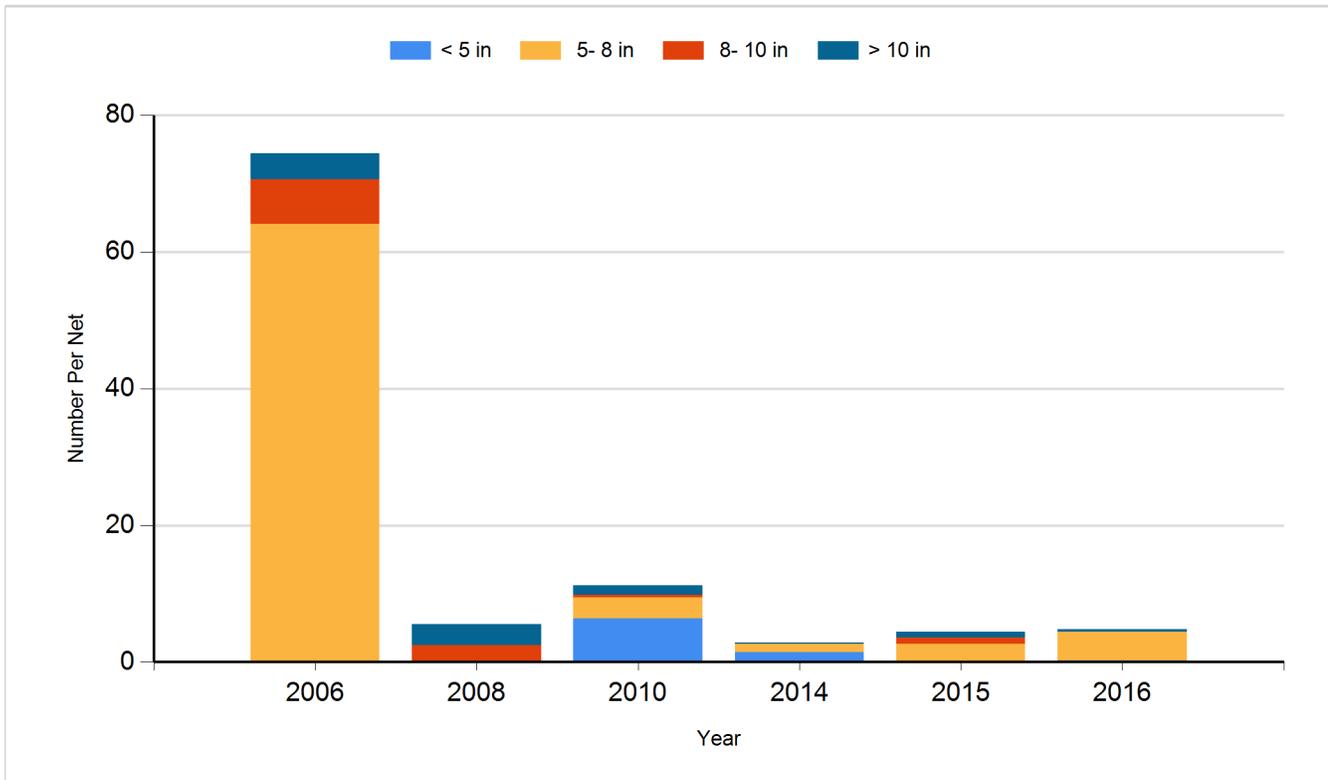




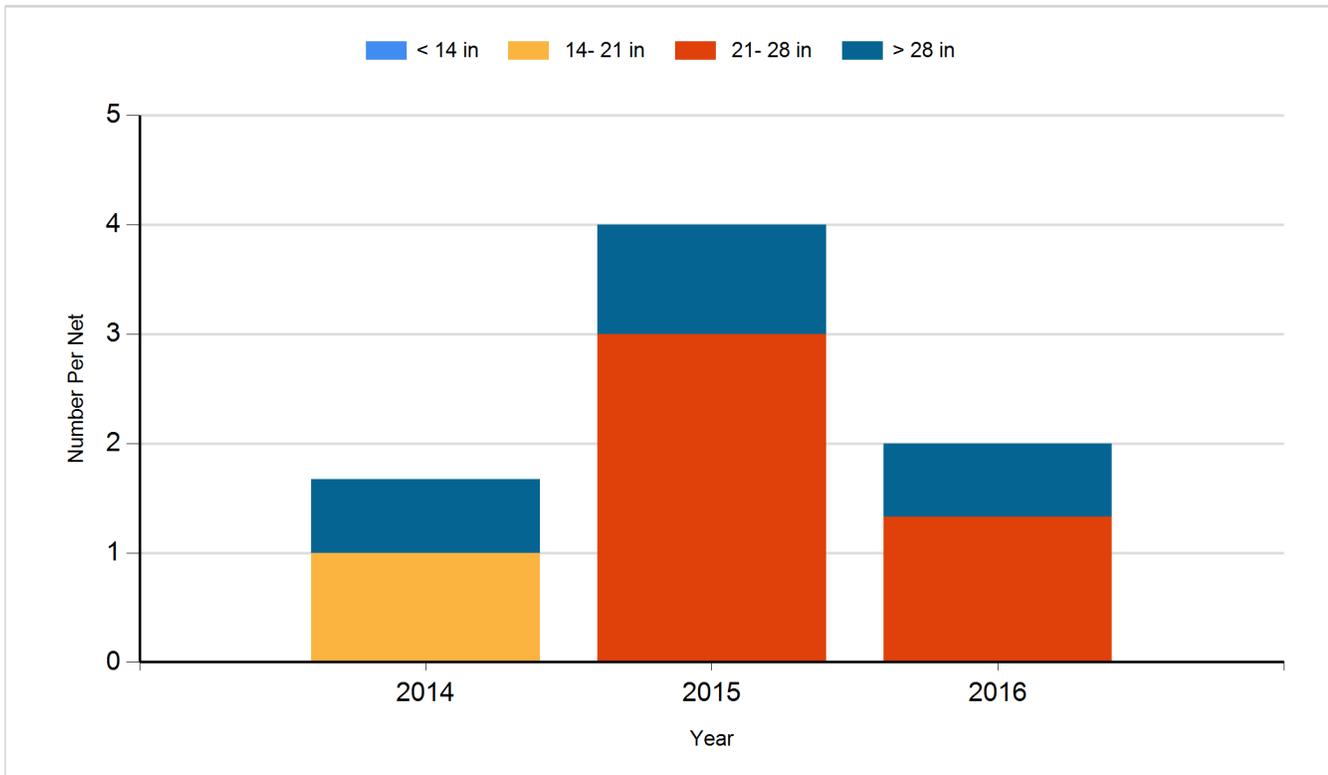
Historic Fish Sizes and Relative Abundance

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

Species: Black Crappie
Gear: Frame Net



Species: Northern Pike
Gear: Gill Net



Fish Stocking

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

Year	Species	Size	Number
2008	Bluegill	Fingerling	22,900
2008	Largemouth Bass	Fingerling	6,560
2014	Walleye	Fry	55,000
2015	Walleye	Small Fingerling	3,840
2016	Gizzard Shad	Adult	130
2016	Walleye	Juvenile	505