SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Lynn, Day County
MUD-Lake-308-003
2015

Lake Information

Name: Lynn

County: Day

Surface Area: 1,607 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	October 06, 2015	3600 seconds
std exp gill net	September 01, 2015	3 net-nights
std exp gill net	September 02, 2015	3 net-nights

Common Fish Species Present

Black Crappie

Northern Pike

Muskellunge

Yellow Perch

Walleye

Smallmouth Bass

Rock Bass

Bluegill

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).

$$CPUE = \frac{number\ of\ fish}{effort}$$

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)
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

	Stock		Quality		Preferred		Memorable		Trophy	
Species Name	(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).

		Abundance		Stock Density Indices				Condition	
Gear	Species	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
boat shocker (night)	Walleye	10.0	11.6	0		0		93	2
std exp gill net	Black Crappie	0.2	0.2	0		0		126	
	Bluegill	0.2	0.2	0		0		100	
	Rock Bass	0.7	0.5	25		0		110	5
	Walleye	4.8	1.5	31	13	14		84	2
	Yellow Perch	2.7	0.8	81		0		101	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.

		CPUE										
Gear	Species	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg
boat shocker (night)	Muskellunge							2.0				2.0
	Walleye	708.5	988.5	109.4	127.1		143.0	4.0	315.0	157.8	10.0	284.8
frame net (std 3/4 in)	Black Bullhead	0.3	1.6	0.1		0.1	0.7	2.1	0.9	0.1		0.7
	Black Crappie	24.2	2.6	0.4	1.7	1.7	11.9	5.2	1.7	0.3		5.5
	Bluegill	7.1	0.6	3.6	20.6	6.8	22.4	8.7	7.1	2.4		8.8
	Muskellunge		0.0									0.0
	Northern Pike		0.0	0.1	0.1	0.1	0.1	0.2	0.6	0.2		0.2
	Rock Bass		0.1		0.3	0.1	0.4	0.2	1.5	0.2		0.4
	Smallmouth Bass		0.0		0.1	0.1	0.6	0.2	0.2	0.1		0.2
	Walleye	1.2	1.3	2.8	1.5	2.2	1.6	0.8	1.2	1.2		1.5
	White Bass		0.0									0.0
	White Sucker		0.1									0.1
	Yellow Perch	0.4	0.1	0.4	1.7	2.7	18.7	4.6	3.8	0.2		3.6
single throat frame net	Muskellunge							36.0				36.0
std exp gill net	Black Bullhead	1.2	0.5				0.1	0.7	0.2	0.2		0.5
	Black Crappie	4.8	0.1	0.2	0.2	0.1	2.2	0.8	0.2	0.0	0.2	0.9
	Bluegill	5.3	0.4	0.3	0.1	0.2	0.2	0.8			0.2	0.9
	Muskellunge		0.1					0.2				0.2
	Northern Pike	0.5			0.1		0.6	2.8	1.5	0.8		1.1
	Rock Bass				0.0	0.3	0.1		0.3	0.3	0.7	0.3
	Smallmouth Bass							0.3		0.3		0.3
	Walleye	7.7	10.8	12.2	6.8	9.4	2.3	9.5	8.5	8.7	4.8	8.1
	Yellow Perch	42.5	17.4	5.5	2.7	9.8	31.7	93.2	37.0	24.7	2.7	26.7

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	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
boat shocker (night)	Walleye	PSD	0	0	0	0		0	0	0	0	0
		PSD-P	0	0	0	0		0	0	0	0	0
		Wr	111	106	93	95		95	101	100	101	93
frame net (std 3/4 in)	Black Crappie	PSD	56	69	86	55	62	45	98	97	100	
		PSD-P	37	16	86	16	21	22	28	90	100	
		Wr		112	111	122	120	114	114	109	111	
	Northern Pike	PSD		100	100	100	100	100	100	90	100	
		PSD-P		80	100	50	0	0	33	20	25	
		Wr		82	87	91	95	92	88	81	78	
	Walleye	PSD	100	94	90	96	95	97	100	86	75	
		PSD-P	22	33	70	85	82	76	71	77	30	
		Wr		89	88	90	94	90	91	90	90	
	Yellow Perch	PSD	100	53	0	23	26	82	67	84	0	
		PSD-P	88	47	0	3	7	46	49	41	0	
		Wr		95	100	99	96	94	97	98	96	
std exp gill net	Black Crappie	PSD	41	100	0	0	50	0	100	100	0	0
		PSD-P	3	0	0	0	0	0	20	100	0	0
		Wr	118	111	124	129	127	115	114	121		126
	Northern Pike	PSD	100			100		90	88	100	100	
		PSD-P	67			0		30	18	56	60	
		Wr	90			97		88	89	84	78	
	Walleye	PSD	100	66	55	35	22	95	86	27	69	31
		PSD-P	30	19	30	14	4	7	11	8	29	14
		Wr	86	85	89	90	93	88	89	88	84	84
	Yellow Perch	PSD	62	35	18	45	31	69	36	49	1	81
		PSD-P	50	14	3	2	7	9	6	9	0	0
		Wr	106	106	105	108	101	101	99	106	105	101

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+
2014	5				288 (2)	304 (3)					
2013	30		175 (1)	268 (18)	310 (7)	329 (4)					
2012	94		229 (76)	287 (12)	312 (5)	342 (1)					
2011	202	183 (152)	248 (30)	289 (18)				327 (2)			
2009	32	147 (11)	197 (11)	203 (4)	252 (3)	311 (1)	298 (2)				
2007	444		166 (150)	224 (236)	279 (26)			316 (6)	339 (26)		

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	52	227 (27)	310 (16)		423 (3)	479 (2)	565 (2)				687 (2)
2014	74	218 (24)	324 (2)	381 (27)	462 (2)	525 (11)	539 (2)			611 (2)	670 (4)
2013	52	248 (2)	325 (38)	465 (4)	496 (5)						616 (3)
2012	62	258 (13)	422 (4)	461 (36)	534 (2)	487 (3)				636 (1)	592 (3)
2011	42	346 (2)	412 (37)				627 (1)				588 (2)
2010	170	338 (131)	425 (21)	470 (11)		571 (1)		510 (2)	511 (1)		577 (3)
2009	123	301 (37)	357 (48)	422 (7)	499 (6)		483 (2)	517 (6)	544 (2)	516 (13)	669 (1)
2008	84	259 (38)	361 (8)	452 (4)		513 (4)	519 (8)	484 (1)	539 (20)	599 (1)	
2007	99	258 (41)	406 (6)		459 (11)	501 (13)		517 (27)			653 (1)
2006	46			446 (9)	462 (11)		512 (27)				

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	16	183 (3)	227 (13)								
2014	148	168 (138)	176 (8)	230 (1)		244 (1)					

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2013	222	176 (5)	195 (153)	226 (53)	258 (12)						
2012	559	152 (348)	222 (122)	241 (90)							
2011	571	174 (171)	226 (382)	253 (7)	277 (11)						
2010	177	188 (157)	239 (12)	288 (7)	285 (1)						
2009	149	115 (127)	232 (22)								

Fish Condition

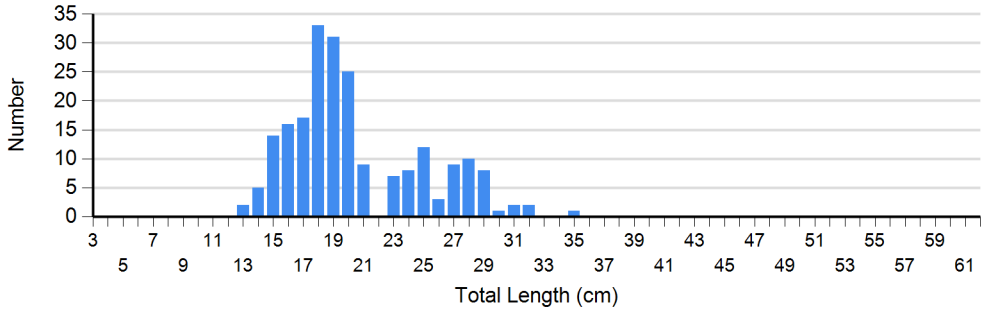
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2011	118	114 (0.7)	49	118 (1.0)	42	113 (0.6)	6	109 (2.0)
	2012	2	114 (1.0)	66	114 (0.7)	20	114 (1.1)	6	114 (2.9)
	2013	1		2	113 (2.9)	16	109 (0.9)	11	109 (1.4)
	2014	0		0		2	114 (8.3)	3	109 (1.5)
Northern Pike Gill Net	2011	1	92	6	87 (2.6)	3	87 (6.1)	0	
	2012	2	87 (1.5)	12	90 (1.8)	3	85 (4.8)	0	
	2013	0		4	78 (2.5)	5	89 (2.7)	0	
	2014	0		2	79 (6.3)	3	77 (2.7)	0	
Walleye Gill Net	2011	2	94 (9.5)	37	87 (0.9)	3	94 (7.0)	0	
	2012	8	83 (4.6)	43	89 (1.0)	4	90 (5.2)	2	99 (6.8)
	2013	37	87 (1.1)	10	92 (1.9)	3	91 (6.3)	1	92
	2014	16	84 (1.2)	21	83 (0.7)	11	86 (1.9)	4	86 (2.3)
	2015	20	86 (1.3)	5	82 (1.8)	2	77 (3.0)	2	73 (3.1)
Yellow Perch Gill Net	2011	179	101 (0.5)	343	102 (0.3)	43	99 (1.2)	6	96 (2.4)
	2012	356	98 (0.4)	172	101 (0.7)	30	96 (0.9)	1	97
	2013	114	107 (0.8)	89	105 (0.9)	19	102 (1.2)	0	
	2014	146	105 (0.5)	2	104 (6.8)	0		0	
	2015	3	102 (0.7)	13	100 (2.7)	0		0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

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



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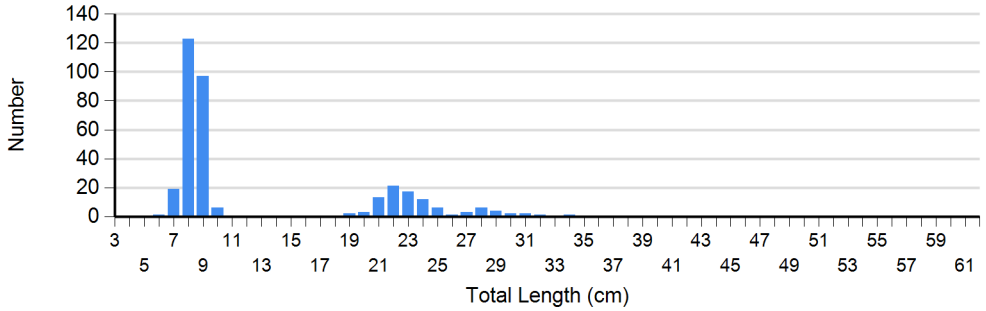

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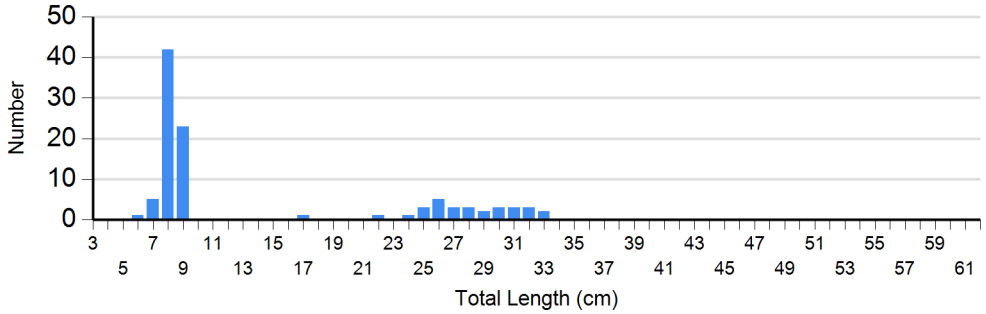

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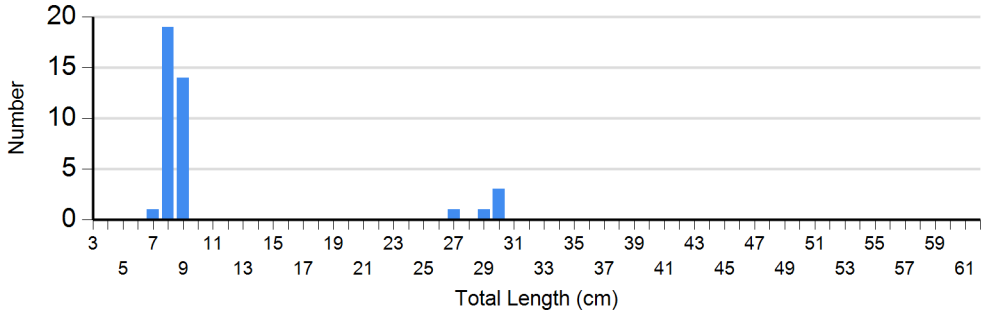

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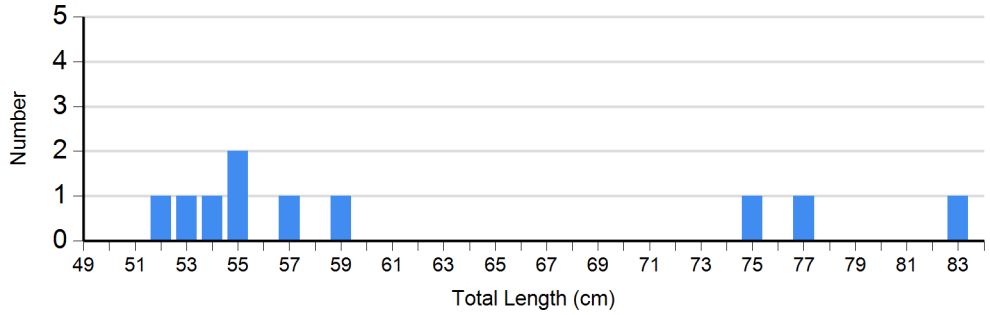
Species: Northern Pike
Gear: std exp gill net



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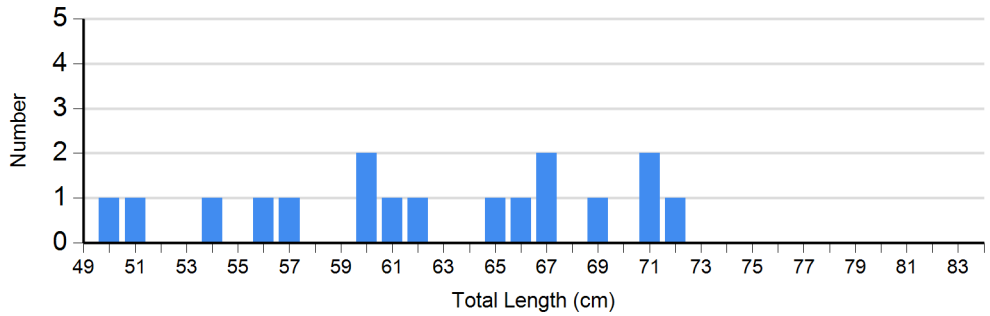

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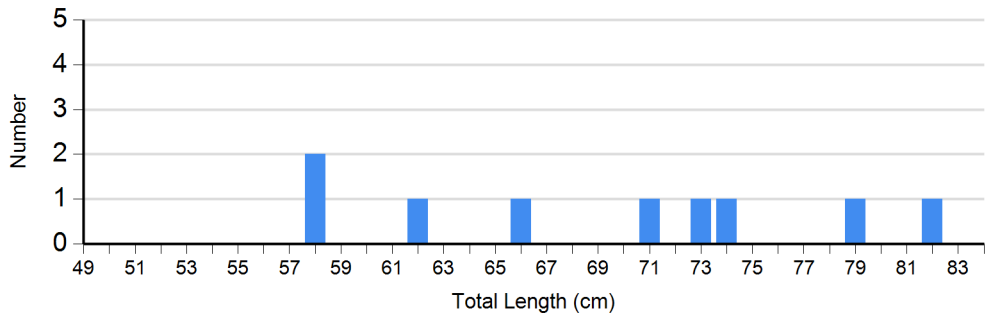

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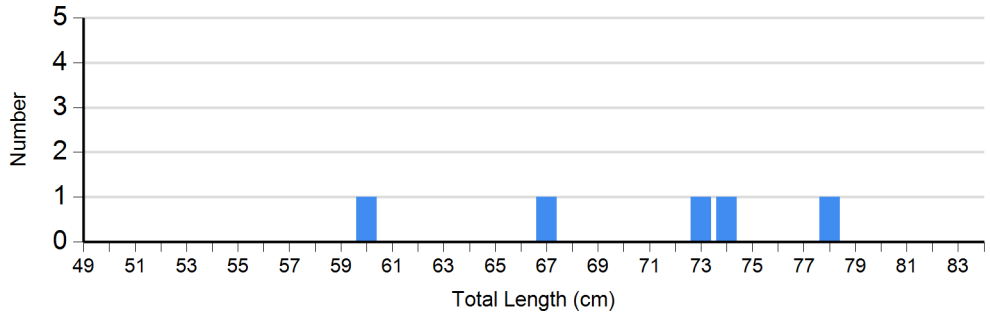
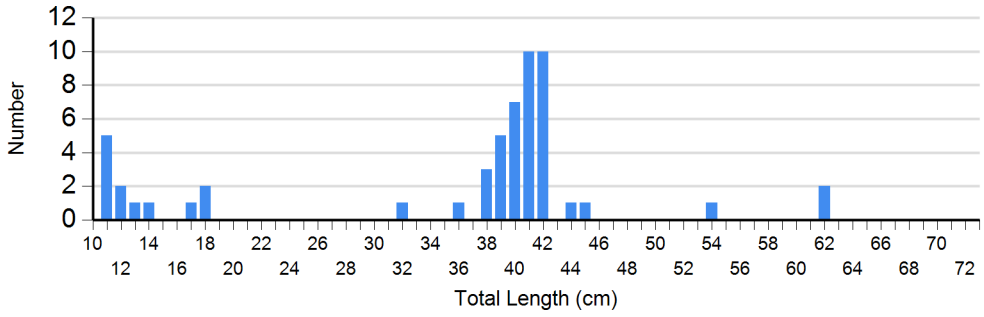


2014

Species: Walleye
Gear: std exp gill net



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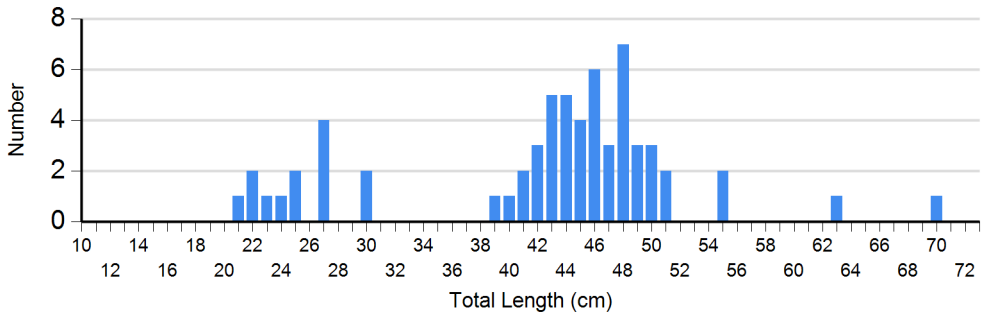

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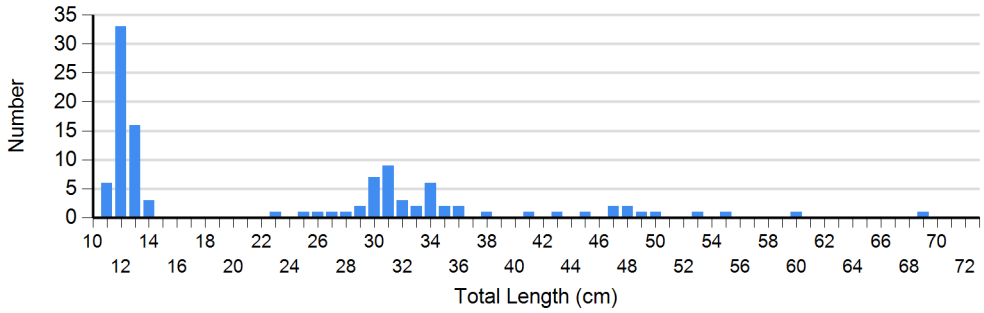

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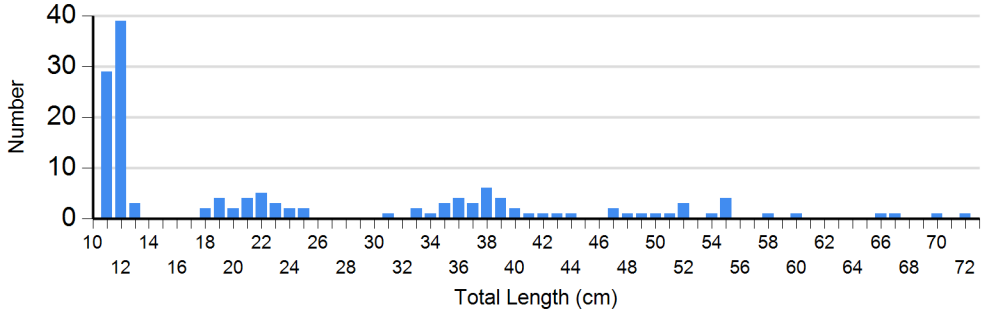

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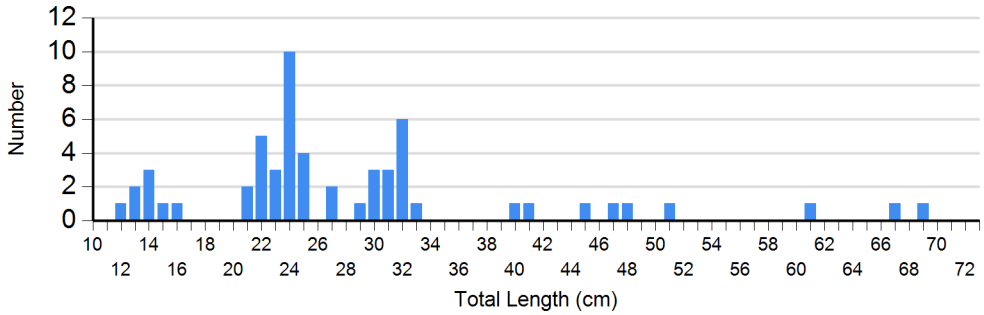
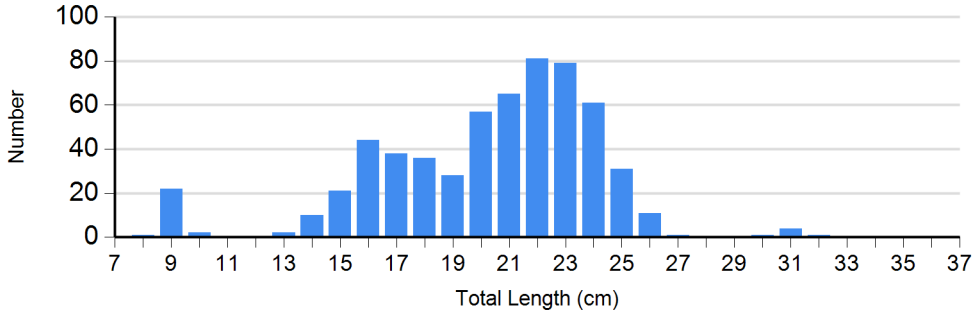


2015

Species: Yellow Perch
Gear: std exp gill net



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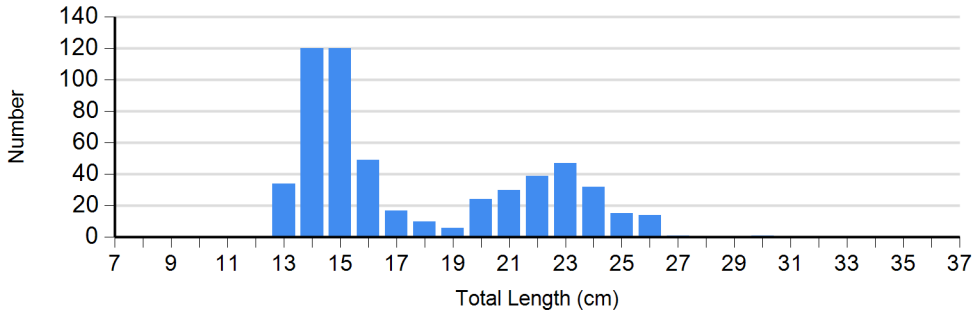

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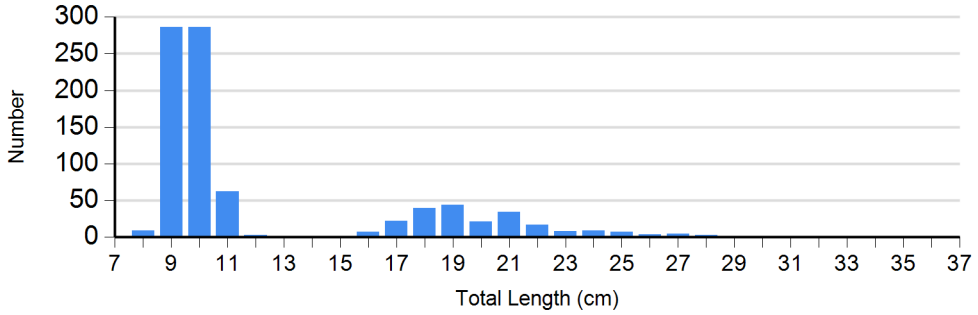
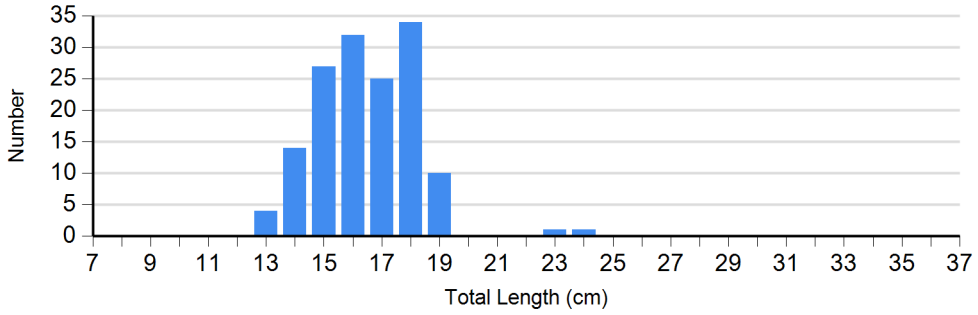


2013



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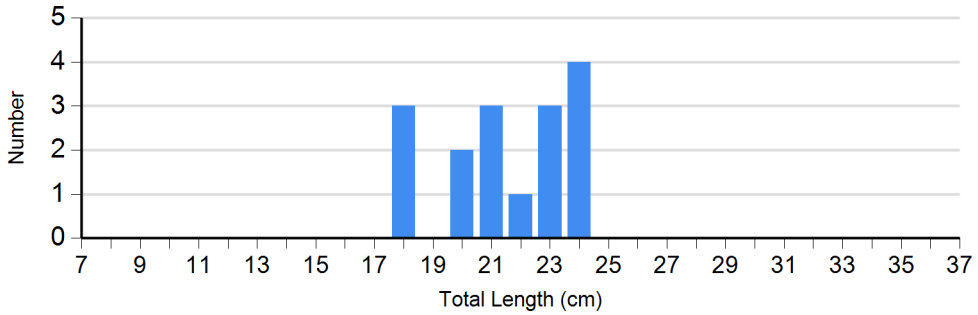
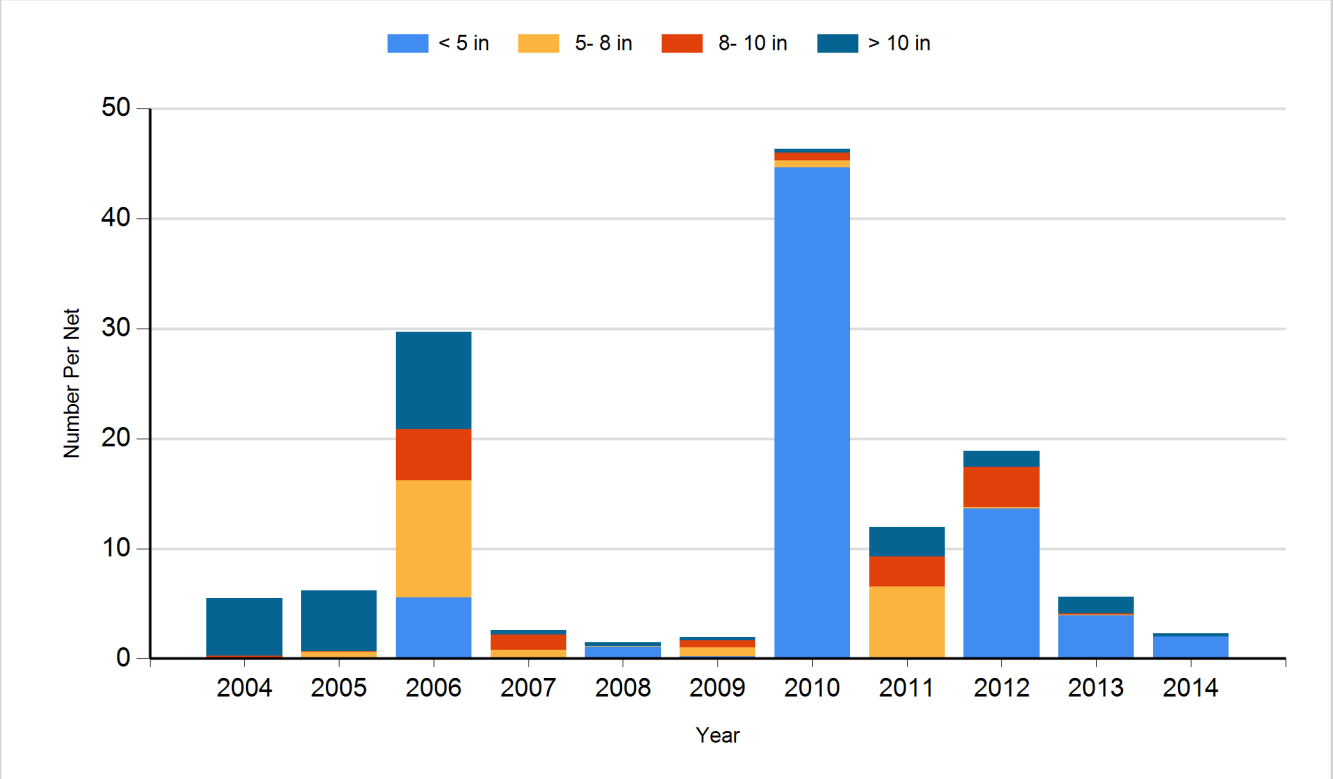


2015

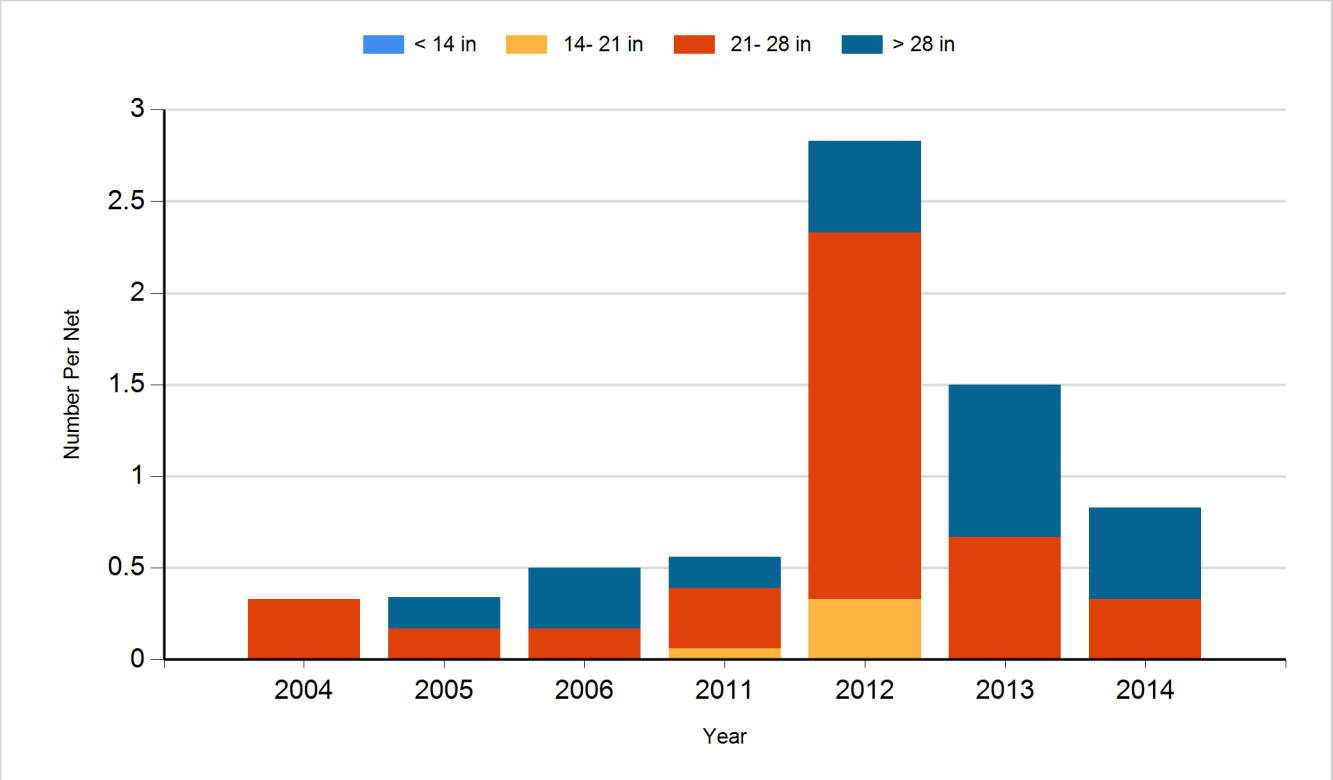
Historic Fish Sizes and Relative Abundance

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

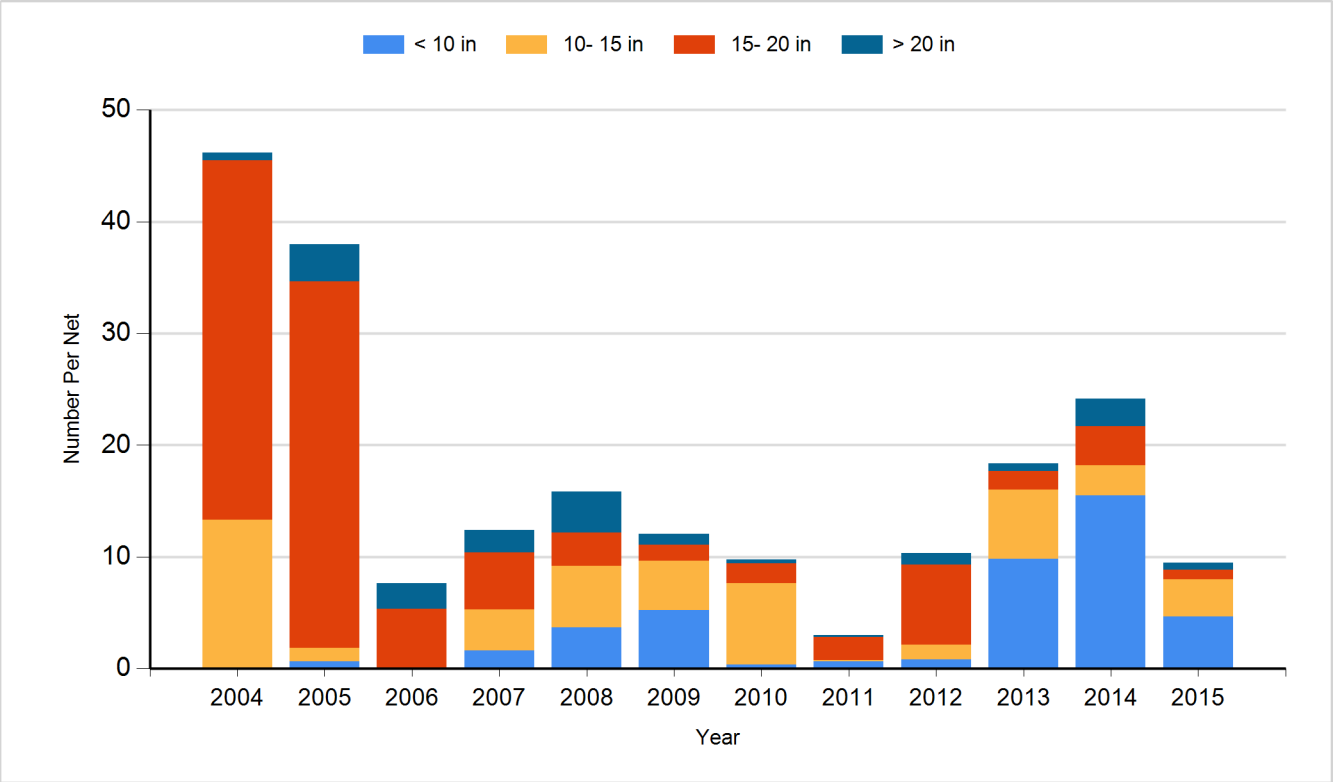
Species: Black Crappie
Gear: Frame Net



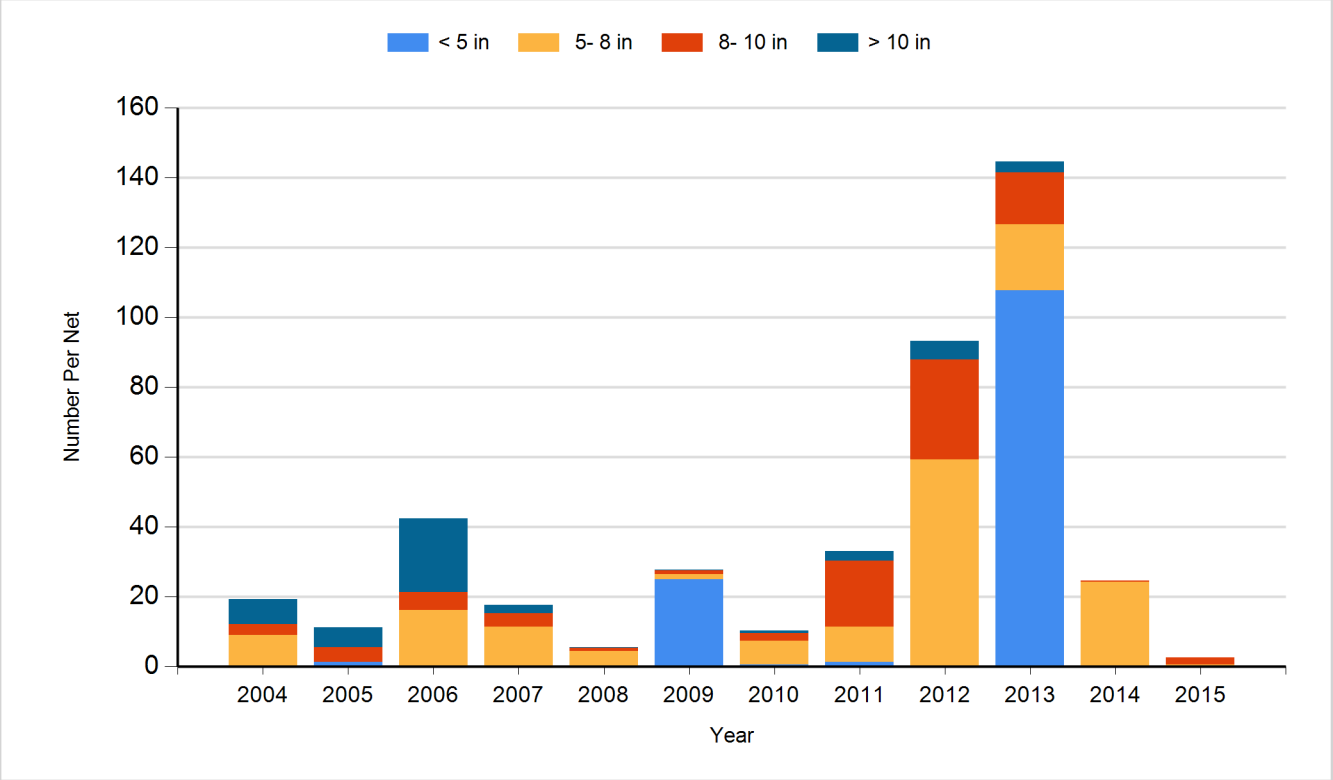
Species: Northern Pike
Gear: Gill Net



Species: Walleye
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net



Fish Stocking

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

Year	Species	Size	Number
2004	Black Crappie	Fingerling	16,324
2004	Muskellunge	Fingerling	500
2006	Muskellunge	Fingerling	1,250
2006	Walleye	Fry	1,500,000
2010	Muskellunge	Juvenile	770
2011	Walleye	Fry	700,000
2012	Muskellunge	Large Fingerling	3,018
2013	Walleye	Fry	750,000
2014	Muskellunge	Large Fingerling	1,600