SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Sharpe, Hughes County
FTR-Lake-6327-001
2015

Lake Information

Name: Sharpe

County: Hughes

Surface Area: 58,660 Acres

Surveys and Investigations

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

Gear	Date	Effort
std exp gill net	August 03, 2015	6 net-nights
std exp gill net	August 04, 2015	6 net-nights
std exp gill net	August 05, 2015	6 net-nights
std exp gill net	August 06, 2015	6 net-nights

Common Fish Species Present

Walleye

Channel Catfish

Yellow Perch

River Carpsucker

Common Carp

Sauger

Shorthead Redhorse

Smallmouth Bass

Lake Herring

Gizzard Shad

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
std exp gill net	Black Crappie	0.1	0.1	0		0		104	5
	Channel Catfish	4.0	1.1	68	7	13	5	89	1
	Common Carp	2.0	0.8	100		31	10	82	3
	Freshwater Drum	0.4	0.2	100		89		93	5
	Gizzard Shad	0.6	0.6	14				95	3
	Goldeye	0.0	0.0						
	Lake Herring	0.6	0.4	100		14		86	4
	Northern Pike	0.0	0.1	100		0		86	
	River Carpsucker	2.7	1.7	100		89	6	93	3
	Sauger	1.9	0.7	98		60	11	76	2
	Shorthead Redhorse	1.5	0.8	100		100		100	5
	Shortnose Gar	0.0	0.0						
	Shovelnose Sturgeon	0.0	0.0						
	Smallmouth Bass	0.7	0.9	71		35	19	100	4
	Smallmouth Buffalo	0.0	0.1	100		0		77	
	Spottail Shiner	0.0	0.0						
	Walleye	12.9	3.6	41	4	0		79	1
	White Bass	0.0	0.1	100		100		93	
	White Sucker	0.0	0.1	0		0		86	
	Yellow Perch	3.0	1.6	56	9	15	6	96	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.

		CPUE										
Gear	Species	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg
AFS std gill net	Black Crappie									0.0		0.0
	Channel Catfish									2.3		2.3
	Common Carp									0.4		0.4
	Flathead Catfish									0.0		0.0
	Freshwater Drum									0.4		0.4
	Gizzard Shad									0.2		0.2
	Goldeye									0.0		0.0
	Rainbow Trout									0.0		0.0
	River Carpsucker									0.8		0.8
	Sauger									1.0		1.0
	Shorthead Redhorse									0.6		0.6
	Shortnose Gar									0.0		0.0
	Shovelnose Sturgeon									0.0		0.0
	Smallmouth Bass									1.9		1.9
	Smallmouth Buffalo									0.3		0.3
	Walleye									12.9		12.9
	White Bass									0.6		0.6
	White Sucker									0.0		0.0
	Yellow Perch									1.3		1.3
boat shocker (night)	Sauger	0.0		0.0	0.0	0.0						0.0
	Smallmouth Bass	18.1	16.3	16.5								17.0
	Walleye	20.7	15.1	48.2	41.9	38.2	14.6					29.8
frame net (std 3/4 in)	Bigmouth Buffalo				0.1		0.2					0.2
	Black Bullhead			0.3	0.4	0.3	0.2	1.4				0.5
	Black Crappie			1.1	4.7	5.3	3.0	8.1				4.4
	Bluegill			2.2	0.8	1.3		1.6				1.5
	Channel Catfish			10.5	4.2	2.3	4.2	3.0				4.8
	Common Carp			2.3	5.2	4.0	3.1	2.4				3.4
	Freshwater Drum			0.6		0.1						0.4
	Gizzard Shad			0.3	4.6	1.8	0.3	1.3				1.7
	Green Sunfish					0.1						0.1
	Largemouth Bass			0.1				0.1				0.1
	Northern Pike			0.7	0.4			0.0				0.4

		CPUE										
Gear	Species	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg
frame net (std 3/4 in)	Orangespotted Sunfish			0.0								0.0
	Rainbow Trout				0.0	0.0	0.0					0.0
	River Carpsucker			1.5	0.4	0.9						0.9
	Sauger			1.7	0.5	0.3	0.1					0.7
	Shorthead Redhorse			0.8	1.0	0.9	0.1					0.7
	Shortnose Gar			0.0	0.0	0.0	0.0	0.0				0.0
	Smallmouth Bass			0.9	2.0	1.2	0.8	1.2				1.2
	Smallmouth Buffalo			0.2	2.2	0.1	1.1					0.9
	Stonecat				0.0							0.0
	Walleye			1.2	1.1	0.8	0.9	1.2				1.0
	White Bass			1.0	21.1	8.9	11.9	3.2				9.2
	White Crappie			1.3	0.4	1.0	0.1	0.1				0.6
	White Sucker			0.3	1.0	0.3	0.3					0.5
	Yellow Perch					0.1						0.1
hoop net	Black Crappie			2.0								2.0
	Channel Catfish			1.0								1.0
	Orangespotted Sunfish			0.0								0.0
	Sauger			1.5								1.5
	Walleye			5.0								5.0
	White Bass			0.5								0.5
	White Crappie			0.0								0.0
rod and reel	Smallmouth Bass	14,970.0	27,120.0	30,300.0		8,460.0	3,480.0	11,640.0				15995.0
smb mono gill net	Bigmouth Buffalo							0.0				0.0
	Channel Catfish							0.9				0.9
	Common Carp							0.5				0.5
	Freshwater Drum							0.2				0.2
	Gizzard Shad							0.7				0.7
	Goldeye							0.0				0.0
	Northern Pike							0.0				0.0
	River Carpsucker							0.2				0.2
	Sauger							0.1				0.1
	Shorthead Redhorse							0.5				0.5
	Smallmouth Bass					2.0	1.1	1.0				1.4
	Walleye							6.1				6.1
	White Bass							0.1				0.1

		CPUE										
Gear	Species	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg
smb mono gill net	White Sucker							0.1				0.1
	Yellow Perch							0.3				0.3
std exp gill net	Bigmouth Buffalo			0.1								0.1
	Black Bullhead			0.1			0.1	0.1				0.1
	Black Crappie	0.2		0.0		0.1	0.1	0.0	0.0		0.1	0.1
	Bluegill	0.0										0.0
	Burbot									0.0		0.0
	Channel Catfish	6.1	4.8	5.3	5.3	5.0	2.8	6.6	4.4	3.0	4.0	4.7
	Common Carp	3.1	2.1	2.4	1.9	1.7	1.9	1.8	2.5	1.1	2.0	2.1
	Freshwater Drum	0.7	0.3	0.9	0.1	0.2	0.2	0.3	0.1	0.1	0.4	0.3
	Gizzard Shad	0.9	0.6	0.1	0.2	0.2	0.0	0.0	0.0	0.3	0.6	0.3
	Goldeye				0.0	0.0		0.0	0.0	0.0	0.0	0.0
	Lake Herring										0.6	0.6
	Largemouth Bass									0.0		0.0
	Northern Pike	0.0				0.0	0.1	0.0	0.0		0.0	0.0
	Rainbow Smelt				0.0							0.0
	Rainbow Trout			0.0				0.0		0.0		0.0
	River Carpsucker	0.1	0.2	0.1	0.5	1.1	0.6	0.3	0.5	2.0	2.7	0.8
	Sauger	2.3	2.5	2.6	2.5	1.1	1.8	0.9	1.4	1.6	1.9	1.9
	Shorthead Redhorse	0.2	0.3	0.1	0.1	0.0	0.7	0.8	1.3	0.7	1.5	0.6
	Shortnose Gar	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Shovelnose Sturgeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Smallmouth Bass	1.1	1.3	0.2	0.4	1.3	0.3	0.2	1.1	0.6	0.7	0.7
	Smallmouth Buffalo		0.0		0.0	0.0			0.0	0.1	0.0	0.0
	Spottail Shiner		0.0			0.0	0.0				0.0	0.0
	Walleye	14.1	19.0	18.6	17.2	19.9	18.4	21.9	12.5	8.0	12.9	16.3
	White Bass	2.2	1.9	1.5	0.5	0.5	0.4	0.0	0.8	0.2	0.0	0.8
	White Crappie	0.0	0.1	0.0		0.1	0.1	0.0				0.1
	White Sucker		0.0		0.0	0.0	0.3		0.1		0.0	0.1
	Yellow Perch	1.9	1.6	0.6	1.6	1.9	2.6	1.8	1.4	0.9	3.0	1.7

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
AFS std gill net	Black Crappie	PSD									0	
		PSD-P									0	
	Walleye	PSD									26	
		PSD-P									2	
	Yellow Perch	PSD									56	
		PSD-P									22	
boat shocker (night)	Walleye	PSD	0	0	0	0	0	0				
		PSD-P	0	0	0	0	0	0				
frame net (std 3/4 in)	Black Crappie	PSD			59	73	92	71	99			
		PSD-P			41	31	28	15	4			
		Wr			97	99	99	92	97			
	Northern Pike	PSD			93	88			0			
		PSD-P			14	75			0			
		Wr			87	95						
	Walleye	PSD			83	82	69	76	39			
		PSD-P			46	32	31	29	9			
		Wr			80	87	81	89	74			
	Yellow Perch	PSD					0					
		PSD-P					0					
hoop net	Black Crappie	PSD			75							
		PSD-P			75							
		Wr			94							
	Walleye	PSD			80							
		PSD-P			30							
		Wr			74							
smb mono gill net	Northern Pike	PSD							0			
		PSD-P							0			
	Walleye	PSD							0			
		PSD-P							0			
	Yellow Perch	PSD							100			

			Year									
Gear	Species	Index	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
smb mono gill net	Yellow Perch	PSD-P							100			
std exp gill net	Black Crappie	PSD	75		0		0	100	100	100		0
		PSD-P	50		0		0	50	100	100		0
		Wr	82		98		95	100	104	84		104
	Northern Pike	PSD	100				100	100	0	100		100
		PSD-P	100				0	0	0	0		0
		Wr	95				88	107	78	88		86
	Walleye	PSD	48	24	23	40	47	39	41	60	52	41
		PSD-P	2	1	1	1	1	1	1	0	1	0
		Wr	85	82	85	82	87	83	83	84	85	79
	Yellow Perch	PSD	53	37	47	56	36	61	58	74	36	56
		PSD-P	0	5	0	0	6	20	9	50	32	15
		Wr	104	84	88	89	86	83	91	97	92	96

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+
2012	160			226 (151)	236 (5)	190 (1)	314 (3)				
2011	59				201 (18)	201 (18)	229 (10)	212 (5)	282 (7)		272 (1)
2010	106	160 (3)	218 (59)	249 (30)	285 (9)	306 (7)					
2009	94		155 (3)	173 (14)	218 (25)	244 (37)	273 (13)	314 (2)			

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	341	214 (34)	327 (121)	382 (130)	450 (5)	426 (15)	423 (18)	416 (11)	432 (6)	465 (1)	
2014	681	245 (150)	337 (292)	389 (25)	397 (63)	427 (80)	423 (38)	426 (17)	456 (6)	461 (10)	
2013	315	249 (35)	349 (23)	380 (102)	397 (95)	395 (28)	426 (16)	465 (7)	444 (4)	424 (1)	454 (6)
2012	945	248 (13)	307 (417)	358 (307)	357 (107)	415 (39)	437 (28)	453 (19)		470 (9)	437 (5)
2011	320	231 (35)	340 (162)	387 (45)	436 (29)	436 (25)	463 (12)	404 (1)	503 (3)		490 (8)
2010	522	261 (172)	348 (99)	394 (106)	411 (63)	416 (60)	414 (3)	447 (8)	434 (1)	459 (2)	498 (7)
2009	427	240 (19)	334 (99)	368 (134)	394 (129)	400 (5)	451 (10)	424 (2)	451 (9)	453 (9)	494 (8)

Fish Condition

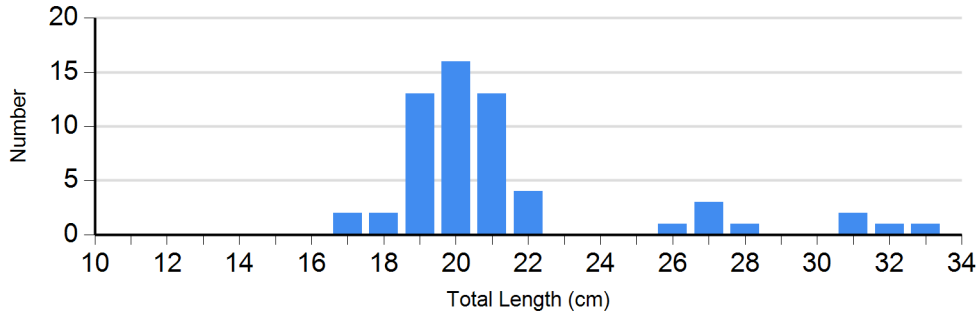
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	17	88 (1.5)	33	92 (1.2)	5	101 (3.1)	4	94 (1.3)
	2012	1		153	97 (0.6)	4	94 (4.0)	3	82
Northern Pike Gill Net	2011	0		1	107	0		0	
	2012	1	78	0		0		0	
	2013	0		1	88	0		0	
	2015	0		1	86	0		0	
Walleye Gill Net	2011	180	82 (0.5)	111	84 (0.8)	2	81 (6.5)	1	78
	2012	309	85 (0.8)	213	79 (0.4)	2	71 (1.5)	1	71
	2013	120	87 (0.6)	178	82 (0.4)	1	77	0	
	2014	92	89 (0.8)	97	81 (0.8)	2	85 (15.5)	0	
	2015	182	80 (1.2)	126	79 (0.7)	1	84	0	
Yellow Perch Gill Net	2011	16	89 (3.5)	17	80 (3.3)	8	75 (3.8)	0	
	2012	18	91 (2.5)	21	90 (2.4)	4	95 (0.8)	0	
	2013	9	103 (2.9)	8	91 (1.7)	15	97 (3.0)	2	91 (6.7)
	2014	14	96 (2.3)	1	89	6	93 (1.4)	1	35
	2015	31	97 (3.1)	29	96 (1.7)	10	95 (2.4)	1	86

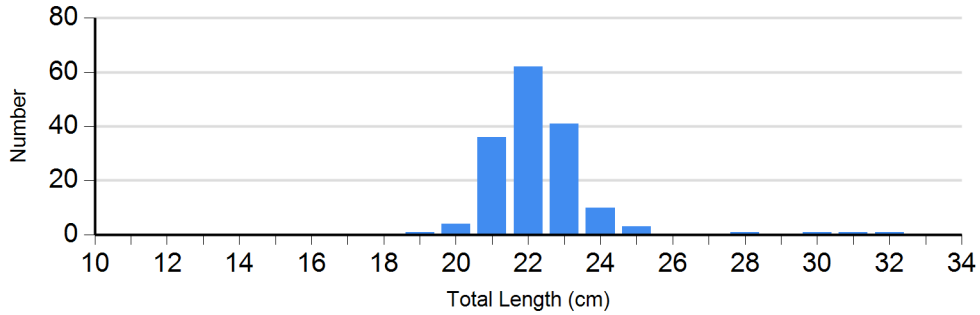
Length Frequency Distribution

Length frequency histogram of species sampled by year.

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

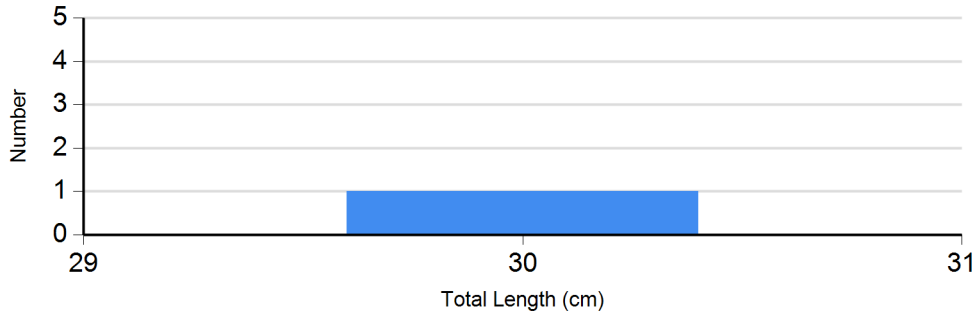


2011



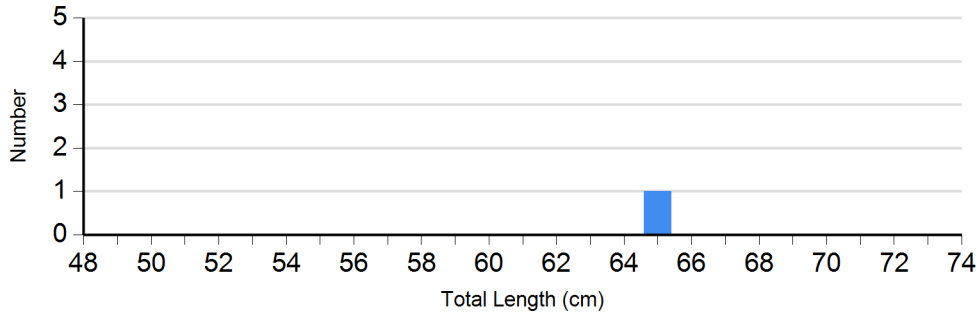
2012

Species: Northern Pike
Gear: smb mono gill net

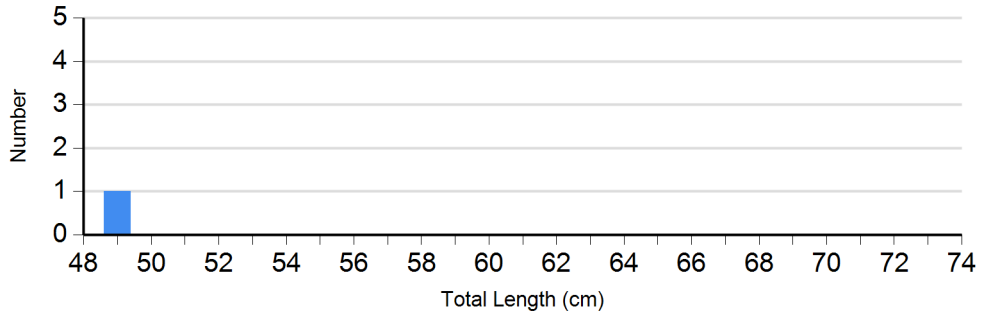


2012

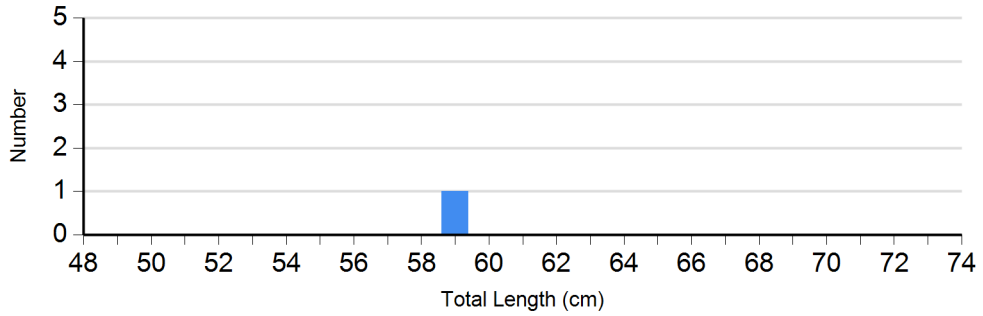
Species: Northern Pike
Gear: std exp gill net



2011



2012



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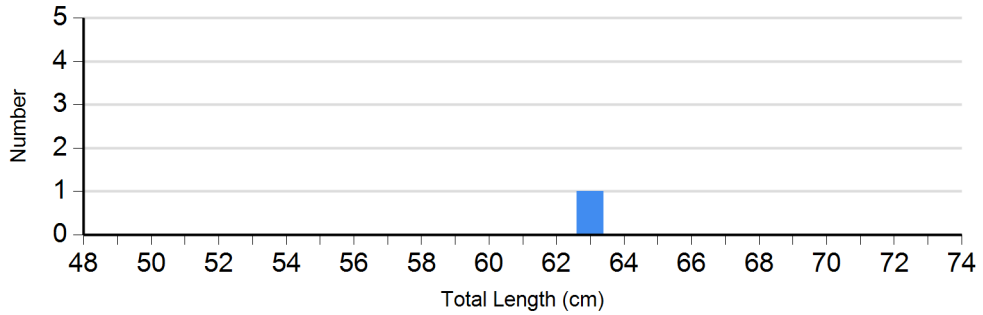
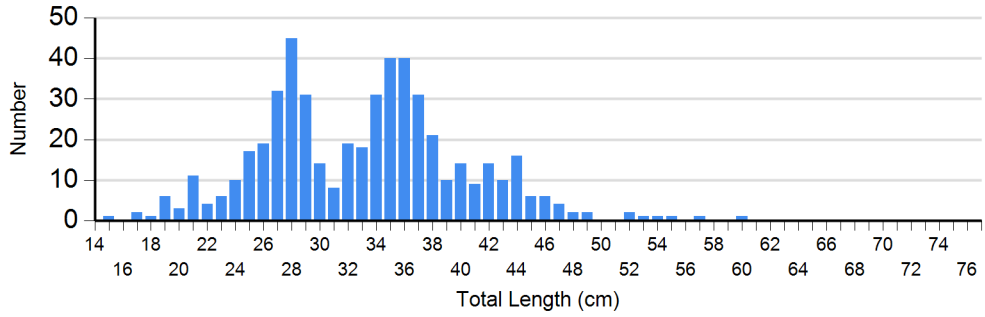


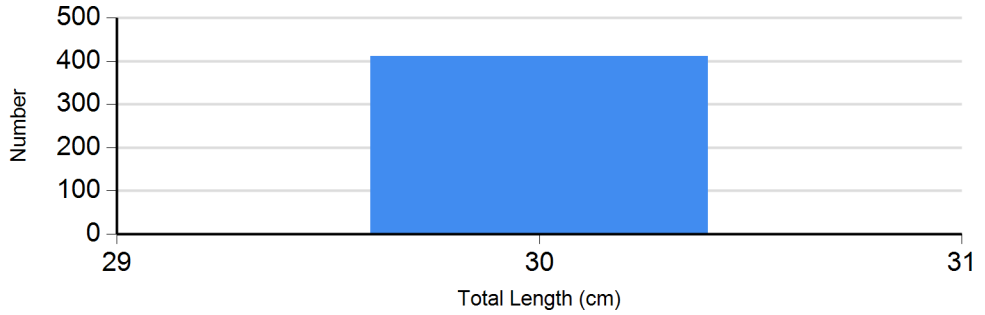
2015

Species: Walleye
Gear: AFS std gill net



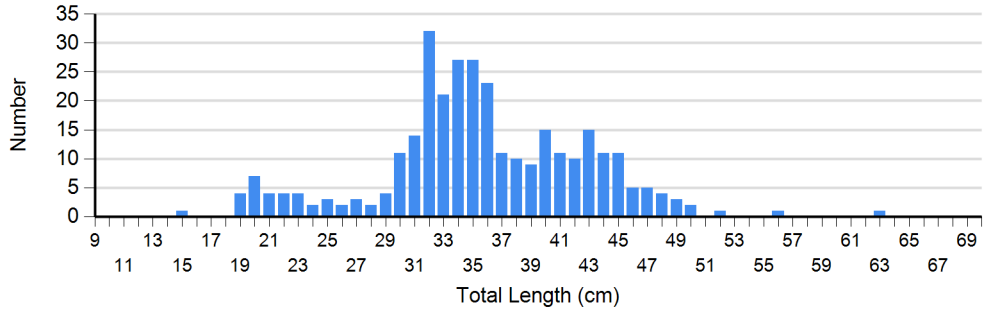
2014

Species: Walleye
Gear: smb mono gill net



2012

Species: Walleye
Gear: std exp gill net



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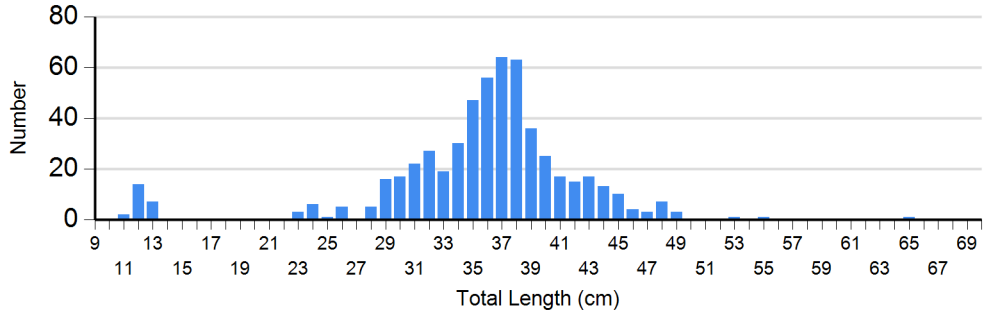

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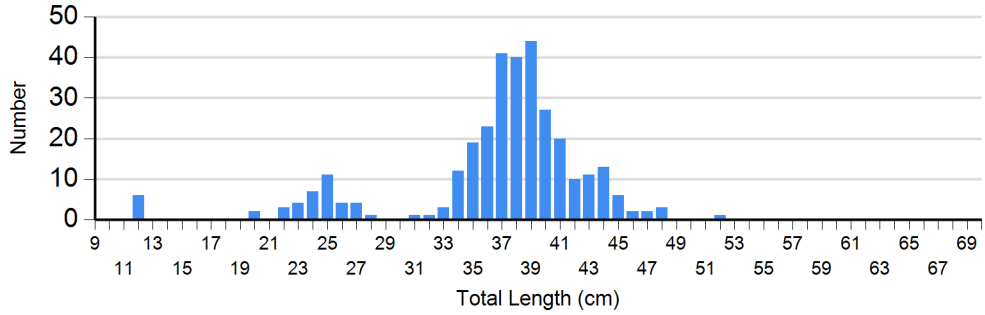

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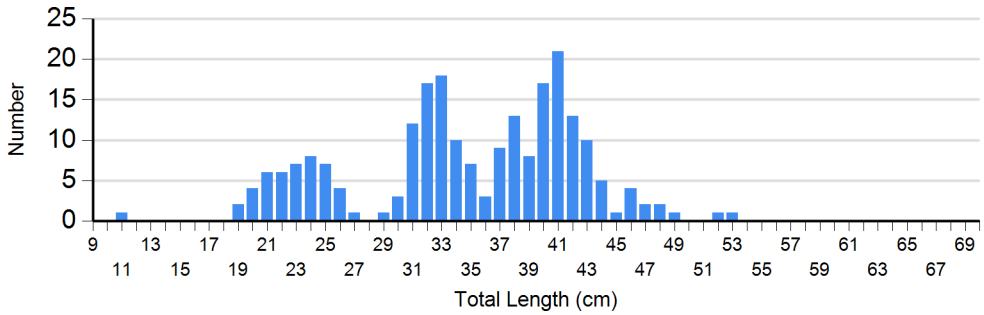
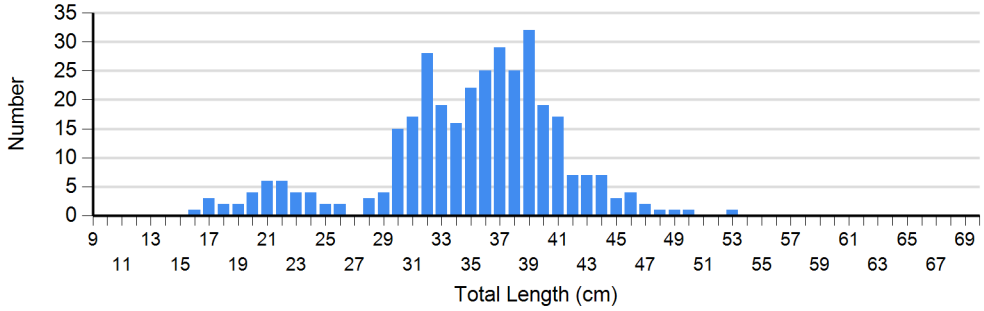
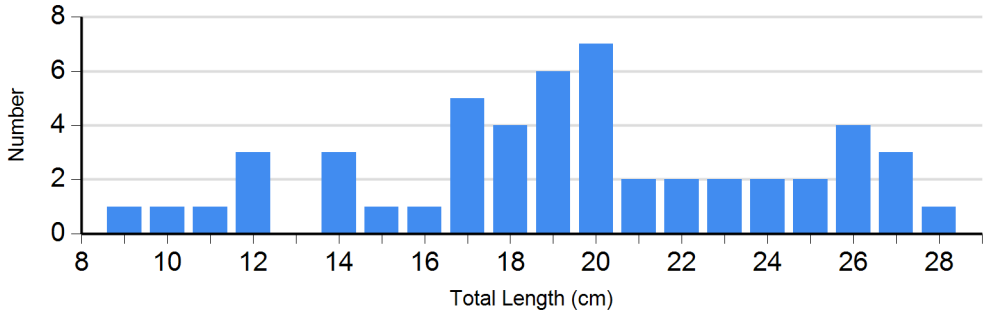


2014



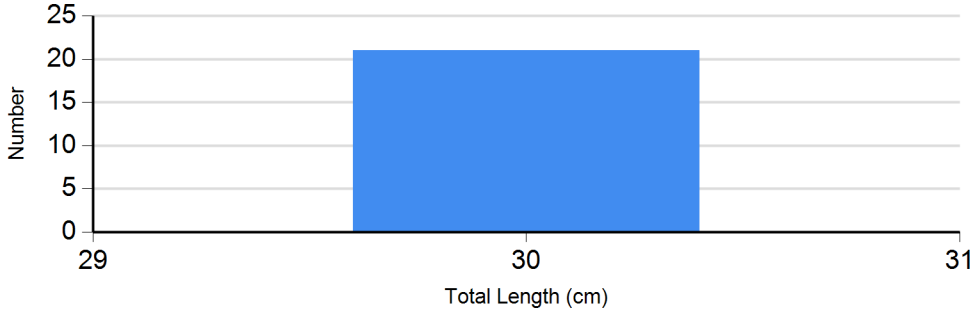
2015

Species: Yellow Perch
Gear: AFS std gill net



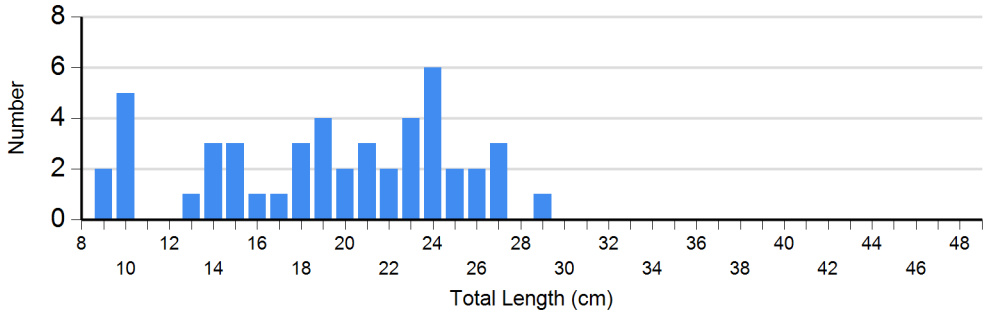
2014

Species: Yellow Perch
Gear: smb mono gill net

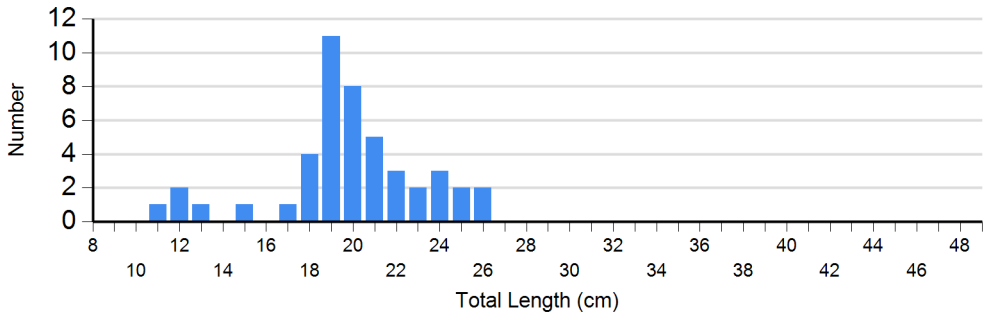


2012

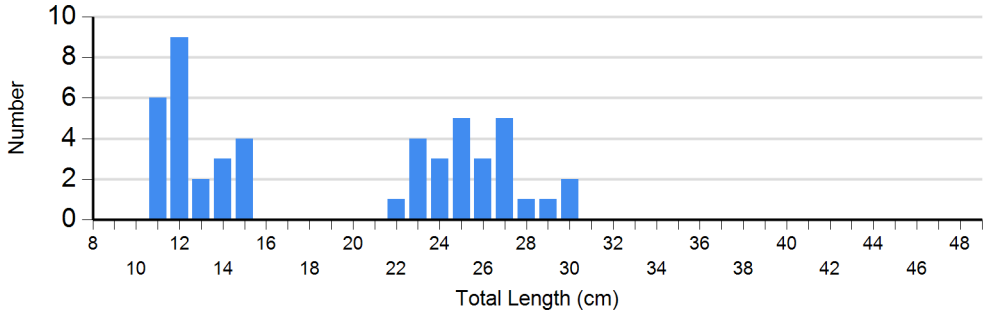
Species: Yellow Perch
Gear: std exp gill net



2011



2012



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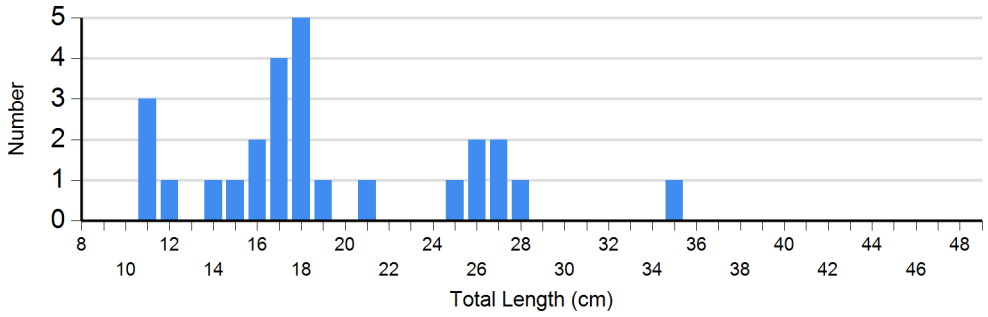
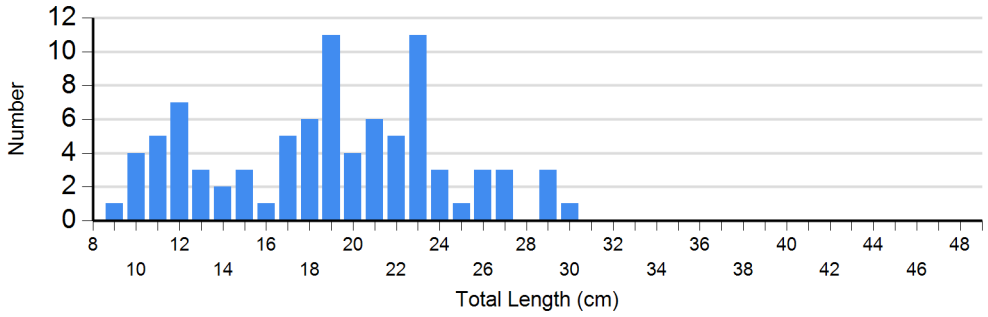


2014

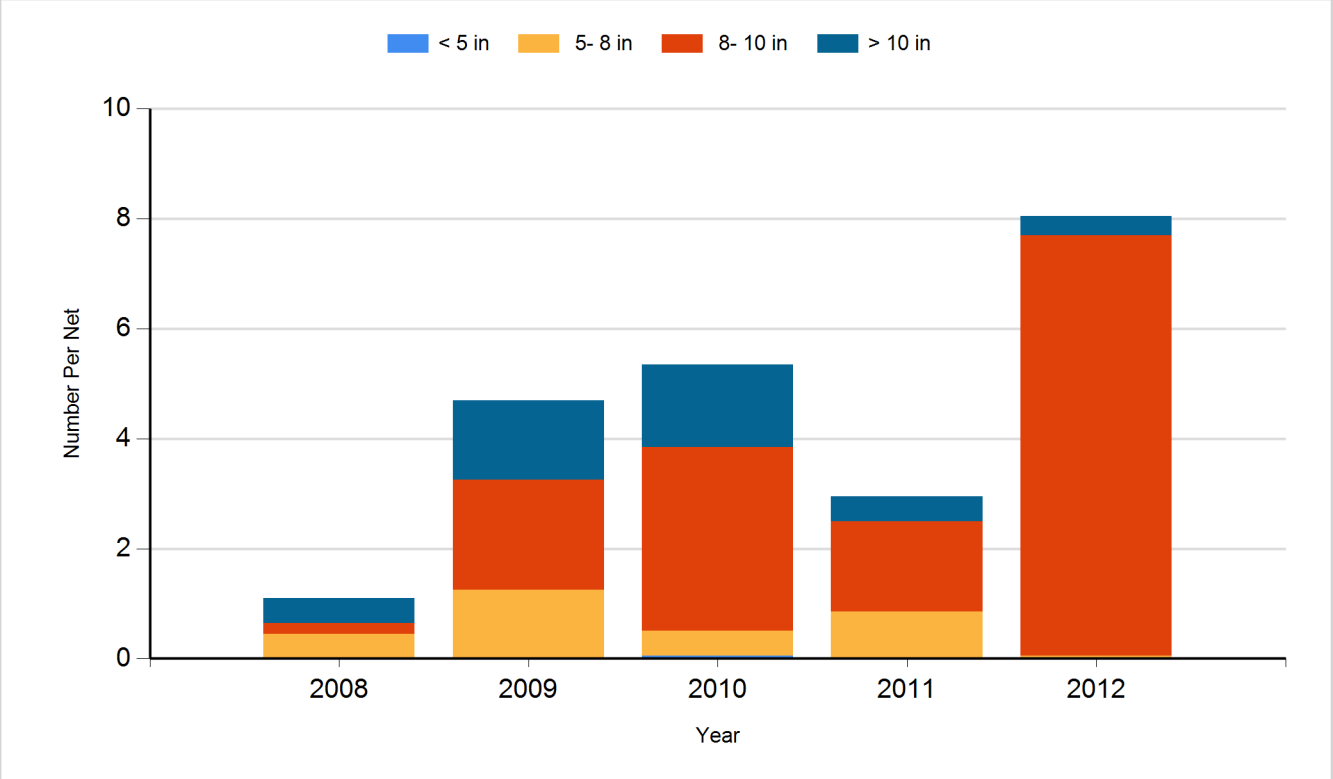


2015

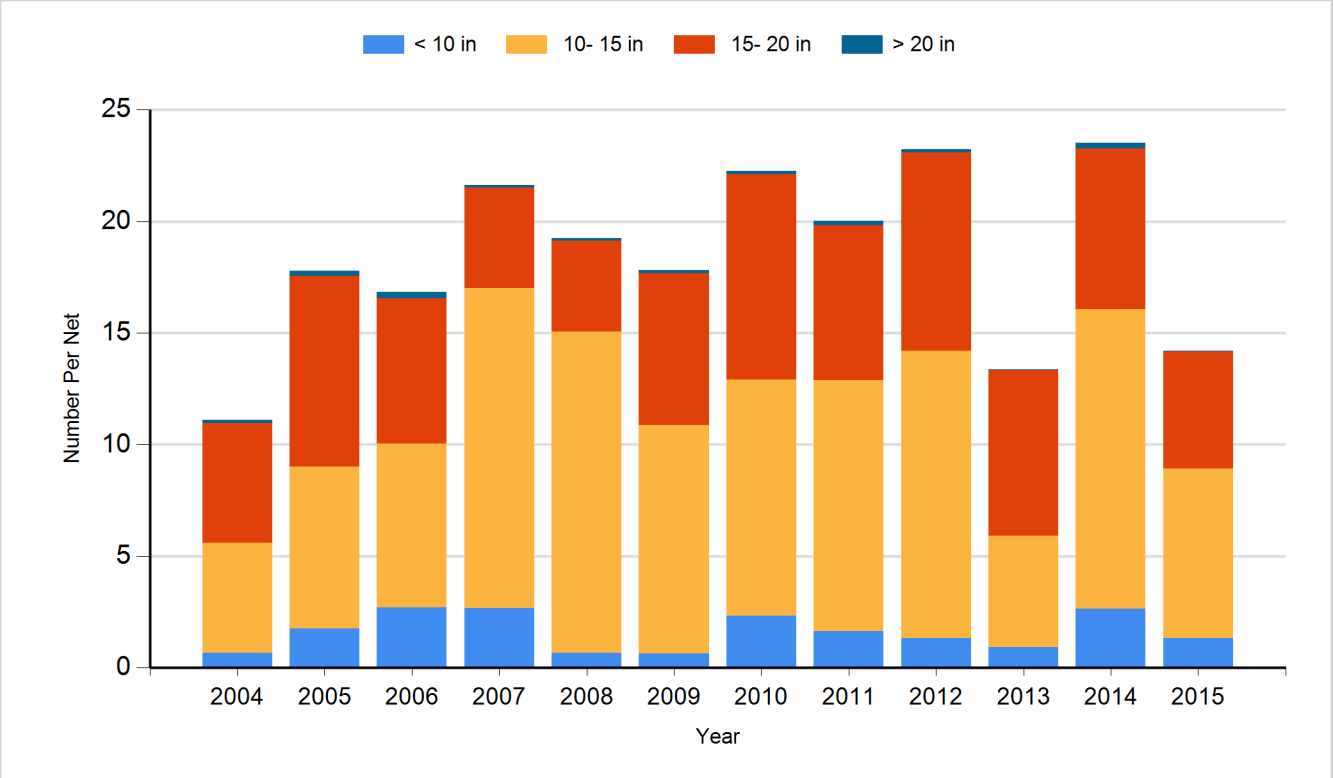
Historic Fish Sizes and Relative Abundance

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

Species: Black Crappie
Gear: Frame Net



Species: Walleye
Gear: Gill Net



Species: Yellow Perch
Gear: Gill Net