SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Cavour, Beadle County
MJA-Lake-532-000
2018

Lake Information

Name: Cavour

County: Beadle

Legal Description: T111N- R60W-Sec. 20-22

Surface Area: 528 Acres

Maximum Depth: 14 Feet

Mean Depth: 4 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Aug 20, 2018	6 net-nights
frame net (std 3/4 in)	Aug 20, 2018	5 net-nights

Common Fish Species Present

Walleye

Common Carp

Black Bullhead

Black Crappie

White Sucker

Freshwater Drum

Bigmouth Buffalo

Yellow Bullhead

Yellow Perch

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	Bigmouth Buffalo	12	1.2	0.7	0		0			
	Black Bullhead	33	5.5	2.2	18	11	0			
	Black Crappie	2	0.3	0.3	100		100		101	6
	Common Carp	175	28.7	4.2	70	5	4	2		
	Freshwater Drum	13	2.2	0.7	46	23	0			
	Walleye	2	0.3	0.3	0		0		92	0
	Yellow Bullhead	1	0.2	0.2	100		100			
frame net (std 3/4 in)	Bigmouth Buffalo	3	0.4	0.6	100		50			
	Black Bullhead	111	22.2	12.0	12	5	0			
	Black Crappie	70	14.0	6.5	100		69	8	99	1
	Common Carp	45	3.6	0.9	50	19	28	18		
	Northern Pike	2	0.4	0.4	100		100		85	0
	Walleye	13	2.6	1.1	8		8		89	1
	White Sucker	14	2.8	1.6	100		100			
	Yellow Bullhead	6	1.2	0.9	100		100			
	Yellow Perch	4	0.8	0.9	25		0		86	6

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	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg
AFS std gill net	Bigmouth Buffalo										1.2	1.2
	Black Bullhead										5.5	5.5
	Black Crappie										0.3	0.3
	Common Carp										28.7	28.7
	Freshwater Drum										2.2	2.2
	Walleye										0.3	0.3
	Yellow Bullhead										0.2	0.2
frame net (std 3/4 in)	Bigmouth Buffalo			0.1							0.4	0.3
	Black Bullhead		23.2	577.3		342.0	159.6	247.2	234.0		22.2	229.4
	Black Crappie		199.8	83.5		20.2	17.2	17.4	25.4		14.0	53.9
	Bluegill		0.4									0.4
	Common Carp		5.1	11.4		4.2	0.2	4.0	8.2		3.6	5.2
	Freshwater Drum								0.0			0.0
	Green Sunfish		0.1	0.6				0.4				0.4
	Northern Pike			0.3		0.2	0.4	1.6	1.4		0.4	0.7
	Sunfish Hybrid							0.0	0.0			0.0
	Walleye		0.4	0.1			0.6	1.0	21.6		2.6	4.4
	White Sucker			0.9		0.8	0.8	1.6	2.2		2.8	1.5
	Yellow Bullhead			0.7			1.4	5.2			1.2	2.1
	Yellow Perch		0.3	0.5			0.2	0.2	0.6		0.8	0.4
std exp gill net	Bigmouth Buffalo							0.7				0.7
	Black Bullhead		32.7	62.7		30.7	170.7	56.0	50.0			67.1
	Black Crappie		34.0	15.7		0.3	1.3	6.0	6.3			10.6
	Channel Catfish								0.0			0.0
	Common Carp		12.7	15.7		10.0	11.3	20.7	18.7			14.9
	Freshwater Drum							0.3	0.7			0.5
	Northern Pike			0.7		1.7	1.0	0.3				0.9
	Walleye		1.3	0.3		2.0	3.7	13.3	3.0			3.9
	White Sucker			0.3		0.7			0.7			0.6
	Yellow Bullhead			0.3				0.3				0.3
	Yellow Perch			0.3		2.3	1.7	2.3				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	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AFS std gill net	Bigmouth Buffalo	PSD										0
		PSD-P										0
	Black Bullhead	PSD										18
		PSD-P										0
	Black Crappie	PSD										100
		PSD-P										100
		Wr										101
	Common Carp	PSD										70
		PSD-P										4
	Walleye	PSD										0
		PSD-P										0
		Wr										92
	Yellow Bullhead	PSD										100
		PSD-P										100
frame net (std 3/4 in)	Bigmouth Buffalo	PSD			100							100
		PSD-P			0							50
		Wr			74							
	Black Bullhead	PSD		12	6		51	74	38	43		12
		PSD-P		0	1		0	0	0	0		0
		Wr		83	84		62					
	Black Crappie	PSD		1	78		100	76	48	85		100
		PSD-P		0	0		91	76	7	6		69
		Wr		96	103		92	120	108	95		99
	Common Carp	PSD		14	47		81	100	65	46		50
		PSD-P		0	4		10	0	45	15		28
		Wr		87	87		78					
	Northern Pike	PSD			100		100	50	88	100		100
		PSD-P			33		100	0	25	57		100
		Wr			88		97	105	92	93		85
	Walleye	PSD		75	0			33	80	93		8
		PSD-P		50	0			0	20	8		8
		Wr		91	98			88	91	73		89
	White Sucker	PSD			100		100	100	100	100		100

			Year									
Gear	Species	Index	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
frame net (std 3/4 in)	White Sucker	PSD-P			100		100	100	88	100		100
		Wr			98		80					
	Yellow Bullhead	PSD			100			100	100			100
		PSD-P			100			71	62			100
		Wr			100			101				
	Yellow Perch	PSD		100	80			100	100	100		25
		PSD-P		0	0			100	100	67		0
		Wr		101	89			107	77	70		86
std exp gill net	Bigmouth Buffalo	PSD							0			
		PSD-P							0			
	Black Bullhead	PSD		3	3		53	65	52	12		
		PSD-P		0	0		0	0	1	0		
		Wr		92	99		71					
	Black Crappie	PSD		2	89		100	0	44	68		
		PSD-P		0	0		100	0	0	0		
		Wr		104	104		89	119	111	99		
	Common Carp	PSD		18	49		70	62	65	50		
		PSD-P		0	0		10	15	3	2		
		Wr		85	87		78					
	Northern Pike	PSD			100		60	67	100			
		PSD-P			0		0	0	0			
		Wr			95		88	98	91			
	Walleye	PSD		25	100		67	45	83	100		
		PSD-P		0	0		0	0	3	0		
		Wr		102	96		79	99	92	74		
	White Sucker	PSD			100		100			100		
		PSD-P			100		100			100		
		Wr			100		82					
	Yellow Bullhead	PSD			100				100			
		PSD-P			100				100			
		Wr			112				98			
	Yellow Perch	PSD			100		43	100	71			
		PSD-P			0		14	80	0			
		Wr			104		81	92	98			

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+
2010	1998			186 (1998)							

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2010	4	286 (1)		371 (3)							

Fish Condition

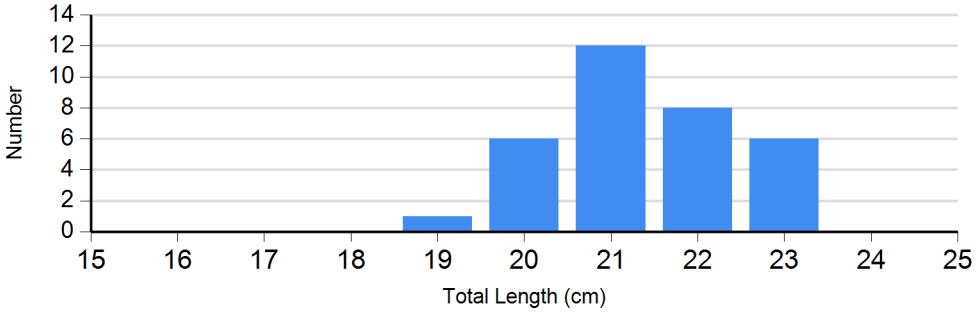
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2014	21	160 (12.1)	0		34	114 (1.1)	31	112 (0.7)
	2015	45	108 (1.3)	36	110 (1.5)	0		6	99 (1.9)
	2016	19	102 (8.3)	101	94 (0.7)	3	78	4	72
	2018	0		22	101 (1.1)	48	98 (0.7)	0	
Northern Pike Gill Net	2014	1	102	2	96 (3.7)	0		0	
	2015	0		1	91	0		0	
Walleye Gill Net	2014	6	98 (3.3)	5	99 (3.4)	0		0	
	2015	7	87 (2.2)	32	93 (1.1)	1	91	0	
	2016	0		9	74 (2.8)	0		0	
	2018	2	92 (0.1)	0		0		0	
Yellow Perch Gill Net	2014	0		1	87	4	94 (0.7)	0	
	2015	2	108 (6.3)	5	94 (2.6)	0		0	

Length Frequency Distribution

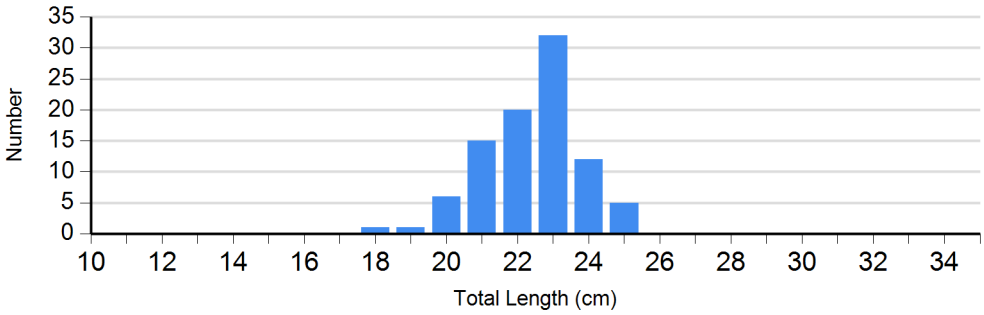
Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: AFS std gill net

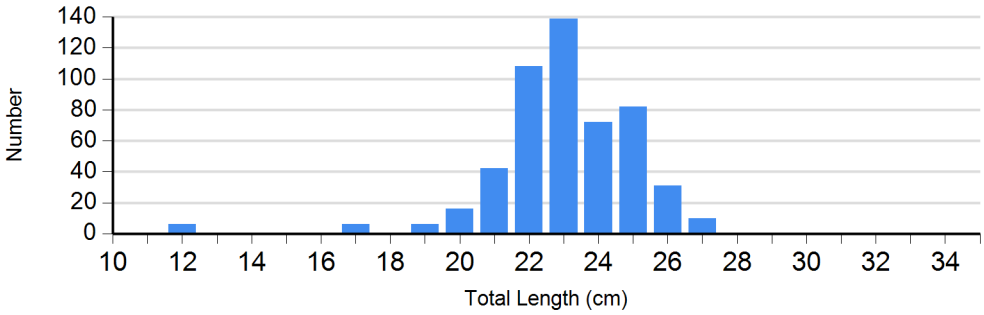


2018

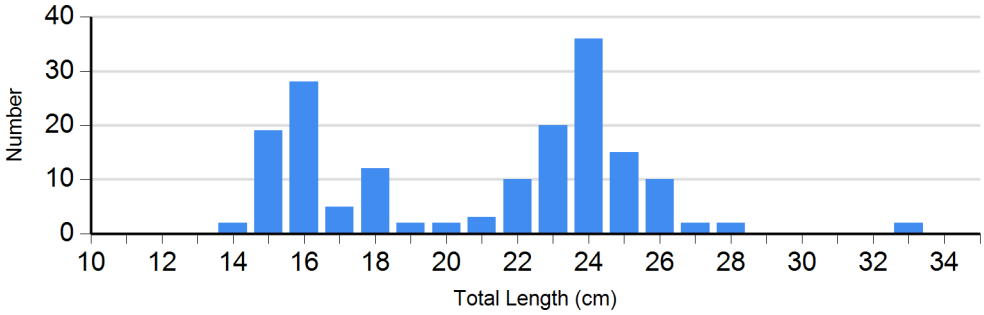
Species: Black Bullhead
Gear: std exp gill net



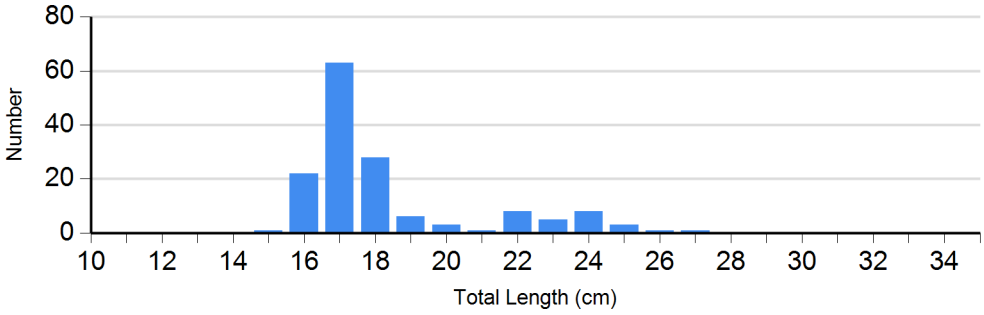
2013



2014

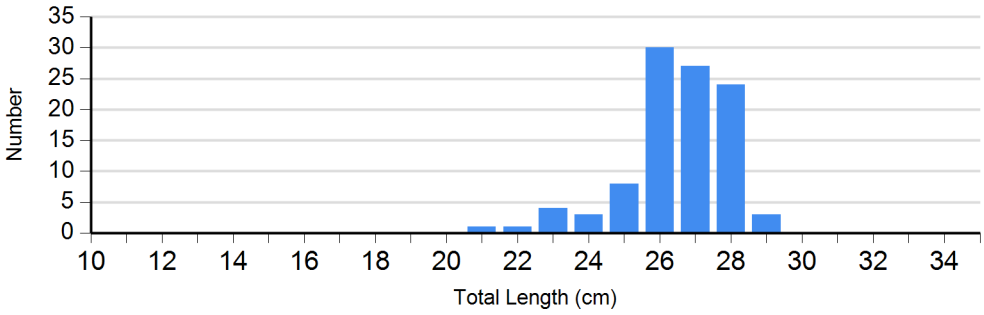


2015



2016

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



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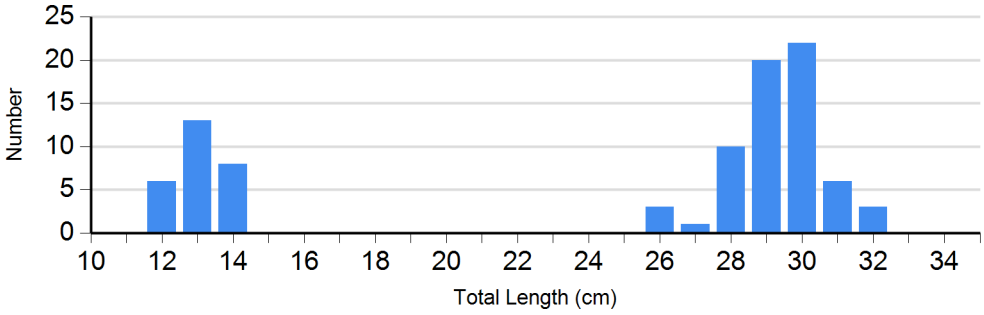

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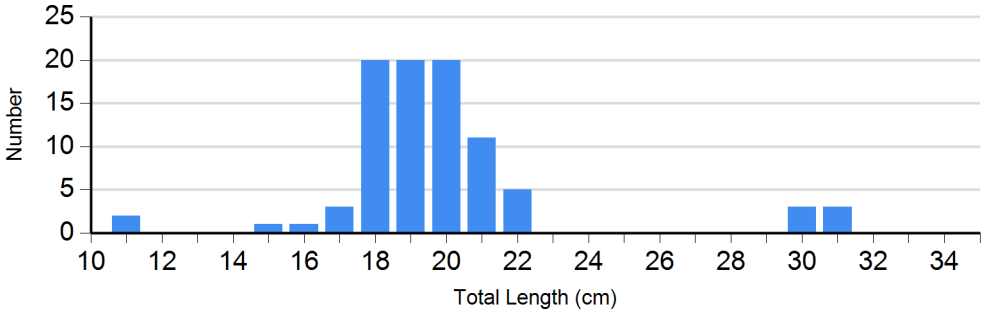

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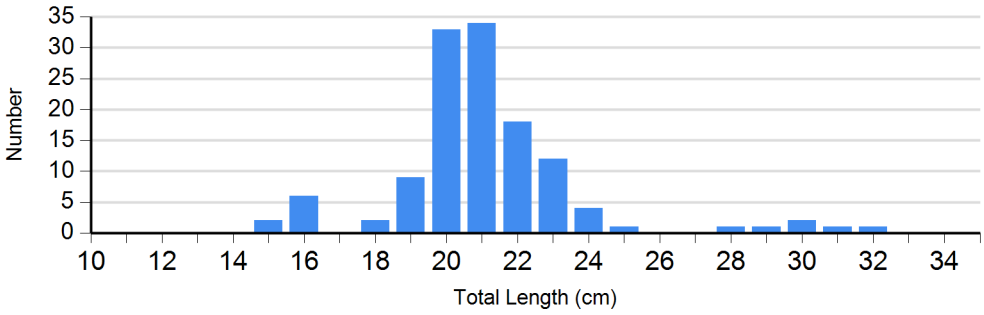

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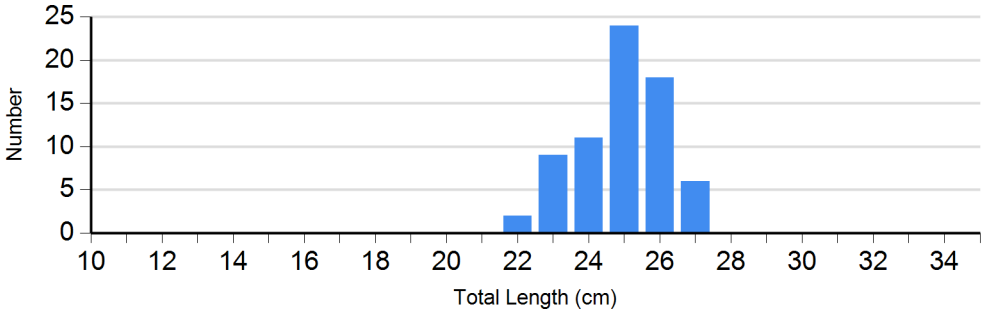
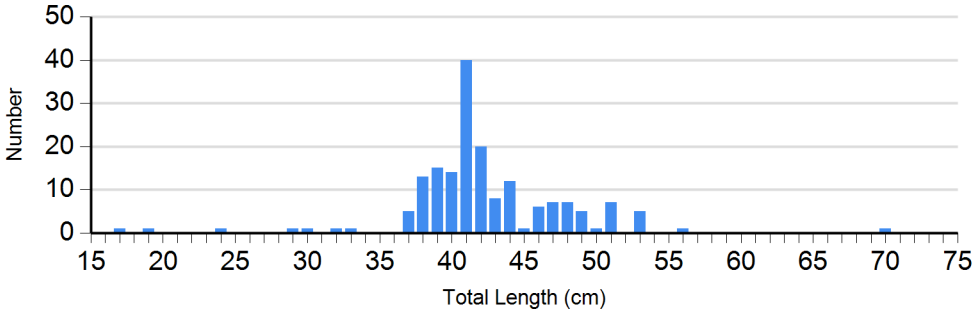


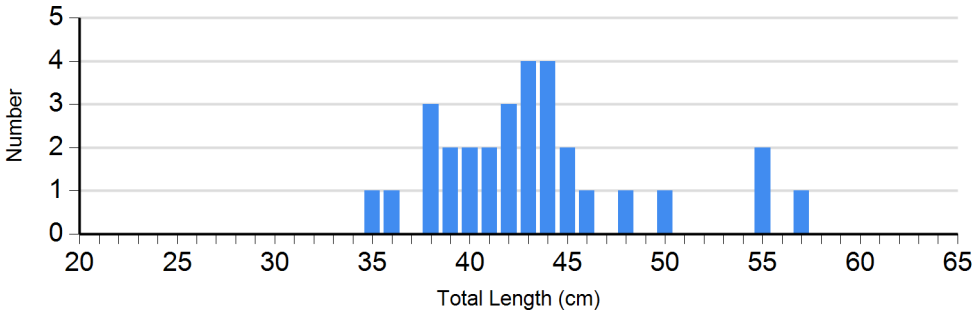
2018

Species: Common Carp
Gear: AFS std gill net

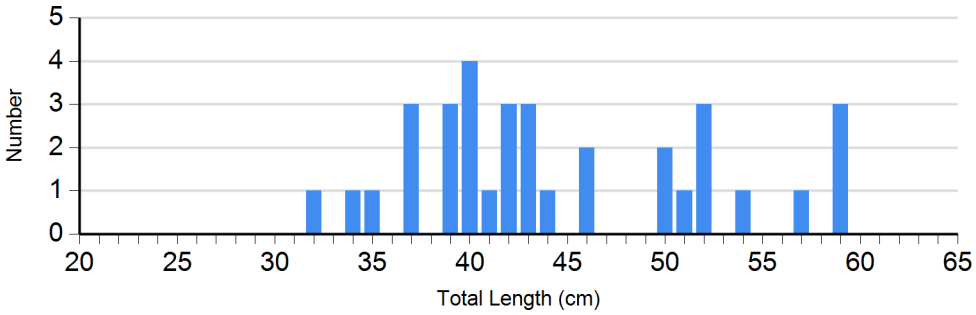


2018

Species: Common Carp
Gear: std exp gill net



2013



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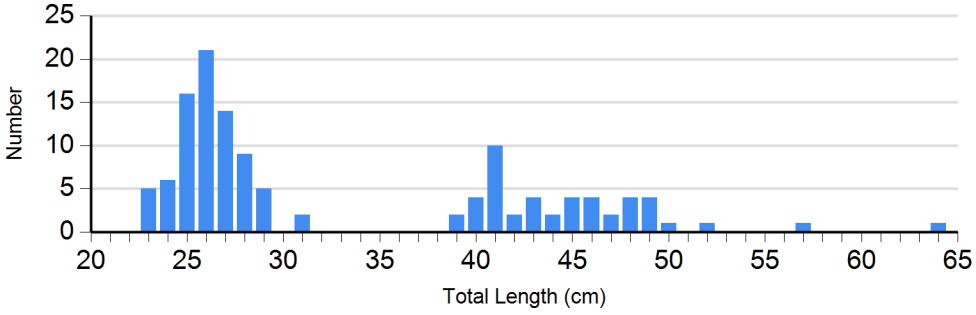

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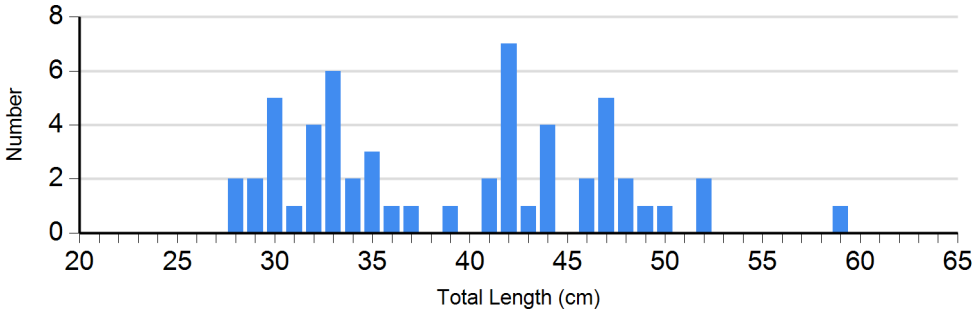
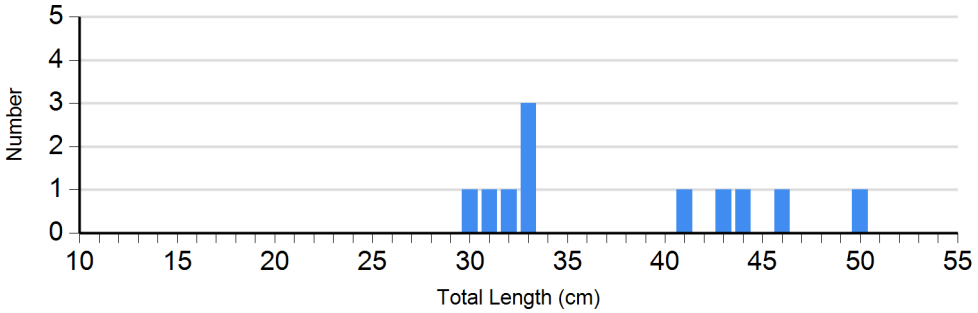


2016

Species: Walleye
Gear: std exp gill net



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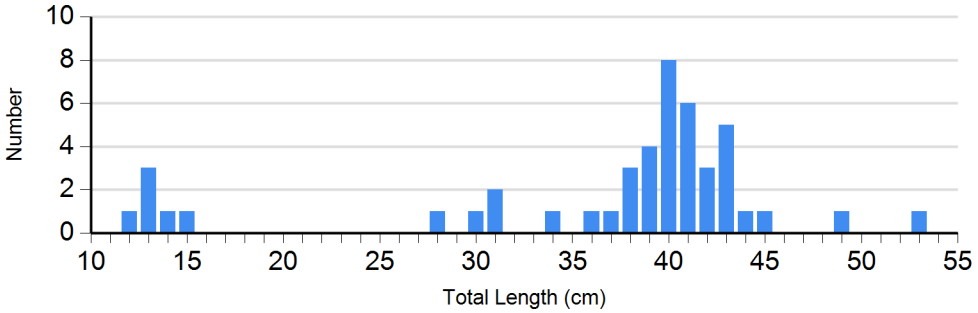
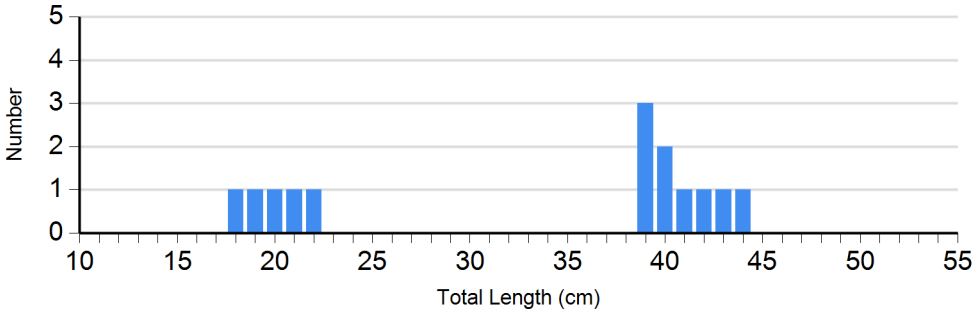


2015

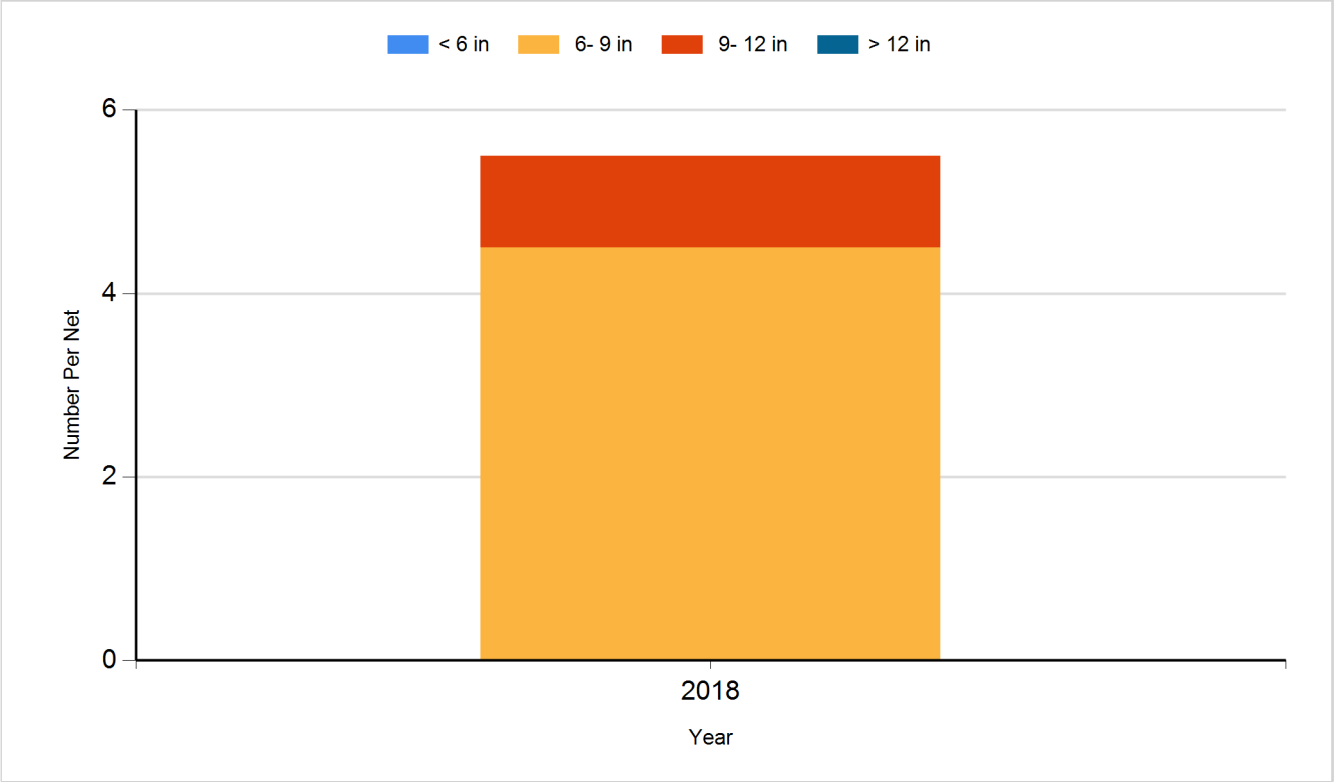


2016

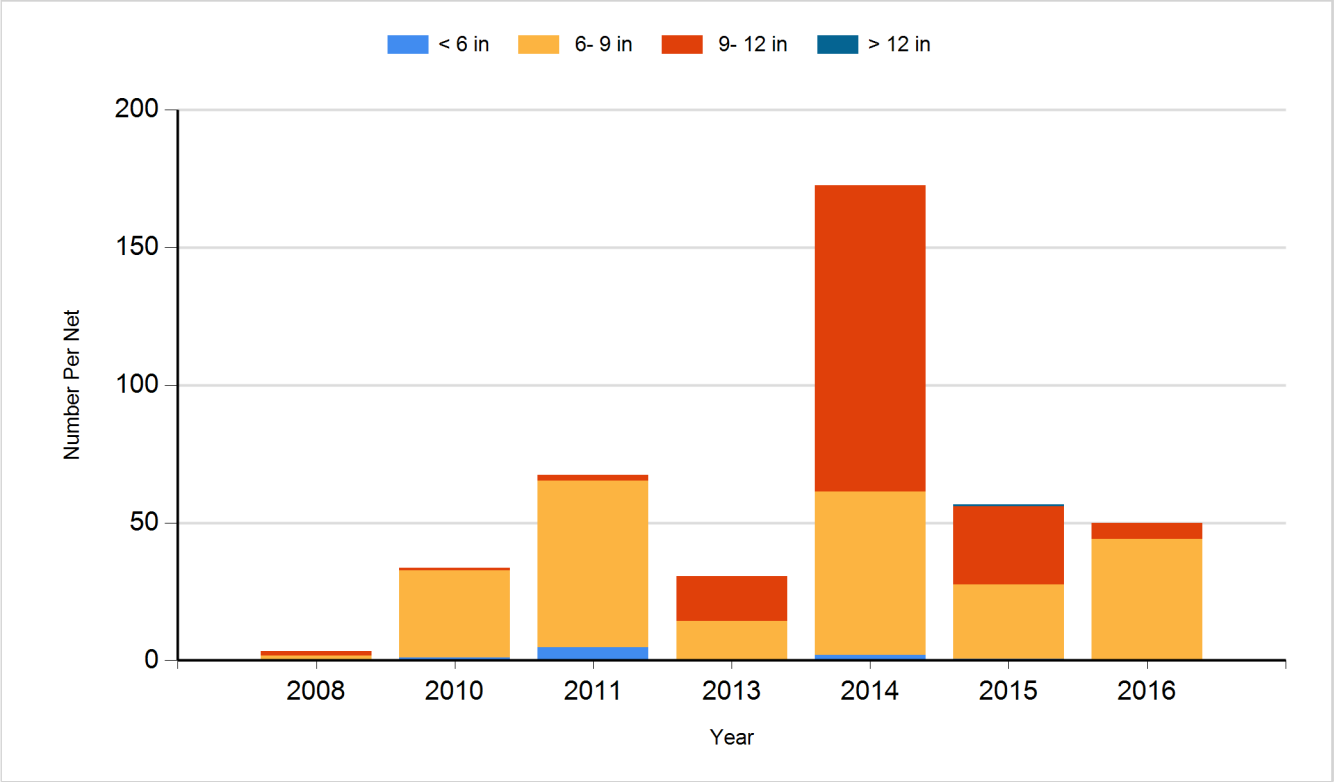
Historic Fish Sizes and Relative Abundance

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

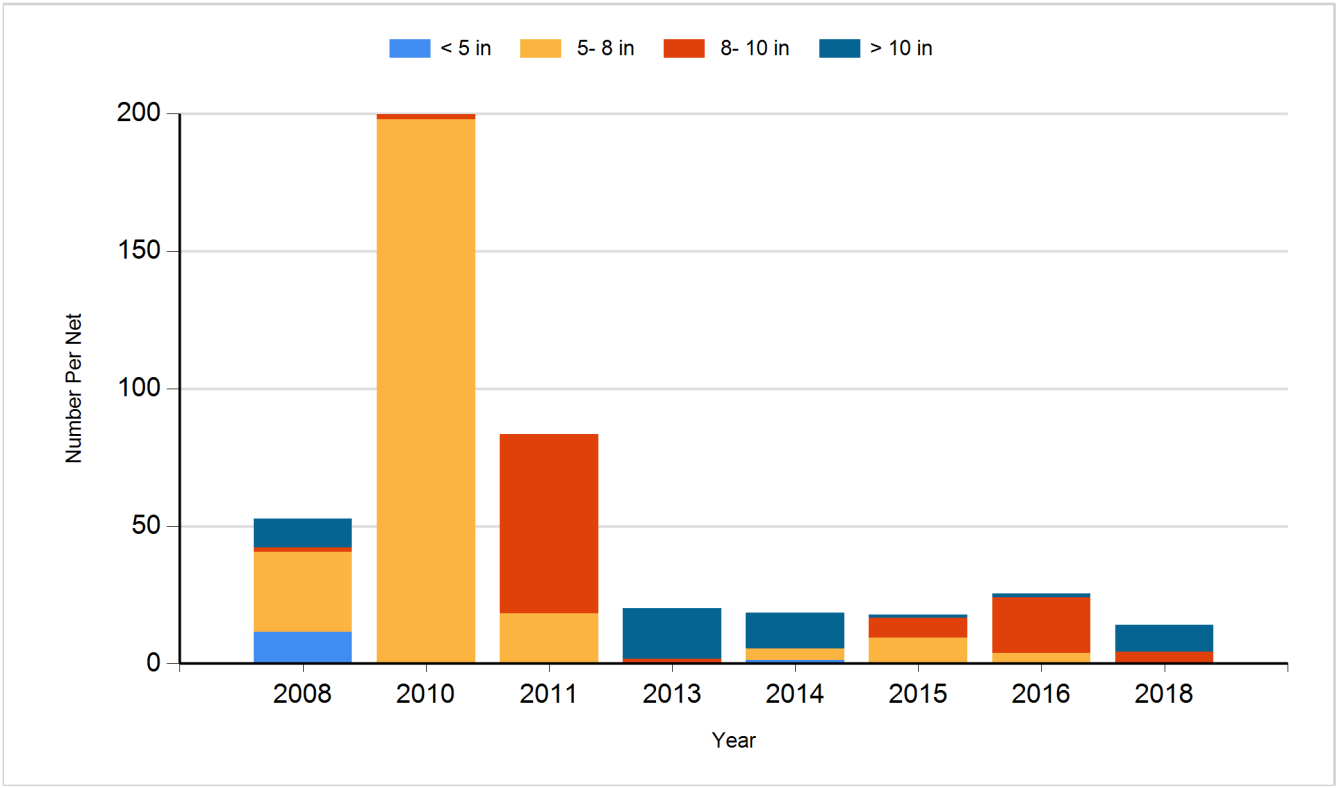
Species: Black Bullhead
Gear: AFS std gill net



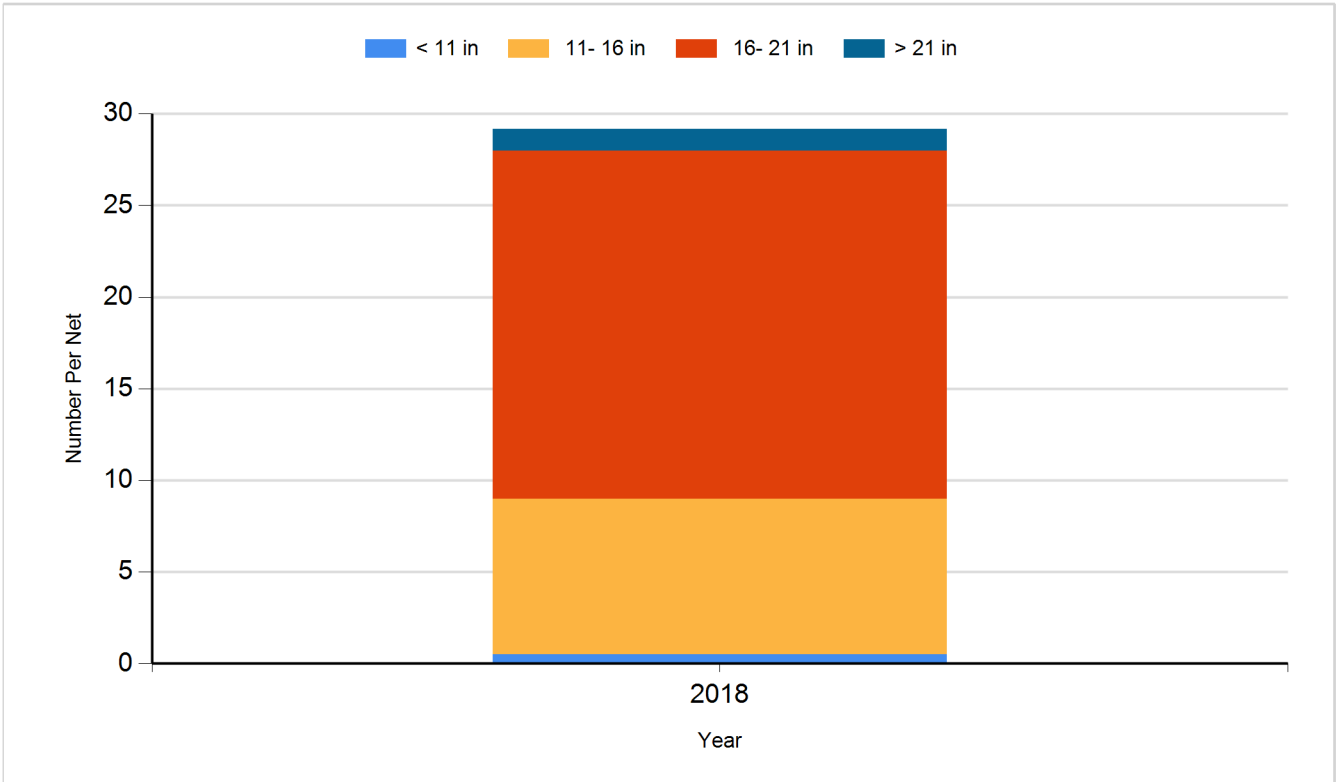
Species: Black Bullhead
Gear: std exp gill net



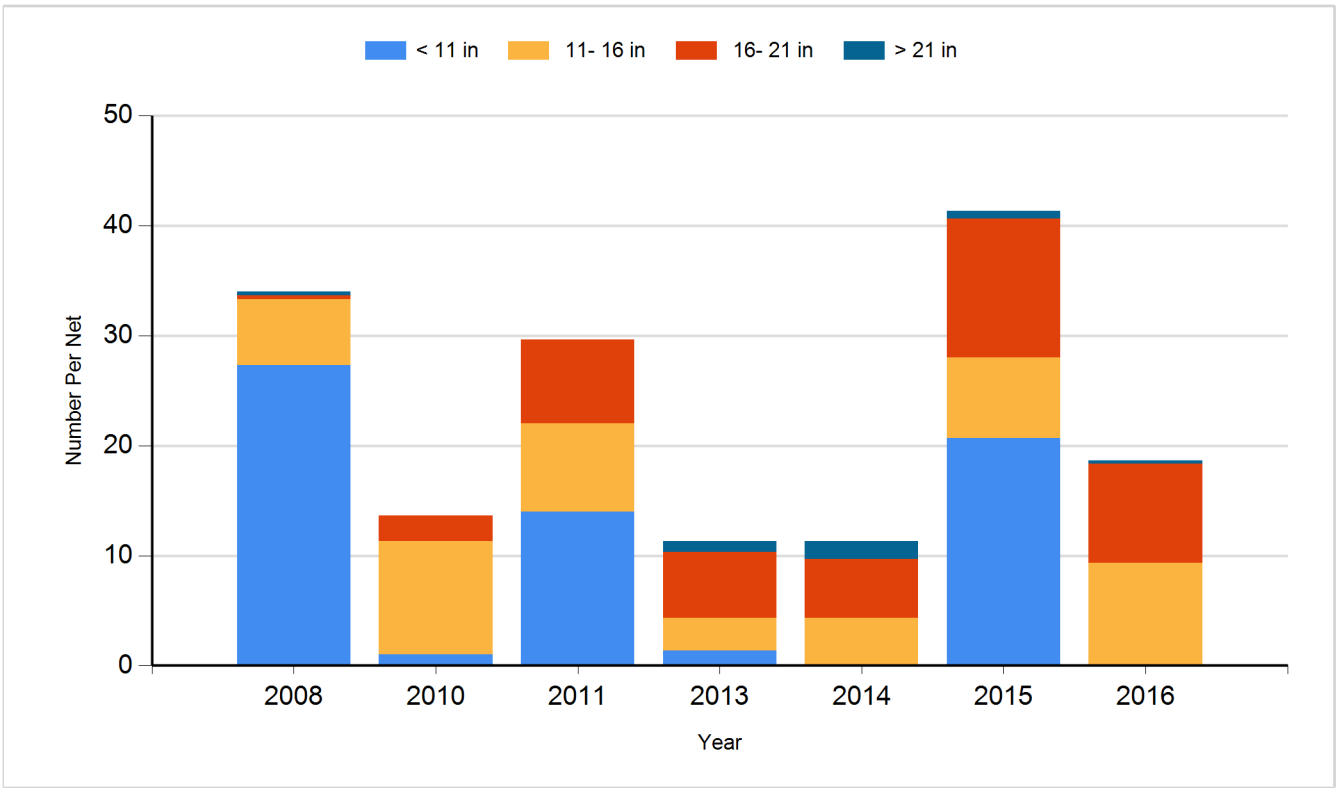
Species: Black Crappie
Gear: frame net (std 3/4 in)



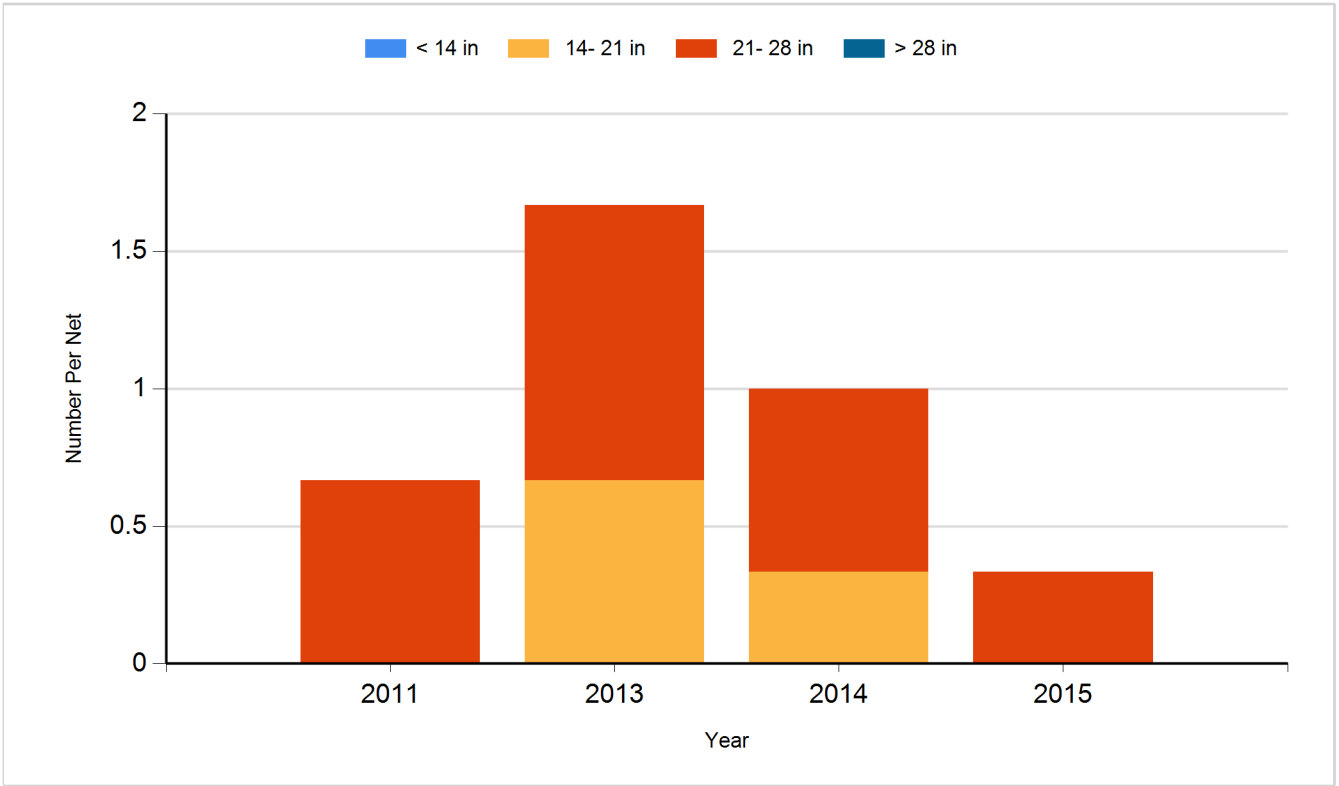
Species: Common Carp
Gear: AFS std gill net



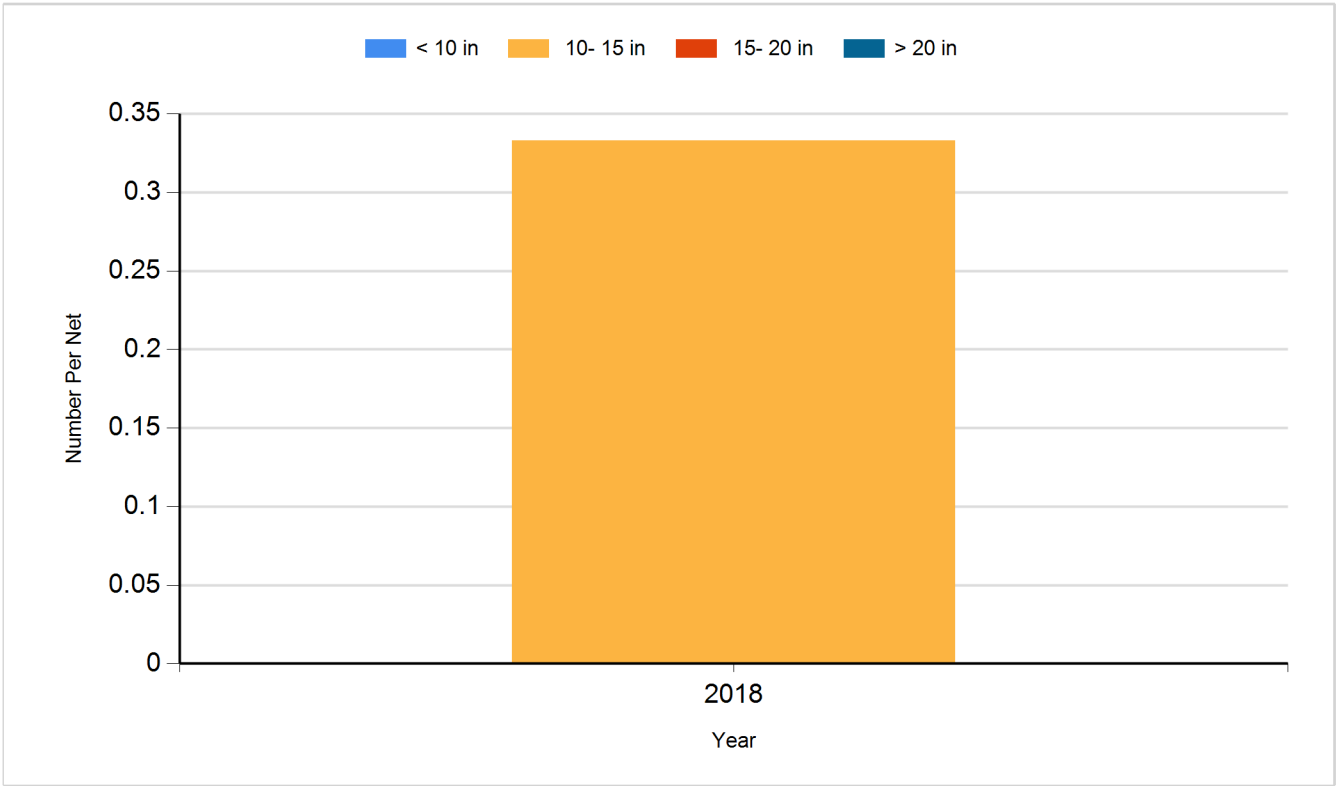
Species: Common Carp
Gear: std exp gill net



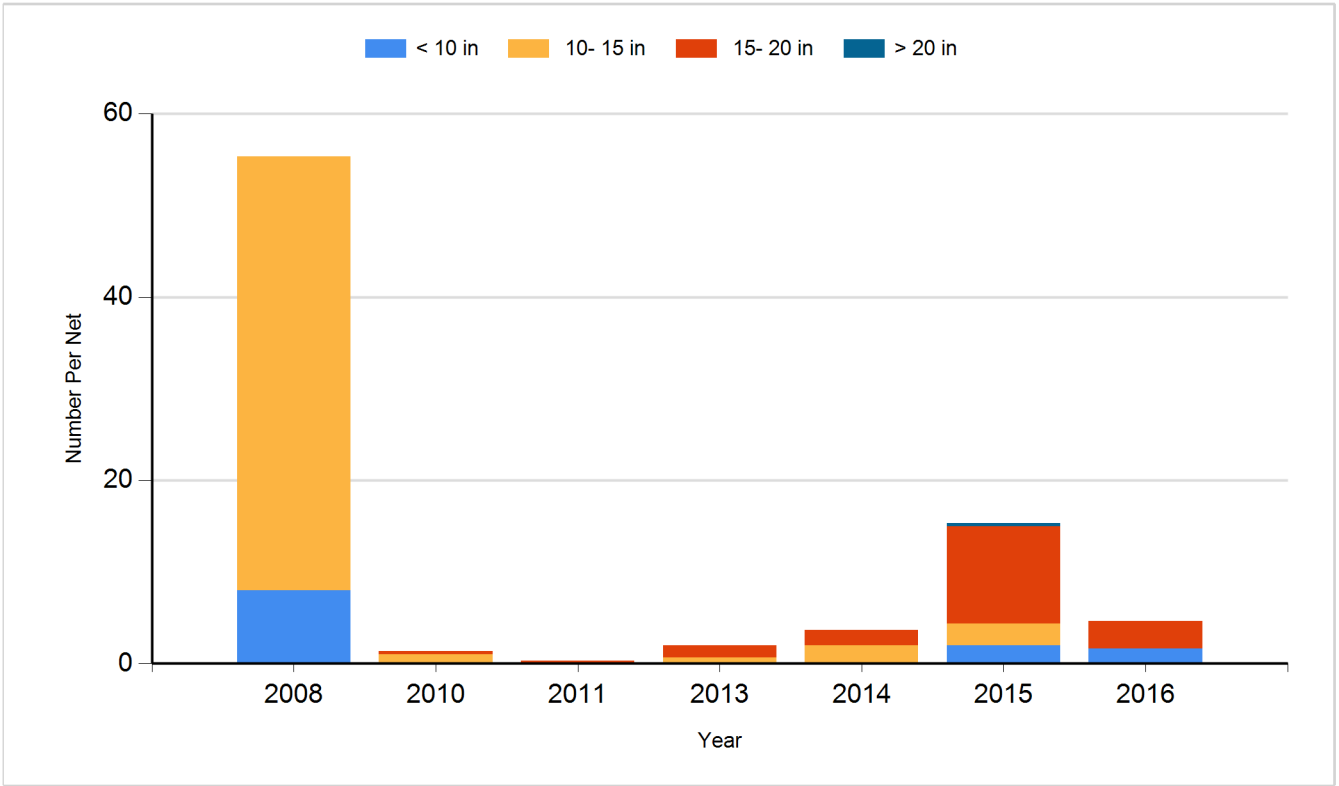
Species: Northern Pike
Gear: std exp gill net



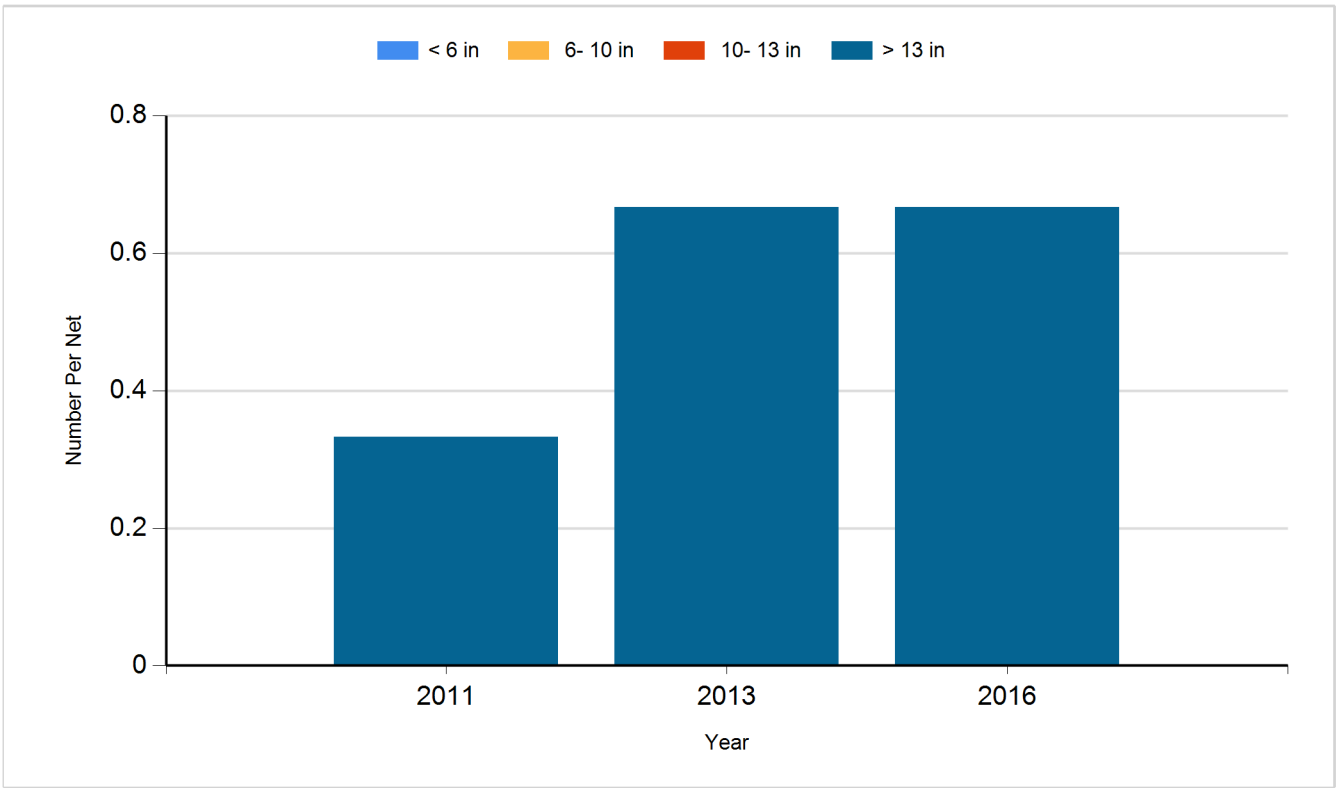
Species: Walleye
Gear: AFS std gill net



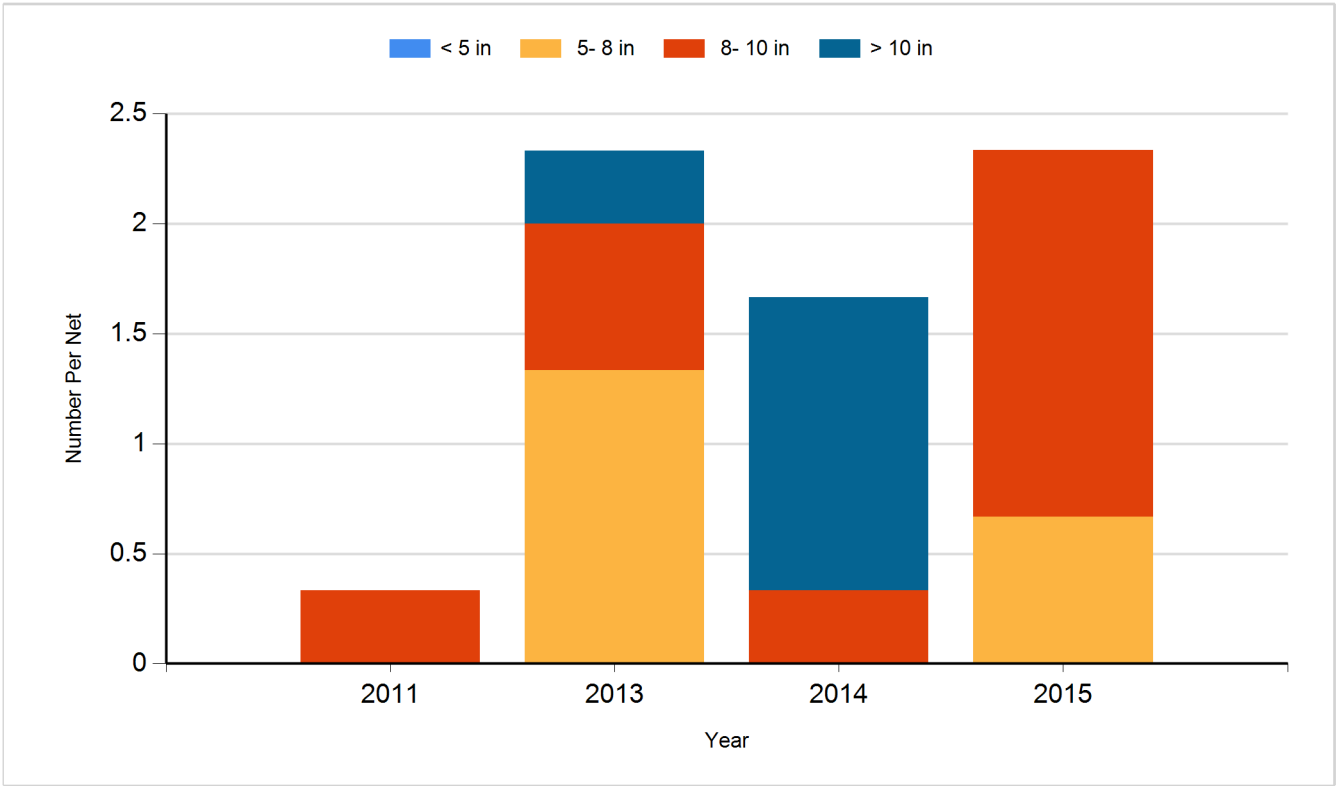
Species: Walleye
Gear: std exp gill net



Species: White Sucker
Gear: std exp gill net



Species: Yellow Perch
Gear: std exp gill net



Fish Stocking

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

Year	Species	Size	Number
2007	Walleye	Small Fingerling	23,180
2011	Walleye	Small Fingerling	23,340
2012	Walleye	Small Fingerling	46,400
2014	Walleye	Fry	115,000
2015	Walleye	Small Fingerling	27,920
2017	Walleye	Fingerling	44,840