SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Dimock, Hutchinson County
LJA-Lake-34-000
2018

Lake Information

Name: Dimock

County: Hutchinson

Legal Description: T100N-R60W-Sec. 15

Surface Area: 93 Acres

Maximum Depth: 18 Feet

Mean Depth: 6 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 13, 2018	6 net-nights
frame net (std 3/4 in)	Jun 13, 2018	5 net-nights

Common Fish Species Present

Walleye

Black Bullhead

Black Crappie

Common Carp

Green Sunfish

Yellow Perch

Orangespotted Sunfish

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	Black Bullhead	269	39.2	10.0	0		0			
	Black Crappie	1	0.2	0.2	100		0		103	
	Common Carp	45	6.3	1.6	24	11	3			
	Green Sunfish	3	0.5	0.3	0		0			
	Walleye	12	2.0	0.7	100		0		97	3
	Yellow Perch	1	0.2	0.2	0		0		107	
frame net (std 3/4 in)	Black Bullhead	1690	267.2	166.2	0		0			
	Black Crappie	34	6.8	4.7	56	13	3		98	1
	Common Carp	12	2.2	1.5	55		27			
	Green Sunfish	10	2.0	1.7	10		0			
	Orangespotted Sunfish	13	0.0	0.0						
	Yellow Perch	1	0.2	0.3	100		100		83	

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 frame net	Black Bullhead									32.6		32.6
	Black Crappie									0.8		0.8
	Common Carp									1.0		1.0
	Green Sunfish									0.8		0.8
	Orangespotted Sunfish									0.0		0.0
	Yellow Perch									0.6		0.6
AFS std gill net	Black Bullhead									53.3	39.2	46.3
	Black Crappie									0.3	0.2	0.3
	Channel Catfish									1.0		1.0
	Common Carp									11.0	6.3	8.7
	Gizzard Shad									1.0		1.0
	Green Sunfish										0.5	0.5
	Walleye									5.3	2.0	3.7
	Yellow Perch									0.3	0.2	0.3
frame net (std 3/4 in)	Black Bullhead		517.1	574.0		574.9	522.8	415.0	65.8		267.2	419.5
	Black Crappie		0.9	1.3		0.4	2.0	0.2	1.0		6.8	1.8
	Bluegill		3.1	1.0			0.4					1.5
	Channel Catfish			0.3		2.5	1.4	0.6	0.4			1.0
	Common Carp		2.8	2.8		1.4	0.6	1.2	4.2		2.2	2.2
	Green Sunfish		1.6	8.3			1.0	0.2	0.6		2.0	2.3
	Orangespotted Sunfish		0.0	0.0			0.0		0.0		0.0	0.0
	Sunfish Hybrid						0.0					0.0
	Walleye					0.1	0.2		0.2			0.2
	White Crappie		4.2	2.6								3.4
	Yellow Perch		0.2	0.6		2.7	0.8	1.2	0.4		0.2	0.9
std exp gill net	Black Bullhead						80.3	48.3	1.7			43.4
	Black Crappie						0.3	2.3				1.3
	Channel Catfish						1.3	2.3				1.8
	Common Carp						2.7	3.0	0.3			2.0
	Gizzard Shad								0.3			0.3
	Green Sunfish							0.3	0.3			0.3
	Orangespotted Sunfish							0.0	0.0			0.0
	Walleye						2.0	9.3	3.7			5.0
	Yellow Perch						4.3	24.0	1.7			10.0

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 frame net	Black Bullhead	PSD									0	
		PSD-P									0	
	Black Crappie	PSD									25	
		PSD-P									25	
		Wr									215	
	Common Carp	PSD									40	
		PSD-P									20	
	Green Sunfish	PSD									25	
		PSD-P									0	
	Yellow Perch	PSD									100	
		PSD-P									33	
		Wr									83	
AFS std gill net	Black Bullhead	PSD									0	0
		PSD-P									0	0
	Black Crappie	PSD									100	100
		PSD-P									100	0
		Wr									107	103
	Common Carp	PSD									16	24
		PSD-P									2	3
	Green Sunfish	PSD										0
		PSD-P										0
	Walleye	PSD									43	100
		PSD-P									14	0
		Wr									92	97
	Yellow Perch	PSD									0	0
		PSD-P									0	0
		Wr										107
frame net (std 3/4 in)	Black Bullhead	PSD		5	0		0	0	3	2		0
		PSD-P		0	0		0	0	0	0		0
		Wr		69	73		58					
	Black Crappie	PSD		25	15		100	70	100	100		56
		PSD-P		0	0		50	10	100	20		3

			Year									
Gear	Species	Index	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
frame net (std 3/4 in)	Black Crappie	Wr		78	92		99	123	99	102		98
	Common Carp	PSD		24	50		86	33	33	29		55
		PSD-P		4	4		7	0	0	5		27
		Wr		76	80		71					
	Green Sunfish	PSD		7	5			0	100	33		10
		PSD-P		0	0			0	0	0		0
		Wr		78	90				109	115		
	Walleye	PSD					0	0		0		
		PSD-P					0	0		0		
		Wr					90	96		86		
	Yellow Perch	PSD		100	83		15	50	50	100		100
		PSD-P		0	17		0	25	17	0		100
		Wr		73	82		86	94	89	87		83
std exp gill net	Black Bullhead	PSD						0	0	0		
		PSD-P						0	0	0		
	Black Crappie	PSD						100	100			
		PSD-P						0	29			
		Wr						124	111			
	Common Carp	PSD						63	22	0		
		PSD-P						0	0	0		
	Green Sunfish	PSD							100	100		
		PSD-P							0	0		
		Wr							106	108		
	Walleye	PSD						67	93	27		
		PSD-P						0	11	0		
		Wr						103	89	91		
	Yellow Perch	PSD						23	53	60		
		PSD-P						0	4	20		
		Wr						106	95	79		

Length at Capture

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

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2018	12			451 (3)	442 (9)						

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2018	1	153 (1)									

Fish Condition

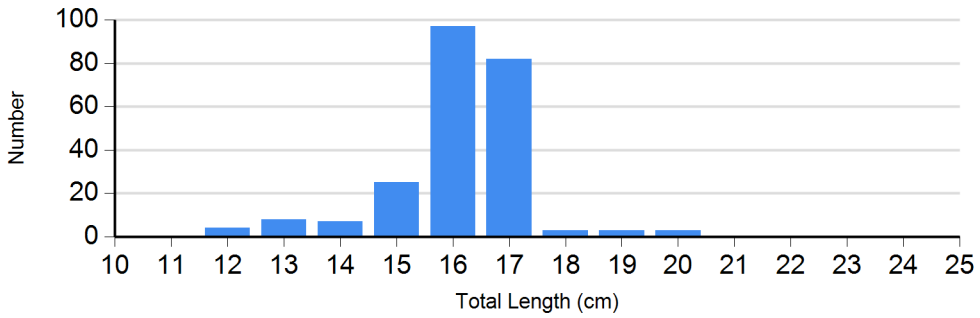
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2014	3	121 (5.0)	6	127 (2.4)	1	102	0	
	2015	0		0		0		1	99
	2016	0		4	105 (2.1)	1	91	0	
	2017	3	252 (147.9)	0		1	103	0	
	2018	15	99 (1.6)	18	98 (1.2)	0		1	98
Walleye Gill Net	2014	2	102 (1.1)	4	104 (1.9)	0		0	
	2015	2	88 (3.0)	23	89 (2.5)	3	90 (9.9)	0	
	2016	8	91 (1.2)	3	92 (1.6)	0		0	
	2017	12	94 (1.9)	6	92 (1.7)	3	86 (2.7)	0	
	2018	0		12	97 (1.9)	0		0	
Yellow Perch Gill Net	2014	10	109 (3.5)	3	99 (1.1)	0		0	
	2015	34	95 (1.1)	35	95 (1.1)	3	95 (1.1)	0	
	2016	2	78 (5.1)	2	83 (10.7)	1	73	0	
	2018	1	107	0		0		0	

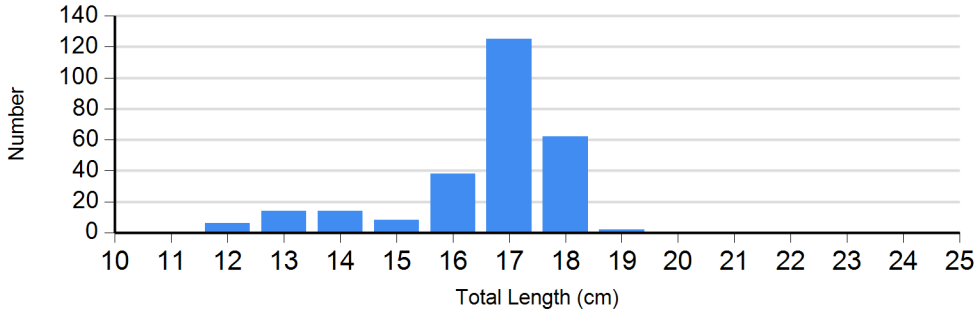
Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: AFS std gill net

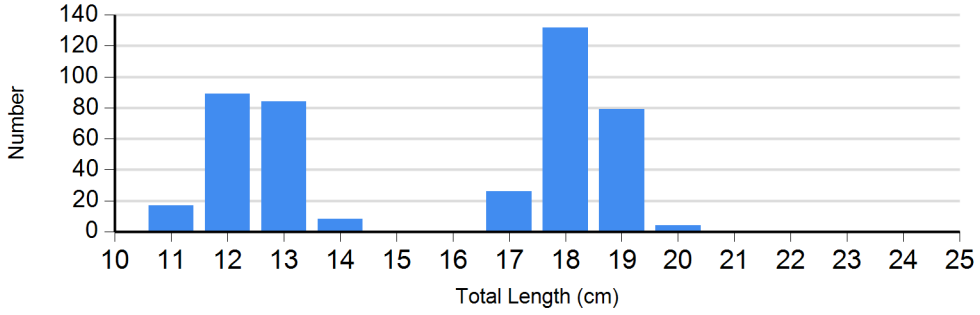


2017

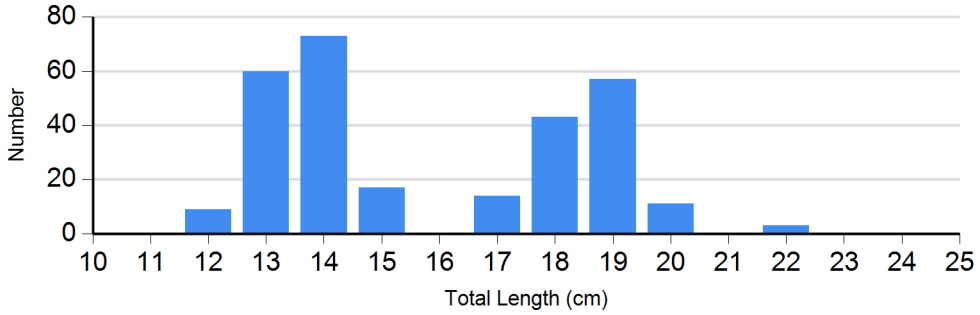


2018

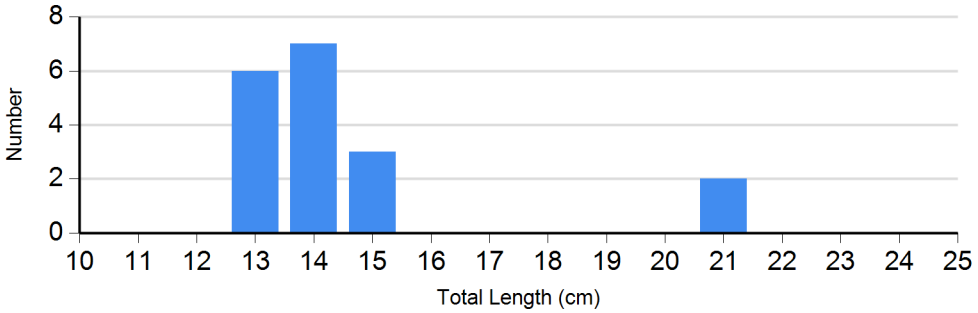
Species: Black Bullhead
Gear: std exp gill net



2014

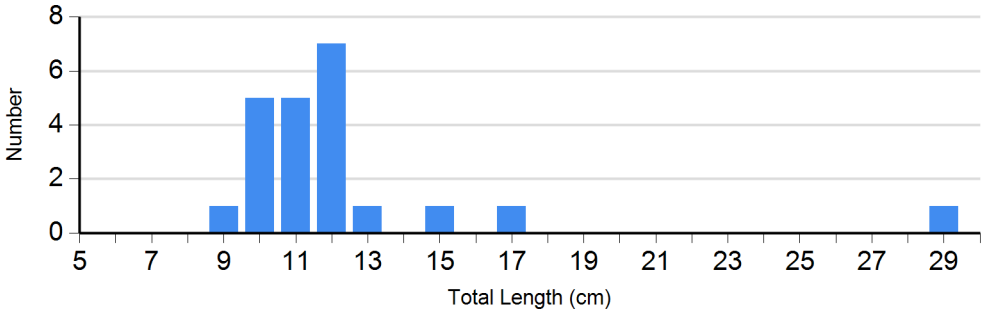


2015



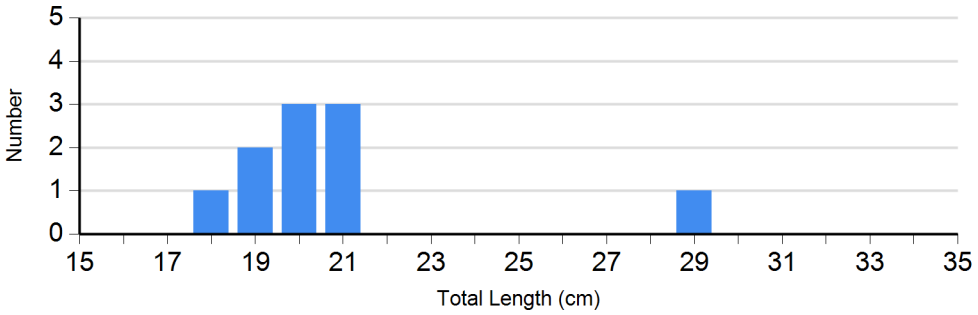
2016

Species: Black Crappie
Gear: AFS std frame net

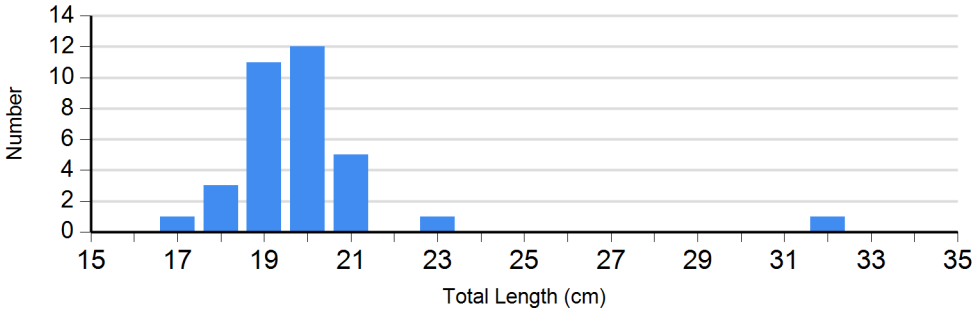


2017

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

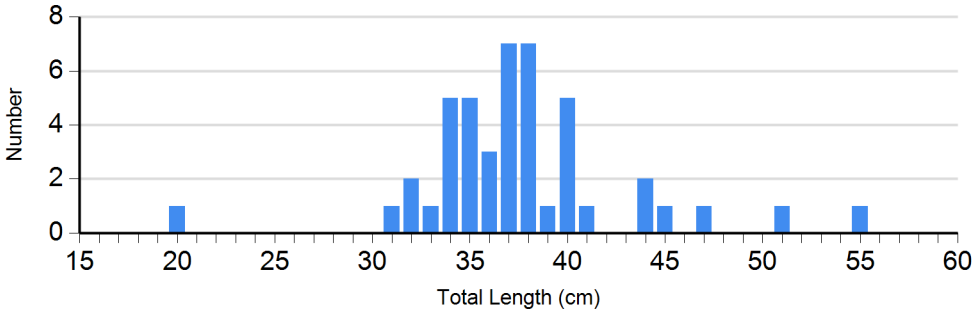


2014

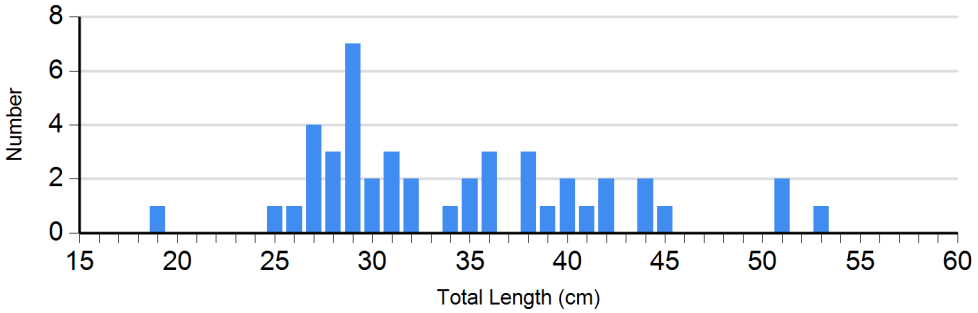


2018

Species: Common Carp
Gear: AFS std gill net

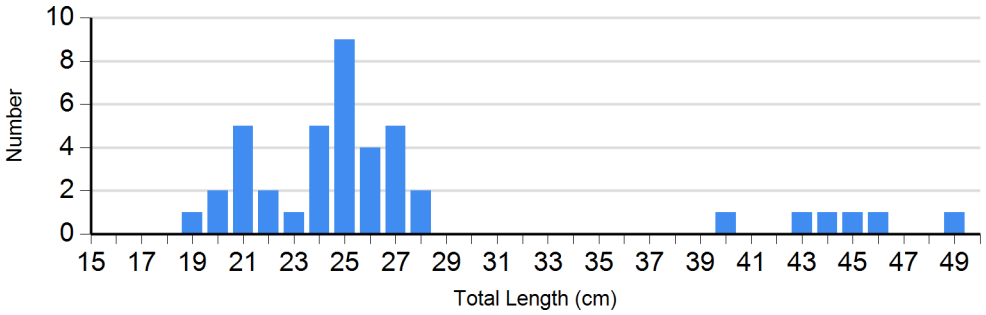


2017

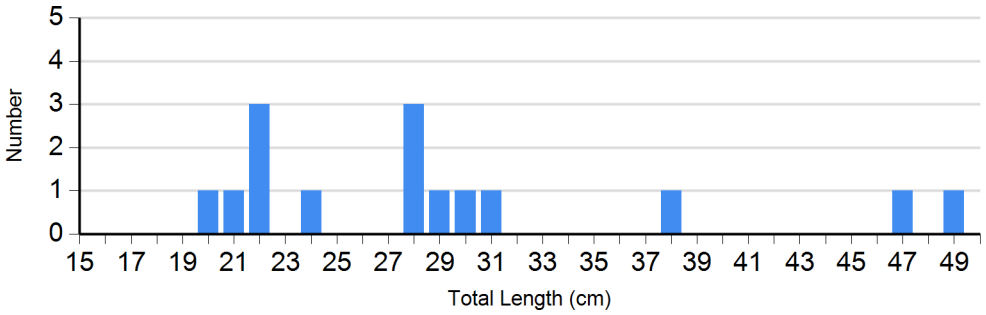


2018

Species: Common Carp
Gear: std exp gill net

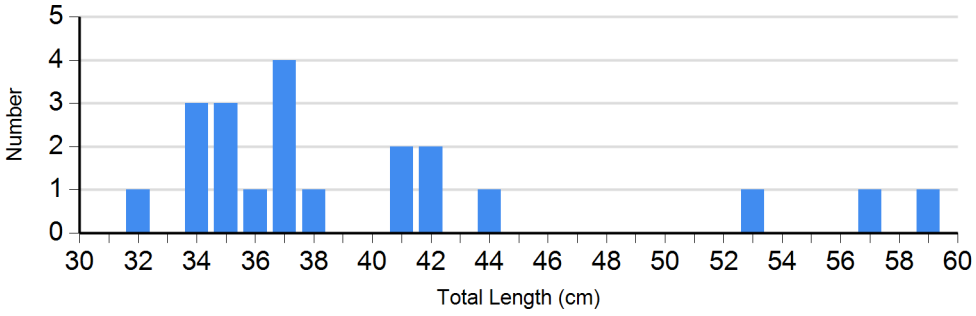


2014

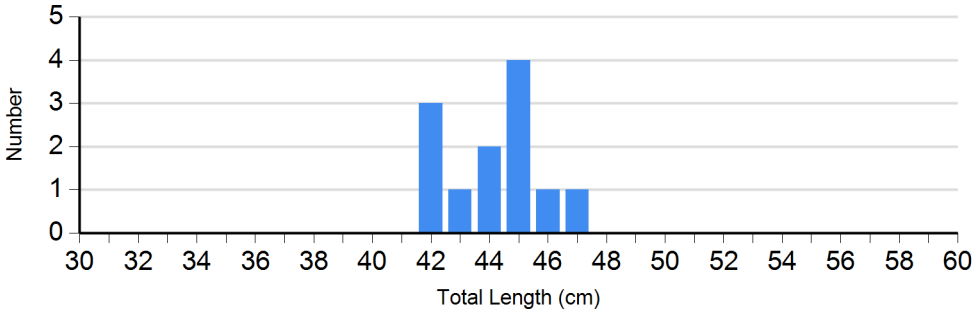


2015

Species: Walleye
Gear: AFS std gill net

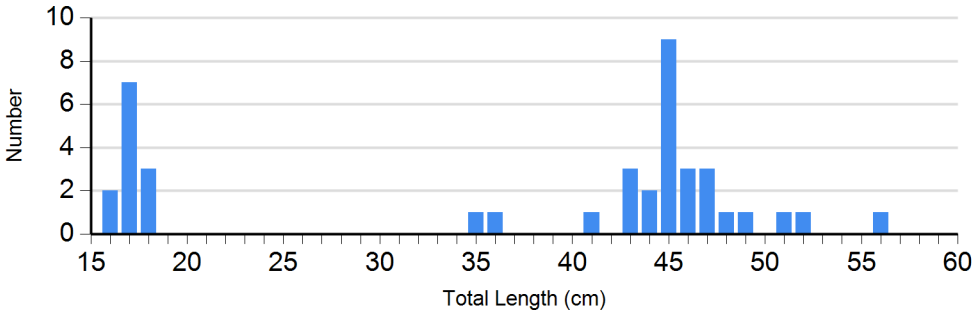


2017

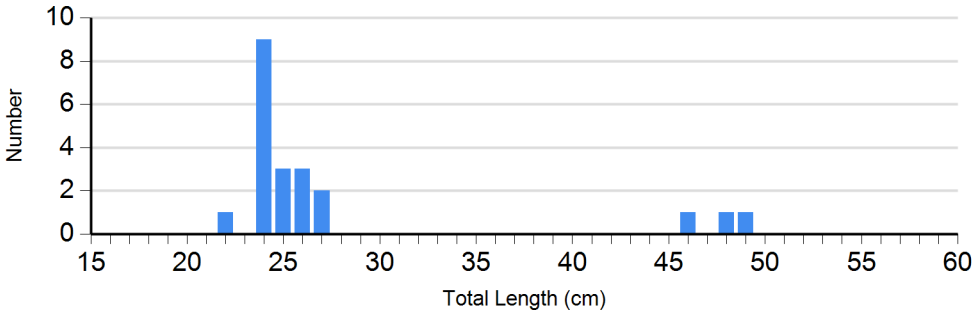


2018

Species: Walleye
Gear: std exp gill net

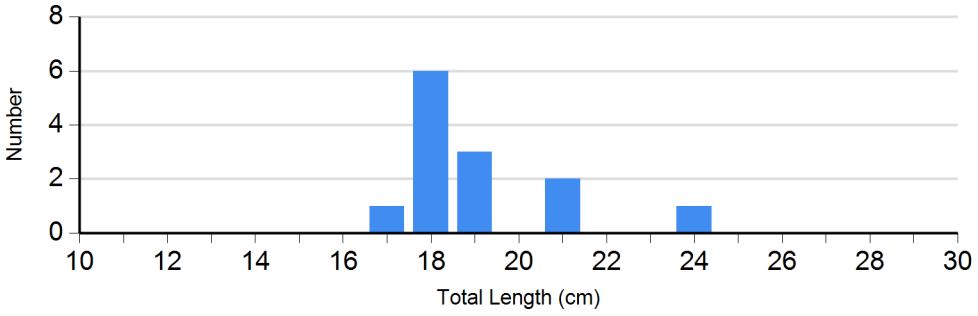


2015

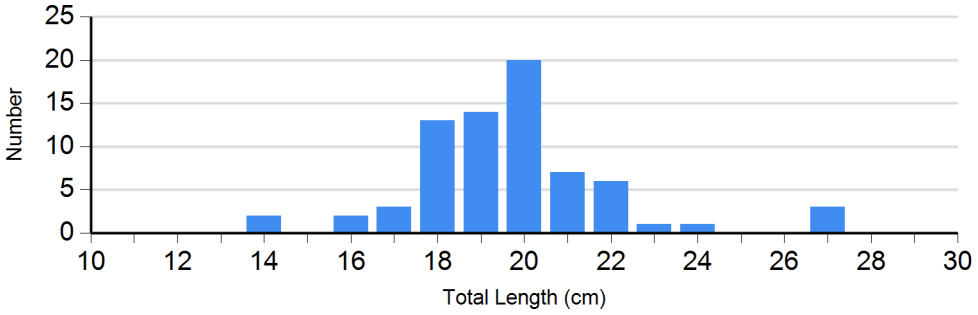


2016

Species: Yellow Perch
Gear: std exp gill net



2014

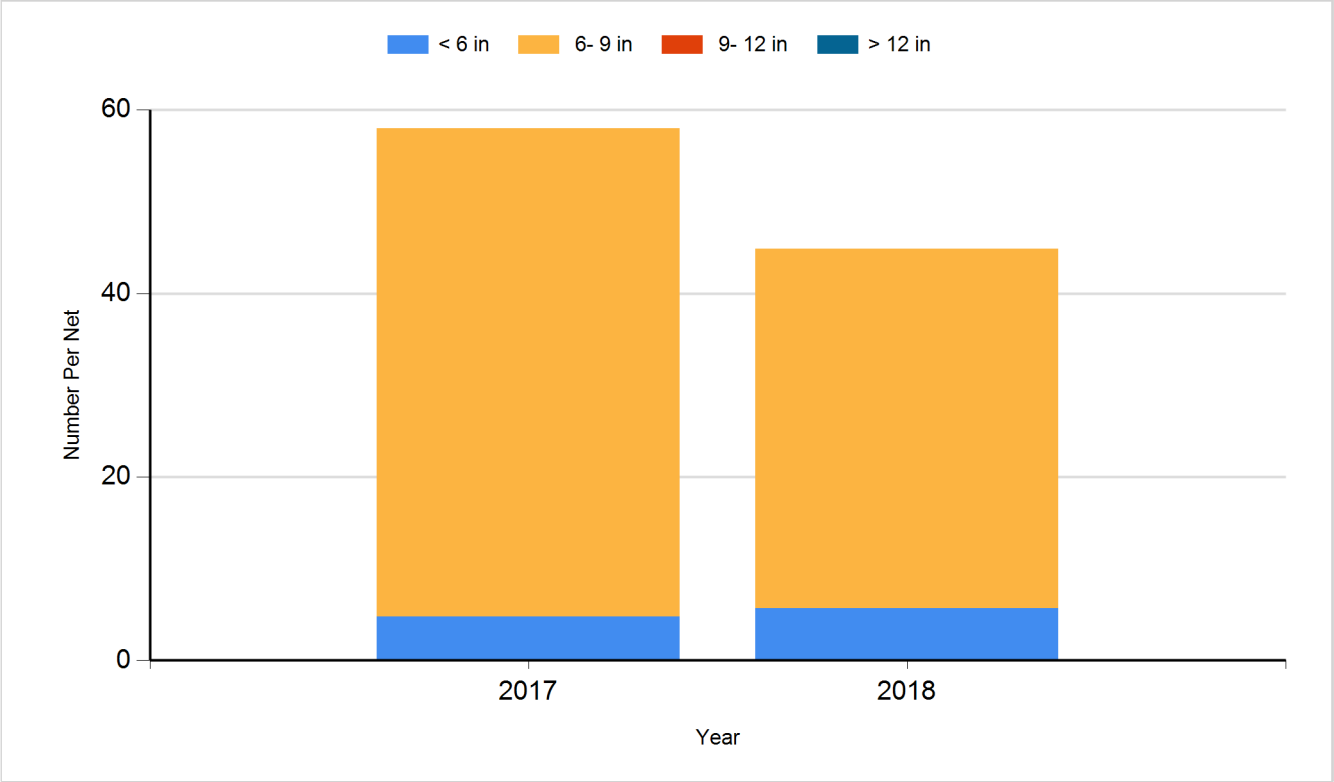


2015

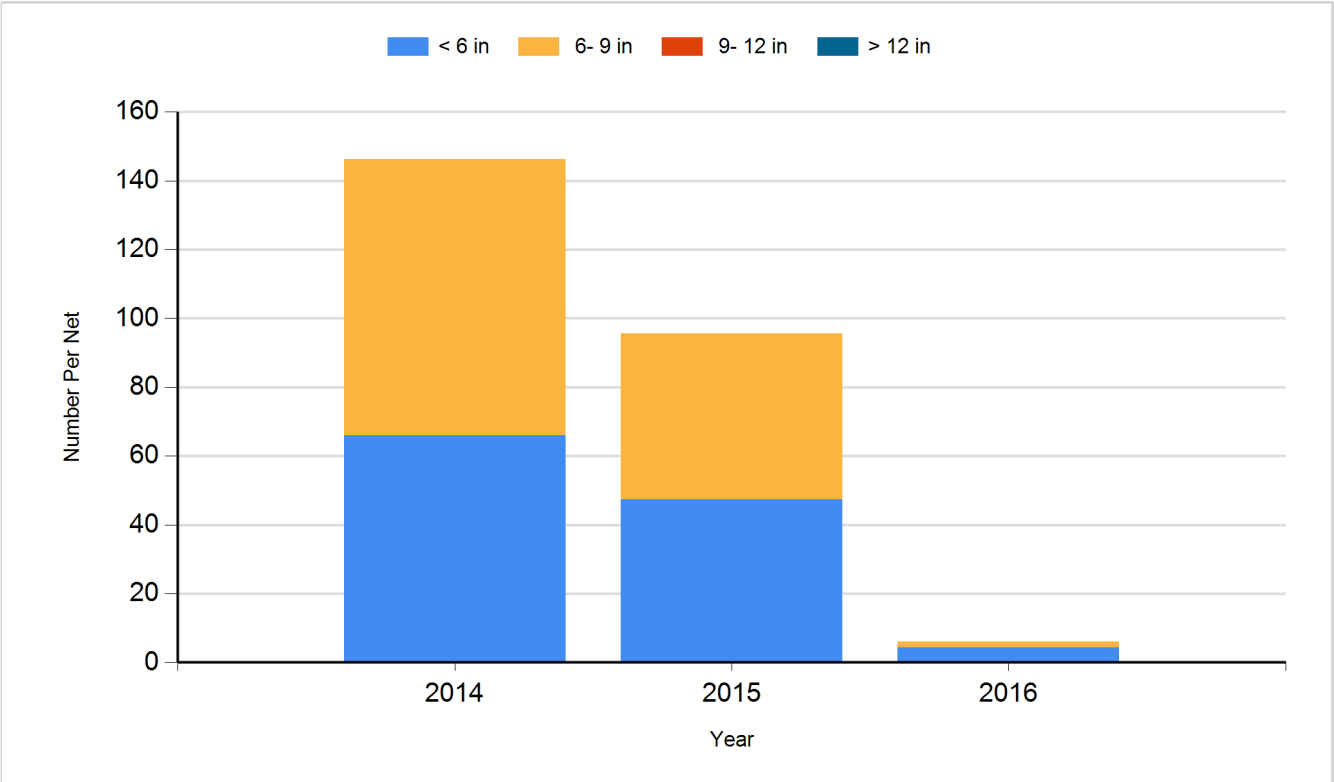
Historic Fish Sizes and Relative Abundance

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

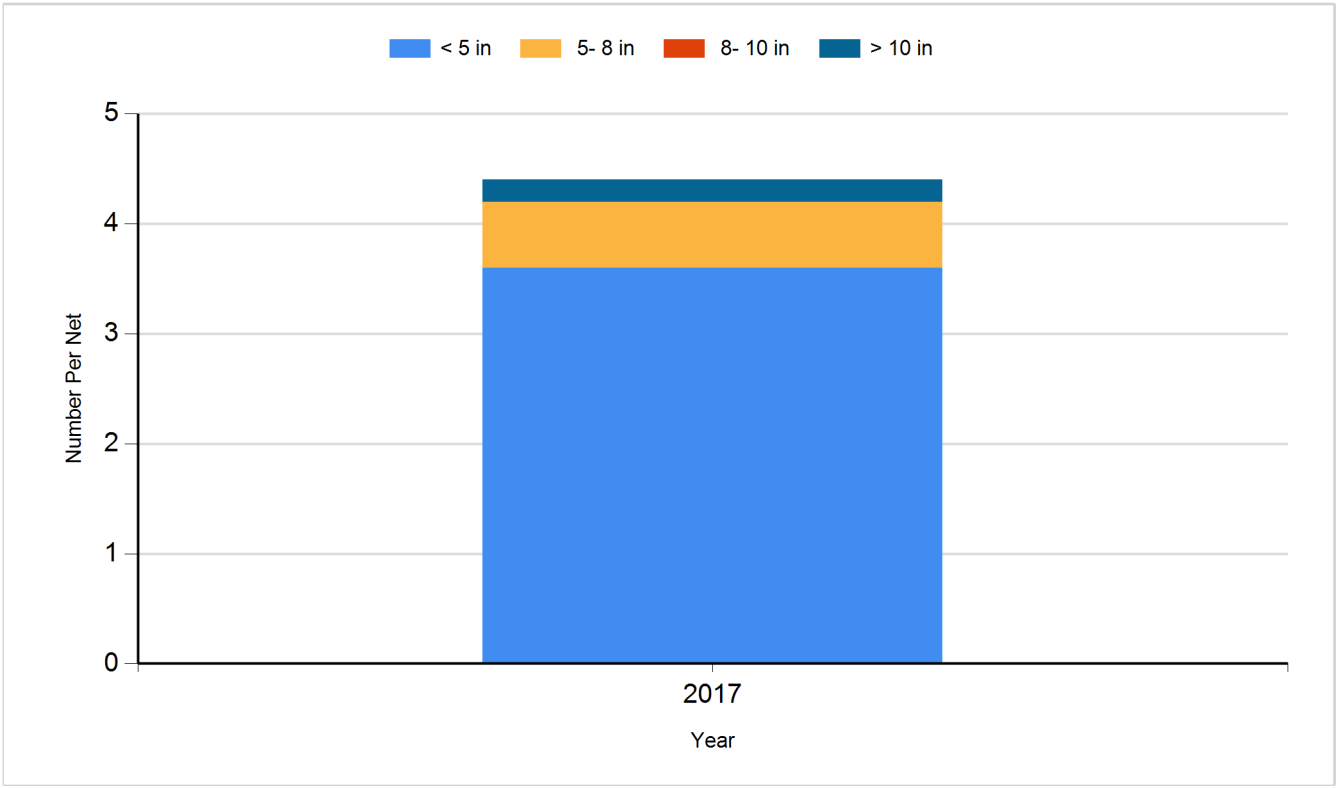
Species: Black Bullhead
Gear: AFS std gill net



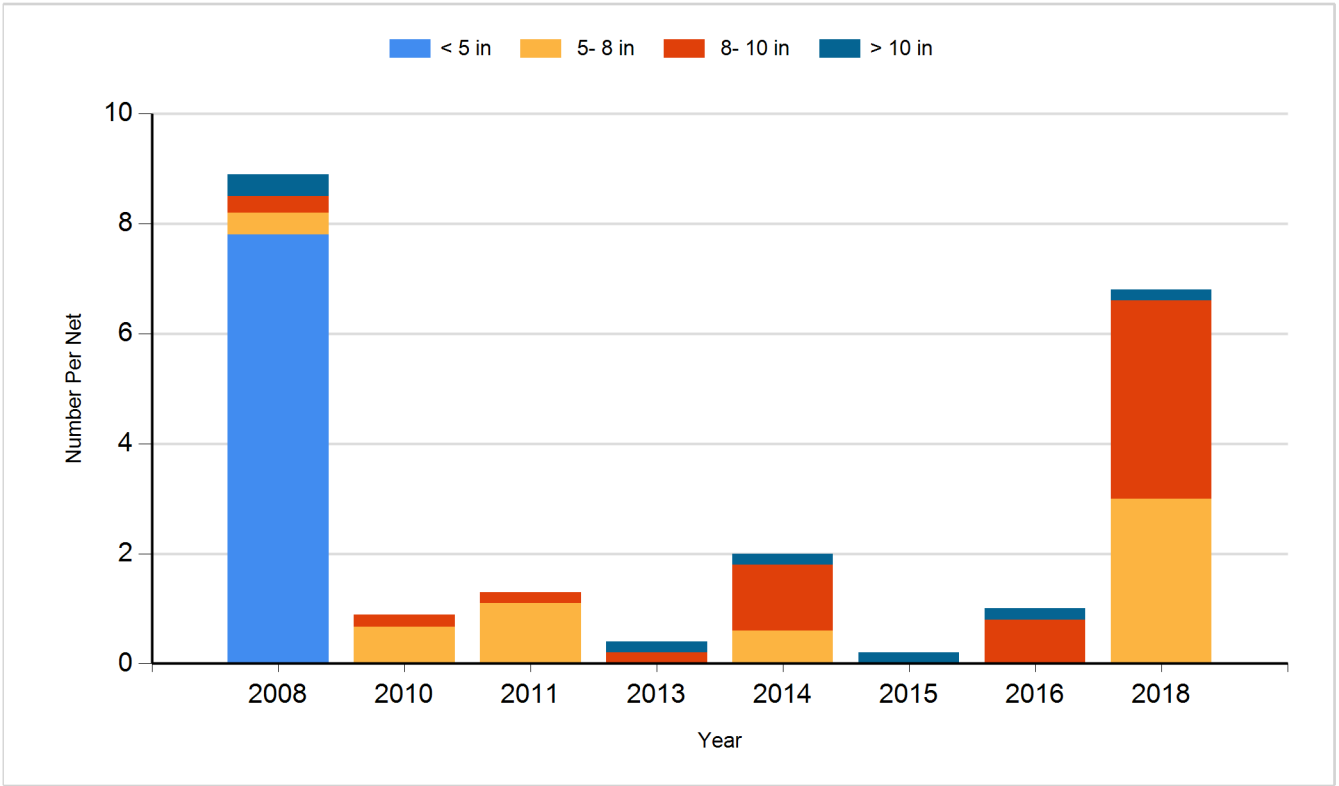
Species: Black Bullhead
Gear: std exp gill net



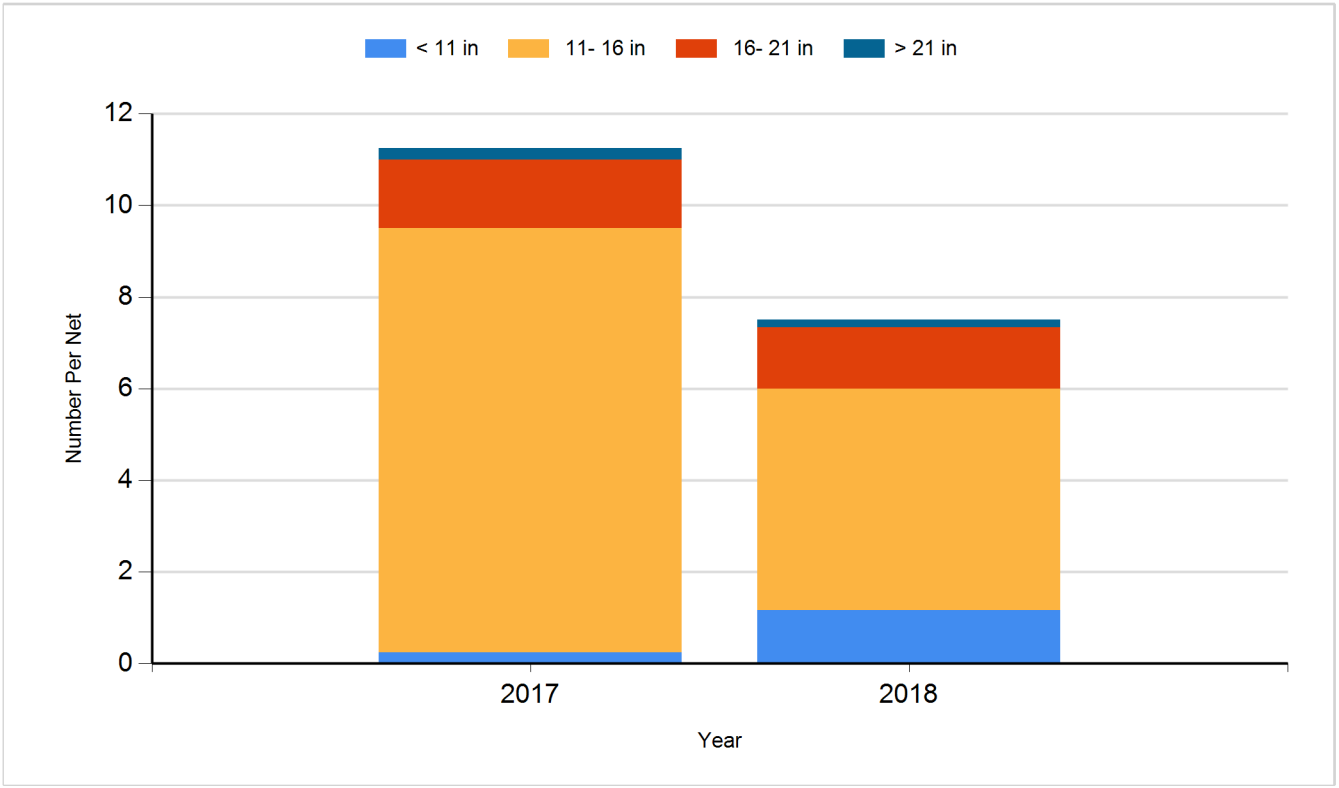
Species: Black Crappie
Gear: AFS std frame net



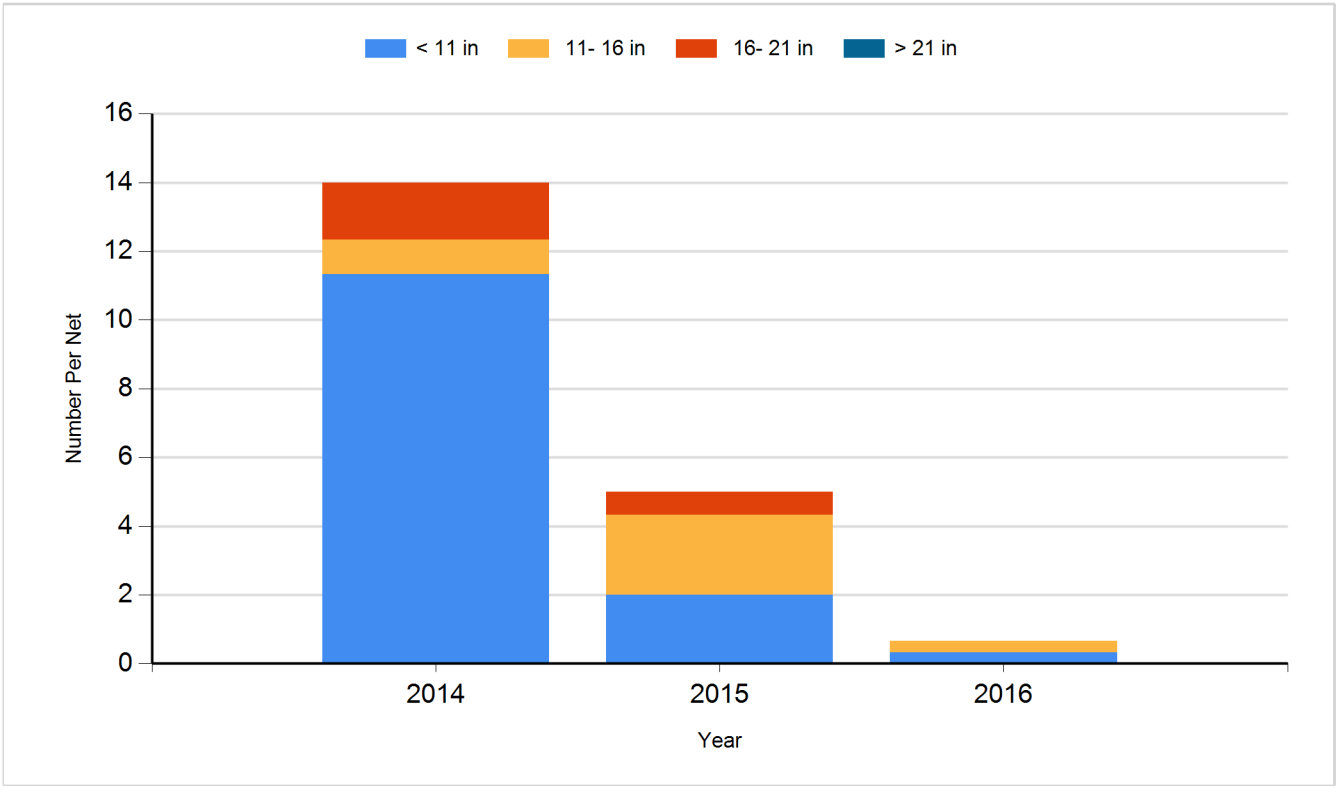
Species: Black Crappie
Gear: frame net (std 3/4 in)



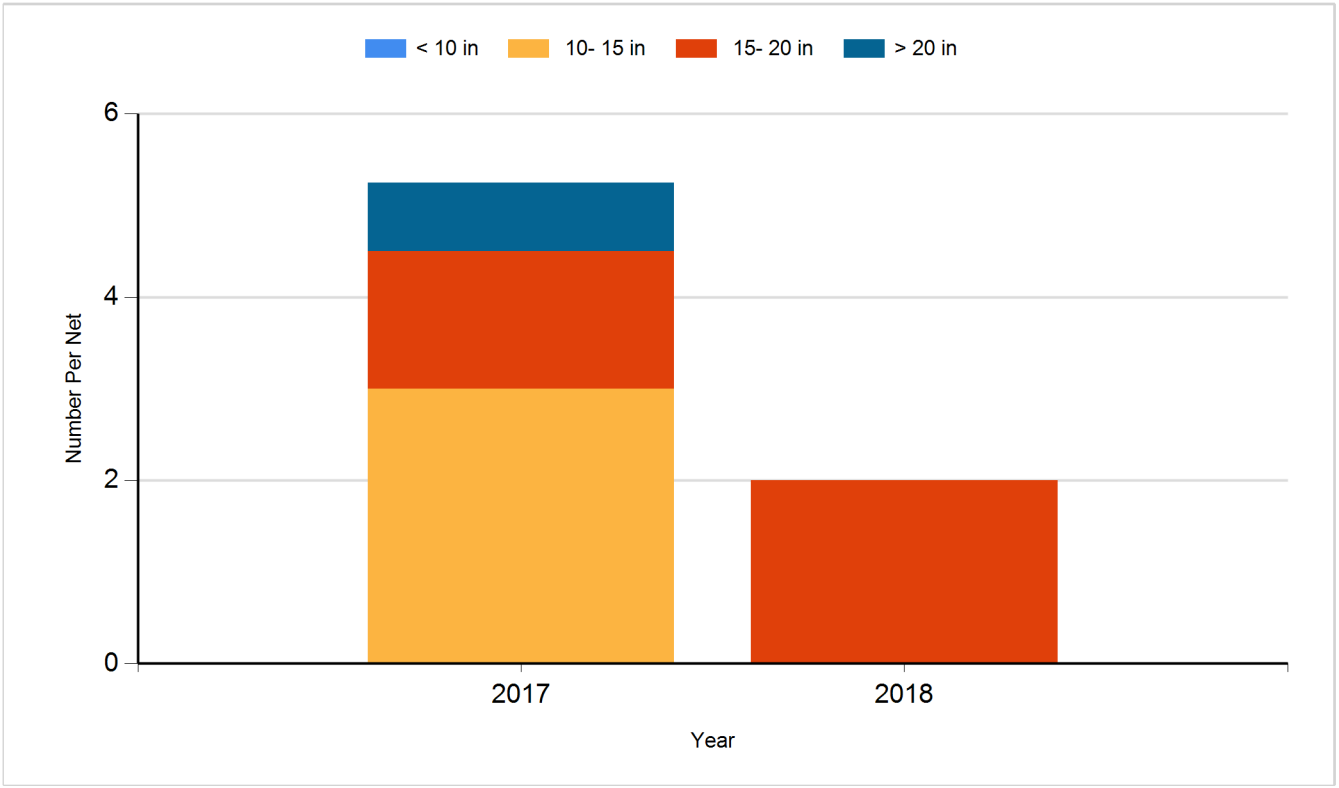
Species: Common Carp
Gear: AFS std gill net



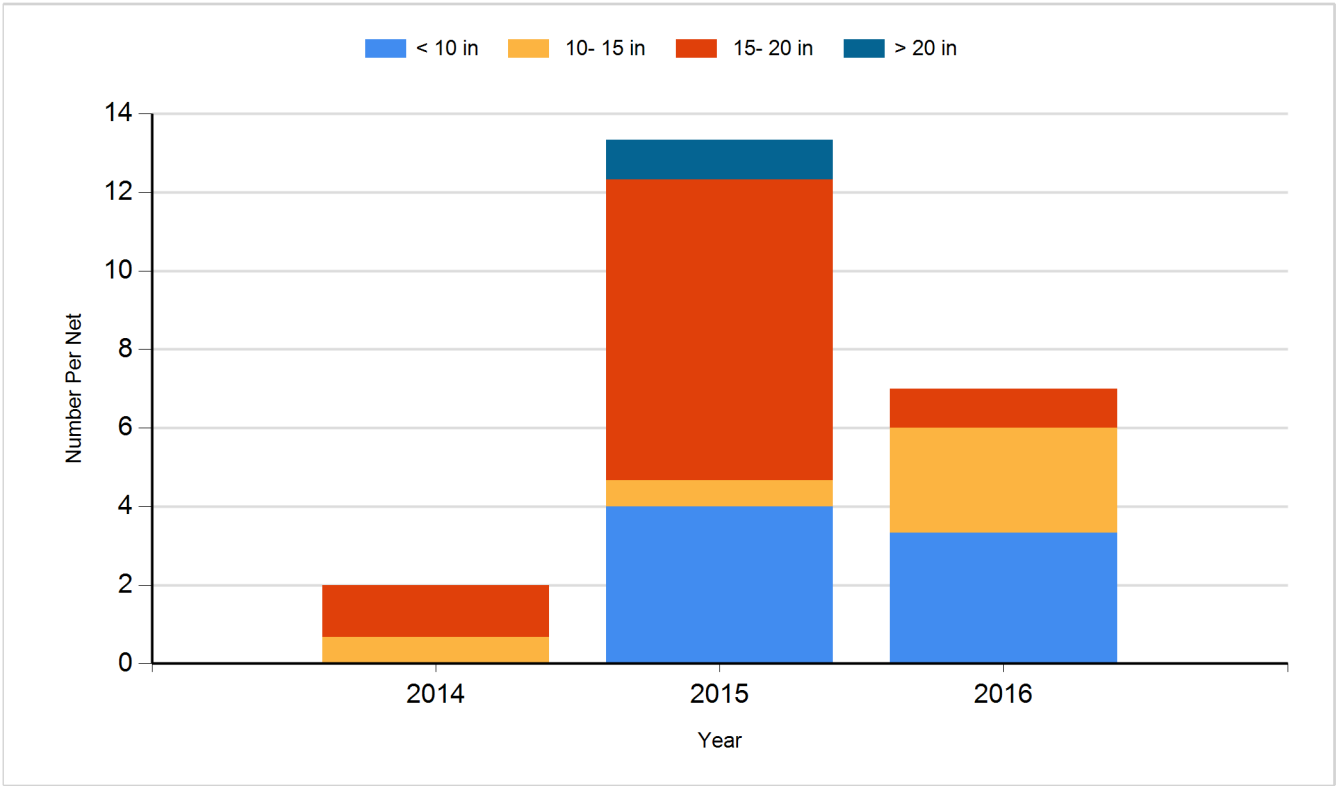
Species: Common Carp
Gear: std exp gill net



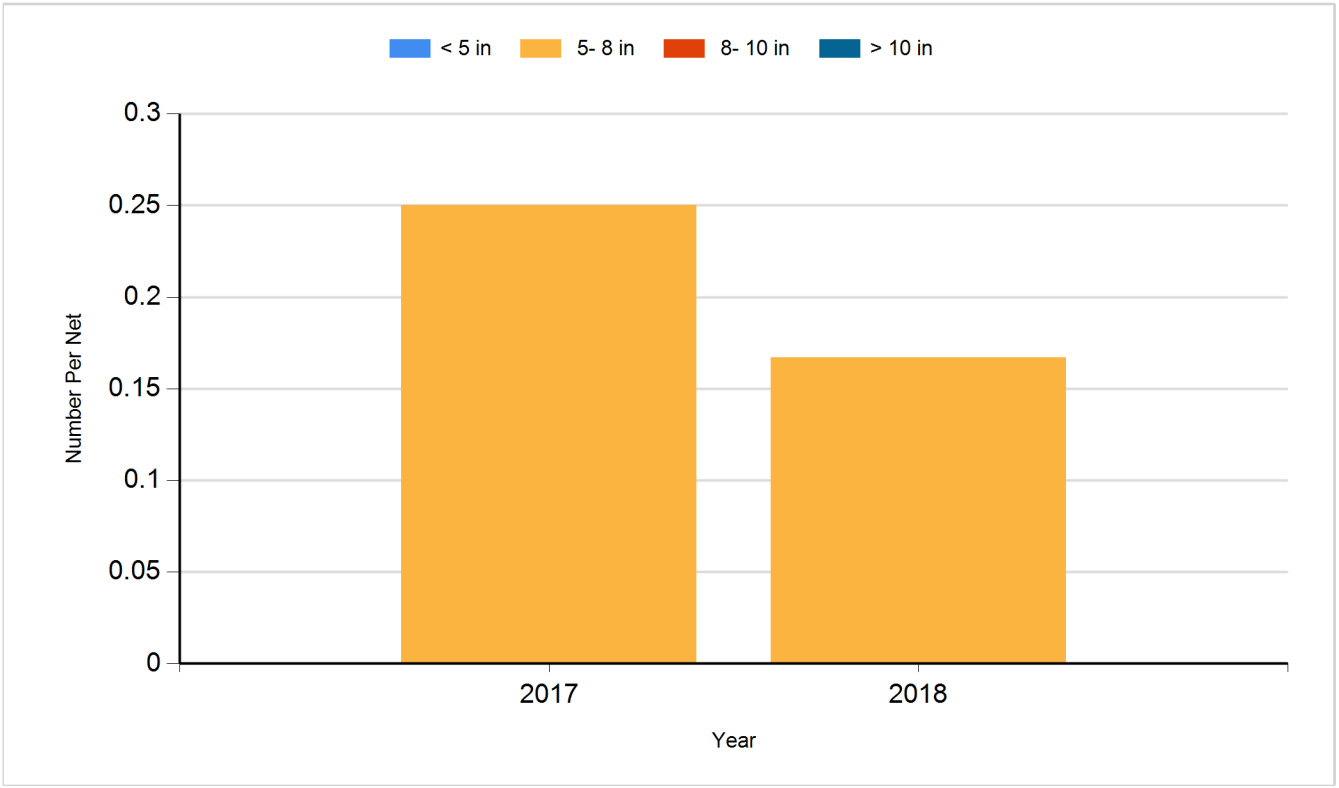
Species: Walleye
Gear: AFS std gill net



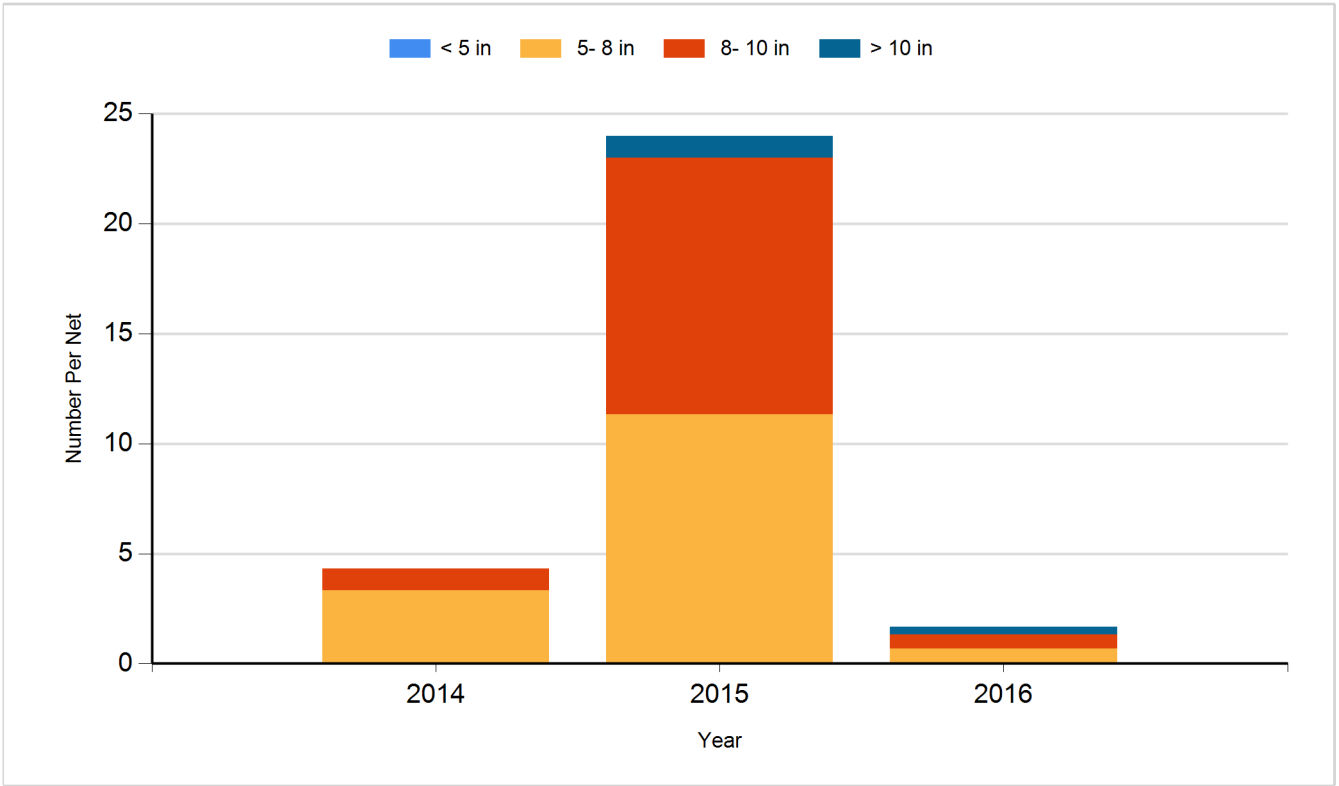
Species: Walleye
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std 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	Black Crappie	Adult	750
2007	Walleye	Adult	102
2007	Walleye	Juvenile	345
2011	Channel Catfish	Adult	81
2011	Walleye	Large Fingerling	638
2011	Yellow Perch	Adult	319
2013	Black Crappie	Juvenile	70
2013	Northern Pike	Adult	38
2013	Walleye	Fry	200,000
2013	Walleye	Juvenile	308
2013	Yellow Perch	Juvenile	2,600
2014	Walleye	Fry	75,000
2015	Walleye	Small Fingerling	5,120
2016	Gizzard Shad	Adult	235
2016	Walleye	Juvenile	647
2017	Yellow Perch	Small Fingerling	50,640