

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Wall, Minnehaha County

LBS-Lake-95-000

2021

Lake Information

Name:	Wall	Maximum Depth:	23 Feet
County:	Minnehaha	Mean Depth:	11 Feet
Legal Description:	T101N-R51W-Sec. 21 & 28	OHWM Elevation:	1,560
Surface Area:	222 Acres	Outlet Elevation:	1,559

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	May 26, 2021	6 net-nights
frame net (std 3/4 in)	May 26, 2021	5 net-nights

Common Fish Species Present

Walleye

Black Bullhead

Black Crappie

Pumpkinseed

Channel Catfish

Yellow Perch

Northern Pike

Common Carp

Bluegill

Bigmouth Buffalo

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.
- **std 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.

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

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)
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**

Gear	Species	Sample Size (n)	Abundance		Stock Density Indices			Condition	
			CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr
AFS std gill net	Black Bullhead	73	12.2	4.6	96		0		
	Channel Catfish	17	2.8	2.4	88		24	102	3
	Common Carp	10	0.8	0.8	80		20		
	Northern Pike	8	1.3	0.6	100		38	109	5
	Pumpkinseed	3	0.5	0.7	100		0	118	1
	Walleye	18	3.0	1.7	50	19	22	85	2
	White Sucker	3	0.5	0.7	0		0	210	2
	Yellow Perch	12	2.0	1.3	83		8	98	3
frame net (std 3/4 in)	Bigmouth Buffalo	4	0.8	0.6	100		100		
	Black Bullhead	3436	687.2	195.2	99	0	0		
	Black Crappie	17	3.4	5.2	100		29	103	2
	Bluegill	4	0.8	0.9	75		0	140	12
	Channel Catfish	9	1.6	0.8	88		25	102	13
	Common Carp	6	0.6	0.6	33		33		
	Pumpkinseed	17	3.4	3.9	94		0	132	14
	Walleye	1	0.2	0.3	100		0	84	
White Sucker	1	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.

* Methods/Species that ignore stock length

Gear	Species	CPUE										Avg	
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
AFS std frame net	Black Bullhead						5.0						5.00
	Bluegill						0.2						0.20
	Pumpkinseed						7.4						7.40
	Sunfish Hybrid						0.0						0.00
	Yellow Perch						0.6						0.60
AFS std gill net	Bigmouth Buffalo						0.0	0.2	0.0		0.0	0.05	
	Black Bullhead						1.0	1.5	6.5		12.2	5.30	
	Black Crappie						0.0	0.0	0.0		0.0	0.00	
	Channel Catfish						4.0	5.2	2.7		2.8	3.68	
	Common Carp						0.7	0.2	2.2		0.8	0.98	
	Green Sunfish						0.0	0.2	0.0		0.0	0.05	
	Northern Pike						0.5	0.2	1.7		1.3	0.93	
	Pumpkinseed						0.0	0.2	0.2		0.5	0.23	
	Walleye						0.8	5.0	10.0		3.0	4.70	
	White Sucker						0.3	1.0	0.2		0.5	0.50	
Yellow Perch						8.3	1.0	3.5		2.0	3.70		
frame net (std 3/4 in)	Bigmouth Buffalo	0.7		0.2	1.2	0.8		0.2	0.6		0.8	0.64	
	Black Bullhead	89.5		210.8	80.8	24.6		55.2	161.4		687.2	187.07	
	Black Crappie	14.2		4.6	0.0	0.0		0.0	0.0		3.4	3.17	
	Bluegill	115.9		0.4	0.4	0.0		0.0	0.2		0.8	16.81	
	Channel Catfish	1.6		6.8	3.4	0.6		0.2	0.6		1.6	2.11	
	Common Carp	7.4		0.6	0.6	0.0		0.0	1.6		0.6	1.54	
	Green Sunfish	1.2		0.0	0.0	0.0		2.0	0.4		0.0	0.51	
	Largemouth Bass	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.00	
	Northern Pike	0.5		0.0	0.4	0.0		0.4	0.0		0.0	0.19	
	Orangespotted Sunfish	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.00	
	Pumpkinseed	4.1		1.4	12.4	2.6		6.0	1.2		3.4	4.44	
	Sunfish Hybrid	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.00	
	Walleye	1.2		0.6	0.8	0.6		1.6	1.0		0.2	0.86	
	White Crappie	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.00	
	White Sucker	0.0		0.2	0.2	0.0		0.0	0.0		0.2	0.09	
Yellow Bullhead	1.3		0.0	1.0	0.0		0.2	0.4		0.0	0.41		
Yellow Perch	0.0		0.0	0.0	1.8		0.0	0.0		0.0	0.26		

		CPUE										
Gear	Species	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
hoop net	Black Bullhead					3.0						3.00
	Green Sunfish					0.3						0.30
	Pumpkinseed					3.7						3.70
	Sunfish Hybrid					0.0						0.00
std exp gill net	Bigmouth Buffalo	0.0		0.7	0.0	0.0						0.18
	Black Bullhead	56.0		35.7	10.3	4.3						26.58
	Black Crappie	0.3		0.0	0.0	0.3						0.15
	Bluegill	0.7		0.0	0.0	0.0						0.18
	Channel Catfish	37.0		15.0	13.0	4.7						17.43
	Common Carp	9.7		1.0	3.3	0.0						3.50
	Northern Pike	1.3		0.0	0.0	6.7						2.00
	Pumpkinseed	0.3		0.0	0.3	0.0						0.15
	Sunfish Hybrid	0.0		0.0	0.0	0.0						0.00
	Walleye	3.3		1.0	0.3	0.3						1.23
	White Sucker	1.3		0.7	0.3	0.0						0.58
	Yellow Perch	3.3		1.7	1.3	5.3						2.90

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										
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
AFS std frame net	Black Bullhead	PSD							100				
		PSD-P							52				
		Wr							114				
	Bluegill	PSD								100			
		PSD-P								0			
		Wr								114			
	Yellow Perch	PSD								100			
		PSD-P								67			
		Wr								88			
AFS std gill net	Bigmouth Buffalo	PSD								100			
		PSD-P								0			
	Black Bullhead	PSD							100	11	13		96
		PSD-P							83	0	5		0
	Black Crappie	PSD									0		
		PSD-P									0		
	Channel Catfish	PSD							100	100	100		88
		PSD-P							0	6	6		24
		Wr							104	105	108		102
	Common Carp	PSD							100	100	38		80
		PSD-P							75	100	15		20
	Northern Pike	PSD							67	100	30		100
		PSD-P							0	0	0		38
		Wr							87	77	89		109
	Walleye	PSD							40	27	93		50
		PSD-P							20	7	0		22
		Wr							89	91	91		85
	Yellow Perch	PSD							80	100	19		83
		PSD-P							4	17	10		8
		Wr							96	96	104		98
	frame net (std 3/4 in)	Bigmouth Buffalo	PSD	100		100	0	100			100	100	
PSD-P			29		100	0	25			0	33		100
Wr			79		90								
Black Bullhead		PSD	28		84	98	100			55	49		99

Gear	Species	Index	Year										
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
frame net (std 3/4 in)	Black Bullhead	PSD-P	1		0	3	28		18	18		0	
		Wr	93		102								
	Black Crappie	PSD	99		87								100
		PSD-P	0		70								29
		Wr	97		95								103
	Bluegill	PSD	100		100	100					0		75
		PSD-P	7		50	0					0		0
		Wr	104		135	112					123		140
	Channel Catfish	PSD	38		97	100	100		100	100			88
		PSD-P	0		0	0	0		0	0			25
		Wr	90		101	109	103		110	108			102
	Common Carp	PSD	4		33	33					63		33
		PSD-P	0		33	0					25		33
		Wr	106		105								
	Northern Pike	PSD	100			100			50				
		PSD-P	0			50			0				
		Wr	93			95			82				
	Walleye	PSD	17		33	25	0		0	100			100
		PSD-P	0		0	25	0		0	0			0
		Wr	76		82	76	81		85	92			84
	Yellow Perch	PSD					33						
PSD-P						0							
Wr						101							
hoop net	Black Bullhead	PSD					100						
		PSD-P					22						
std exp gill net	Bigmouth Buffalo	PSD			100								
		PSD-P			50								
		Wr			81								
	Black Bullhead	PSD	7		97	74	77						
		PSD-P	0		2	0	8						
		Wr	93		94								
	Black Crappie	PSD	100				100						
		PSD-P	0				0						
		Wr	96				103						
	Bluegill	PSD	100										
		PSD-P	100										

Gear	Species	Index	Year									
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
std exp gill net	Bluegill	Wr	99									
		Channel Catfish	PSD	5		87	97	100				
			PSD-P	1		2	0	0				
			Wr	86		101	99	106				
	Common Carp	PSD	14		100	50						
		PSD-P	3		33	10						
		Wr	95		101							
	Northern Pike	PSD	75					85				
		PSD-P	0					0				
		Wr	94					79				
	Walleye	PSD	0		0	0	0					
		PSD-P	0		0	0	0					
		Wr	73		77	77	85					
	Yellow Perch	PSD	90		80	100	38					
		PSD-P	0		0	0	6					
		Wr	95		102	111	95					

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	30		328 (10)	356 (6)	374 (9)	353 (2)			570 (2)		

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	6		220 (2)		238 (3)	230 (1)					

Fish Condition

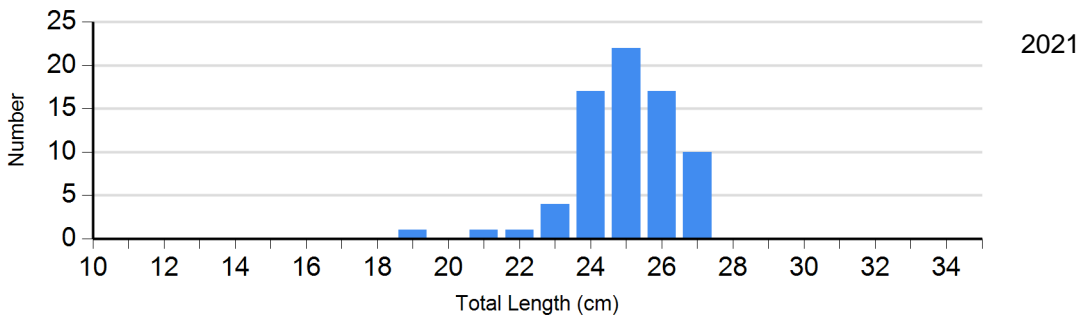
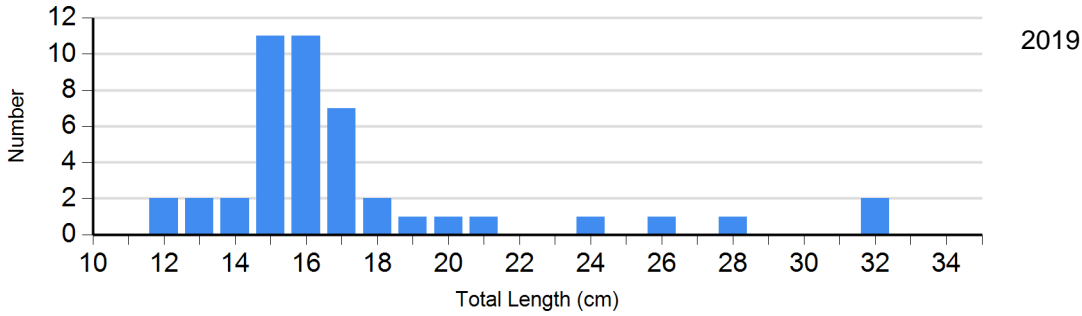
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2021	0		12	104 (1.3)	4	102 (3.0)	1	99
Bluegill Frame Net	2017	0		1	114	0		0	
	2019	1	123	0		0		0	
	2021	1	134	3	142 (13.5)	0		0	
Channel Catfish Gill Net	2017	0		24	104 (3.4)	0		0	
	2018	0		29	105 (2.0)	2	101 (3.8)	0	
	2019	0		15	108 (2.1)	0		1	109
	2021	2	93 (9.4)	11	101 (2.0)	3	113 (3.2)	1	95
Northern Pike Gill Net	2017	1	81	2	90 (6.9)	0		0	
	2018	0		1	77	0		0	
	2019	7	88 (1.1)	3	91 (1.9)	0		0	
	2021	0		5	106 (3.8)	3	114 (8.4)	0	
Walleye Gill Net	2017	3	86 (6.1)	1	101	1	87	0	
	2018	22	92 (6.1)	6	90 (1.6)	2	85 (5.2)	0	
	2019	4	95 (2.2)	56	90 (1.0)	0		0	
	2021	9	83 (3.0)	5	85 (2.4)	4	87 (1.8)	0	
Yellow Perch Gill Net	2017	10	95 (2.2)	38	97 (1.2)	2	88 (1.9)	0	
	2018	0		5	97 (4.1)	1	89	0	
	2019	17	107 (2.0)	2	95 (4.8)	2	91 (5.7)	0	
	2021	2	96 (2.5)	9	99 (3.2)	1	88	0	

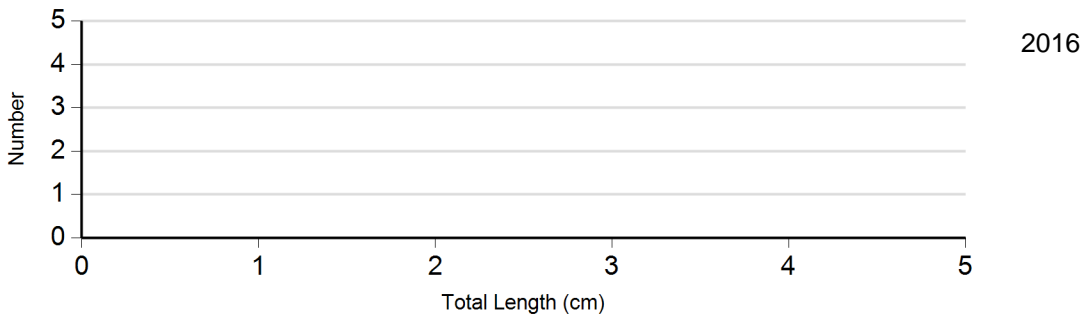
Length Frequency Distribution

Length frequency histogram of species sampled by year.

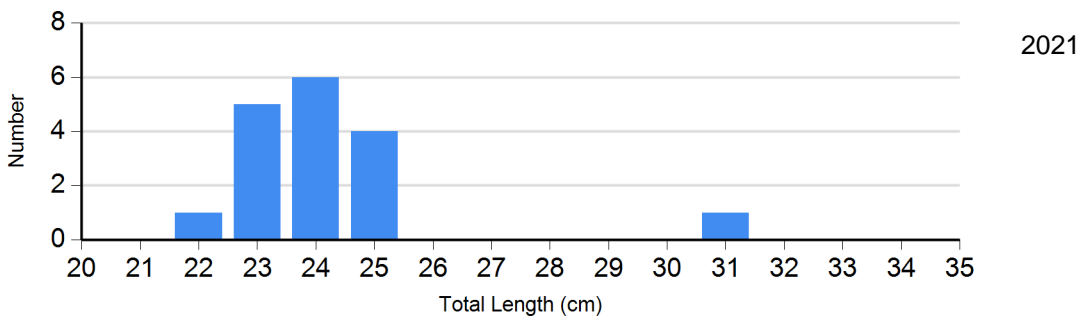
Species: Black Bullhead
Gear: AFS std gill net



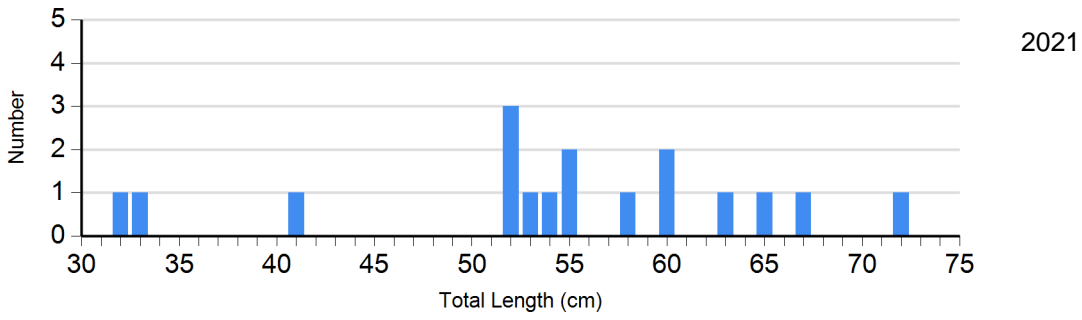
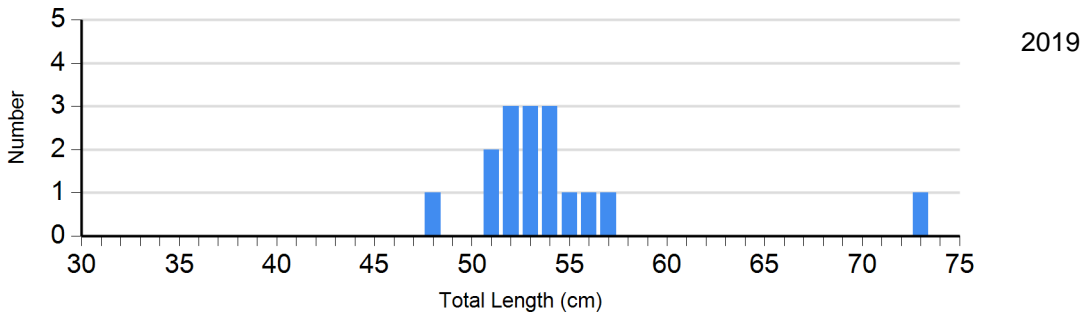
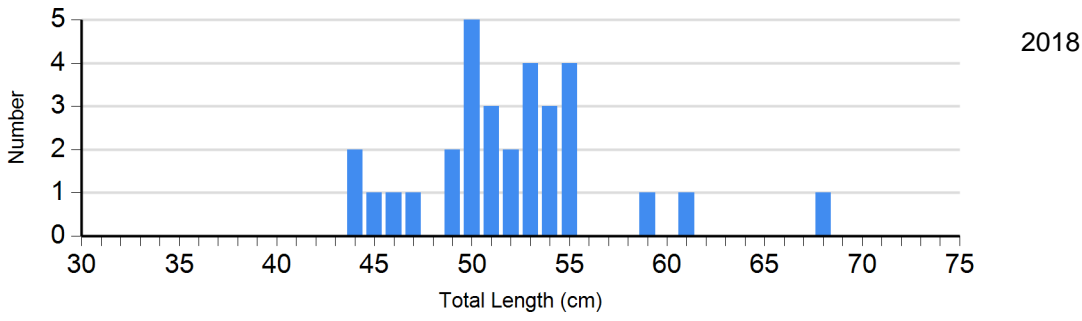
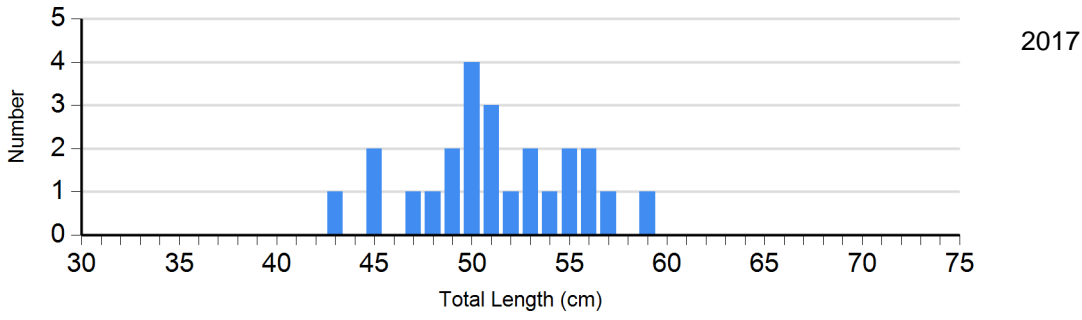
Species: Black Bullhead
Gear: std exp gill net



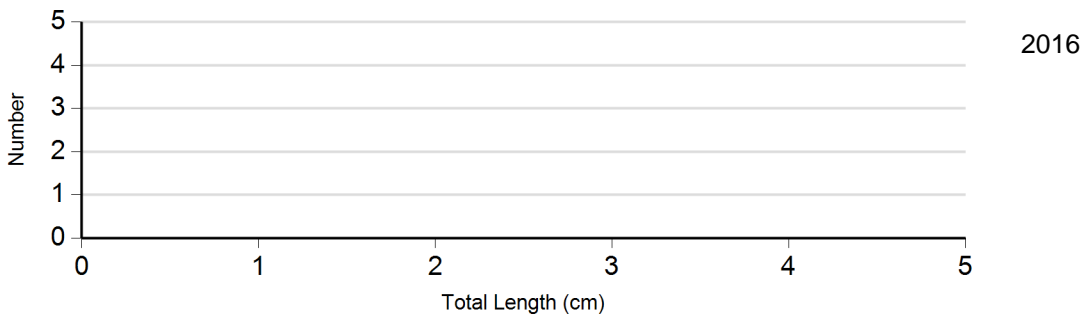
Species: Black Crappie
Gear: frame net (std 3/4 in)



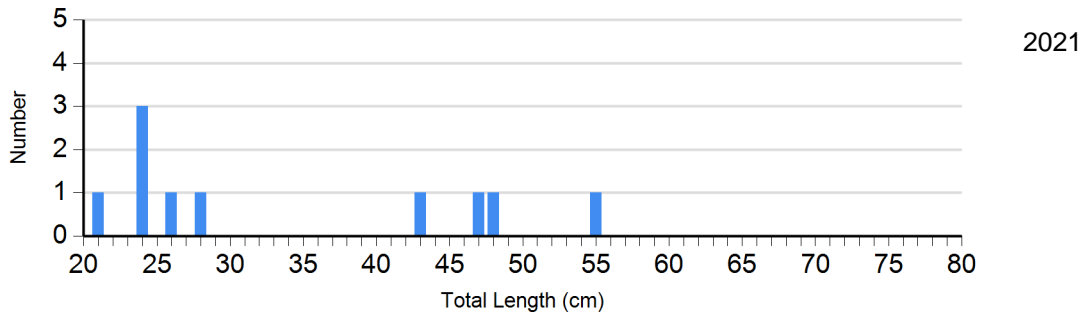
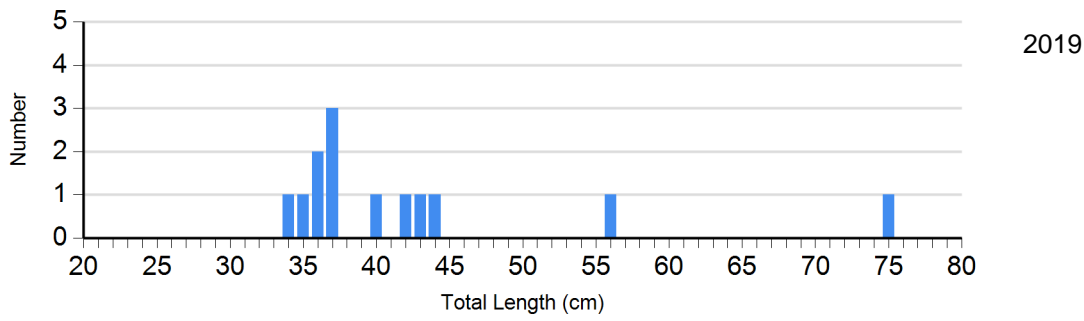
Species: Channel Catfish
 Gear: AFS std gill net



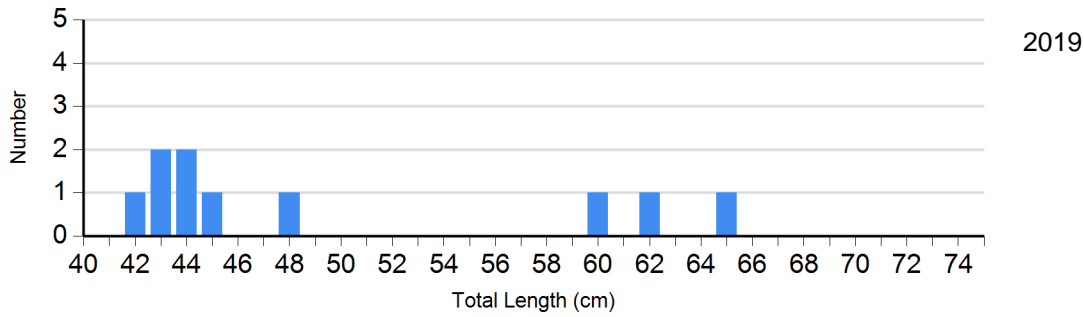
Species: Channel Catfish
 Gear: std exp gill net



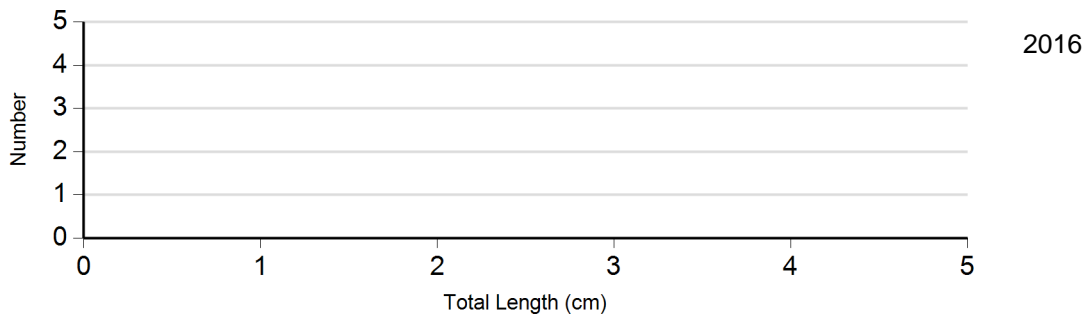
Species: Common Carp
Gear: AFS std gill net



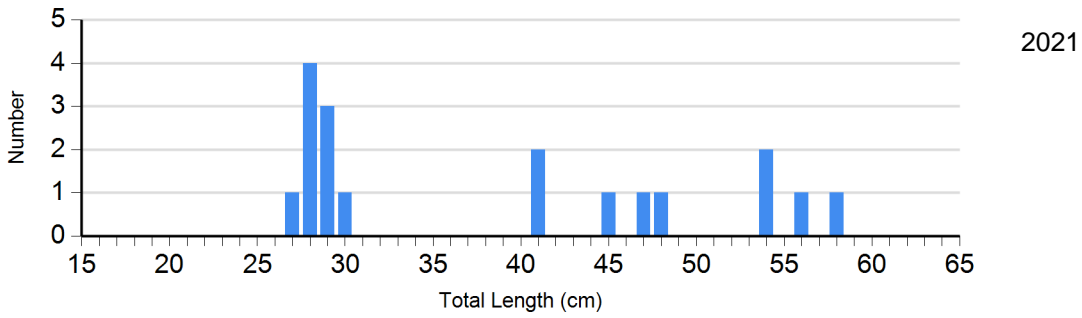
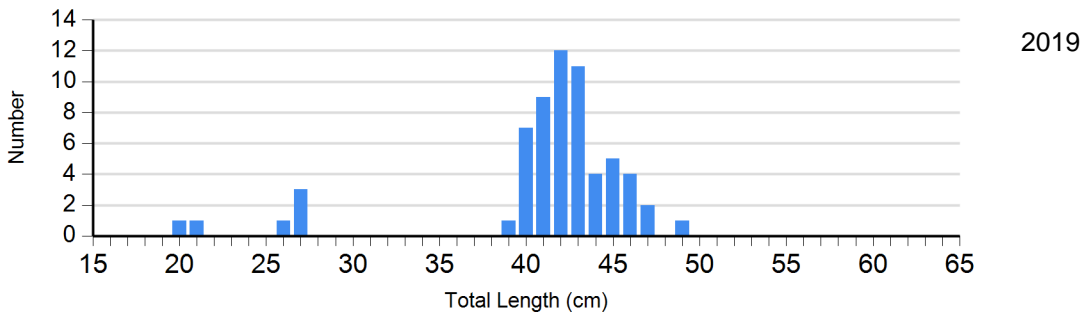
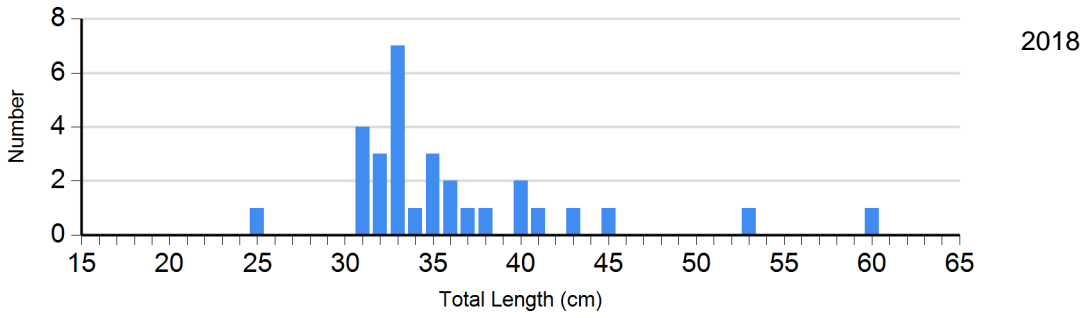
Species: Northern Pike
Gear: AFS std gill net



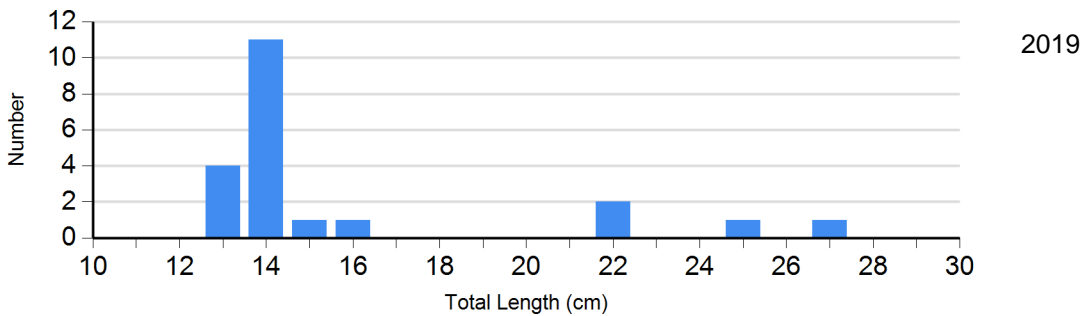
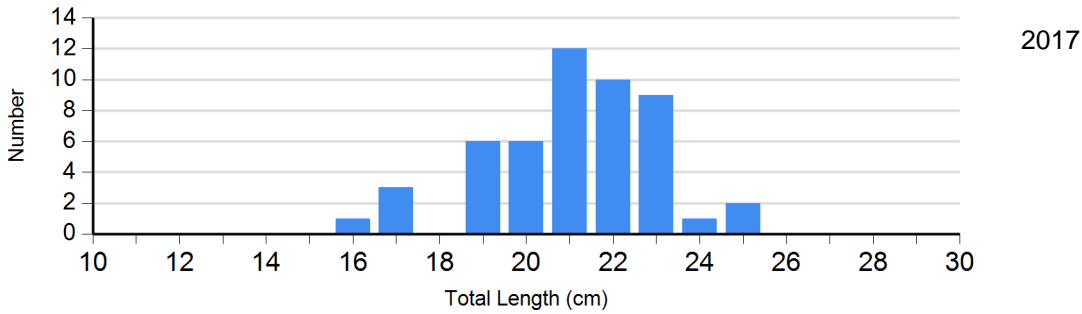
Species: Northern Pike
Gear: std exp gill net

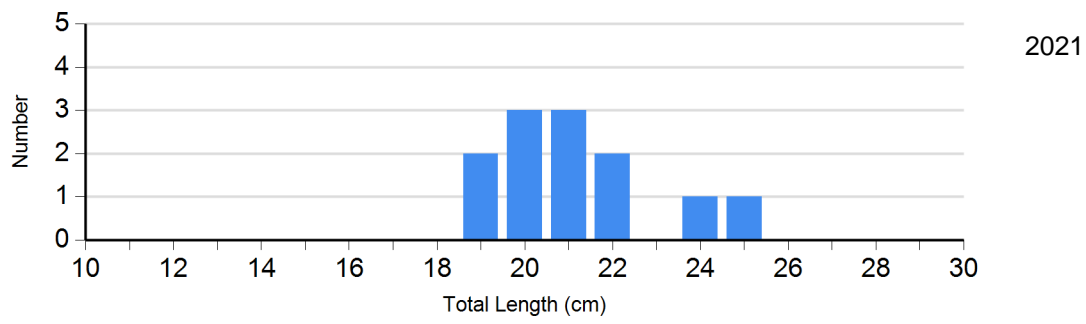


Species: Walleye
 Gear: AFS std gill net

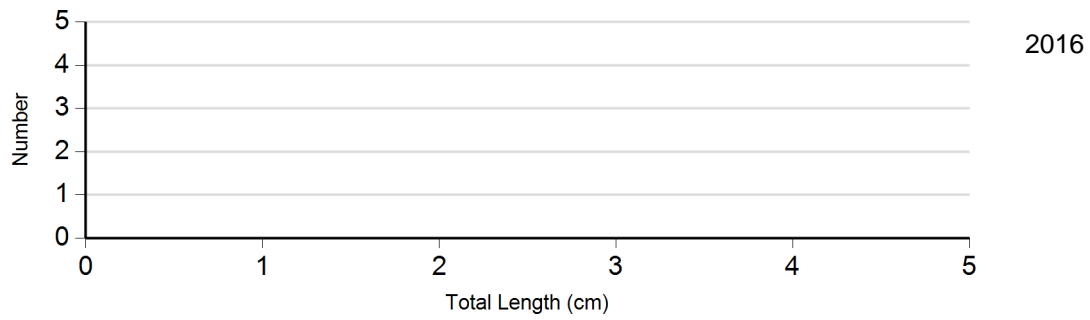


Species: Yellow Perch
 Gear: AFS std gill net





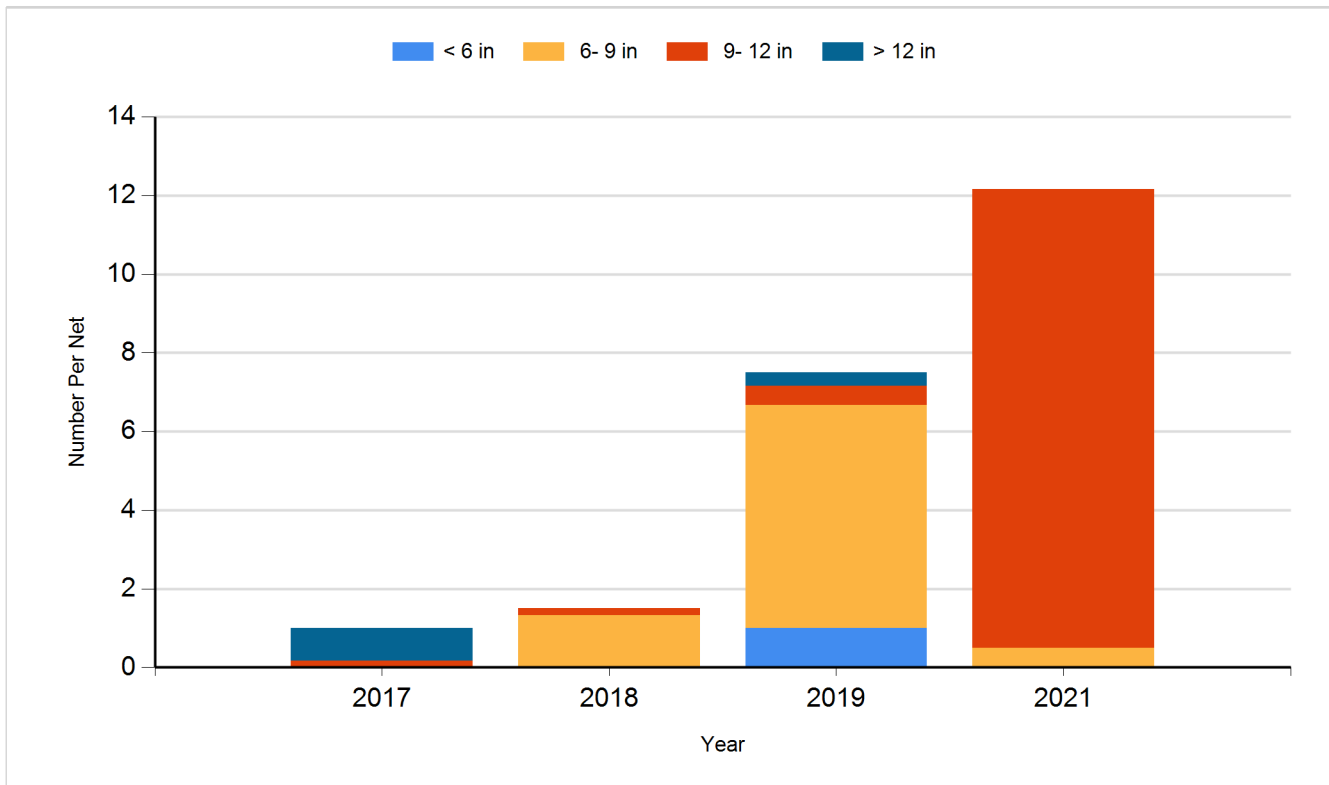
Species: Yellow Perch
 Gear: std exp gill net



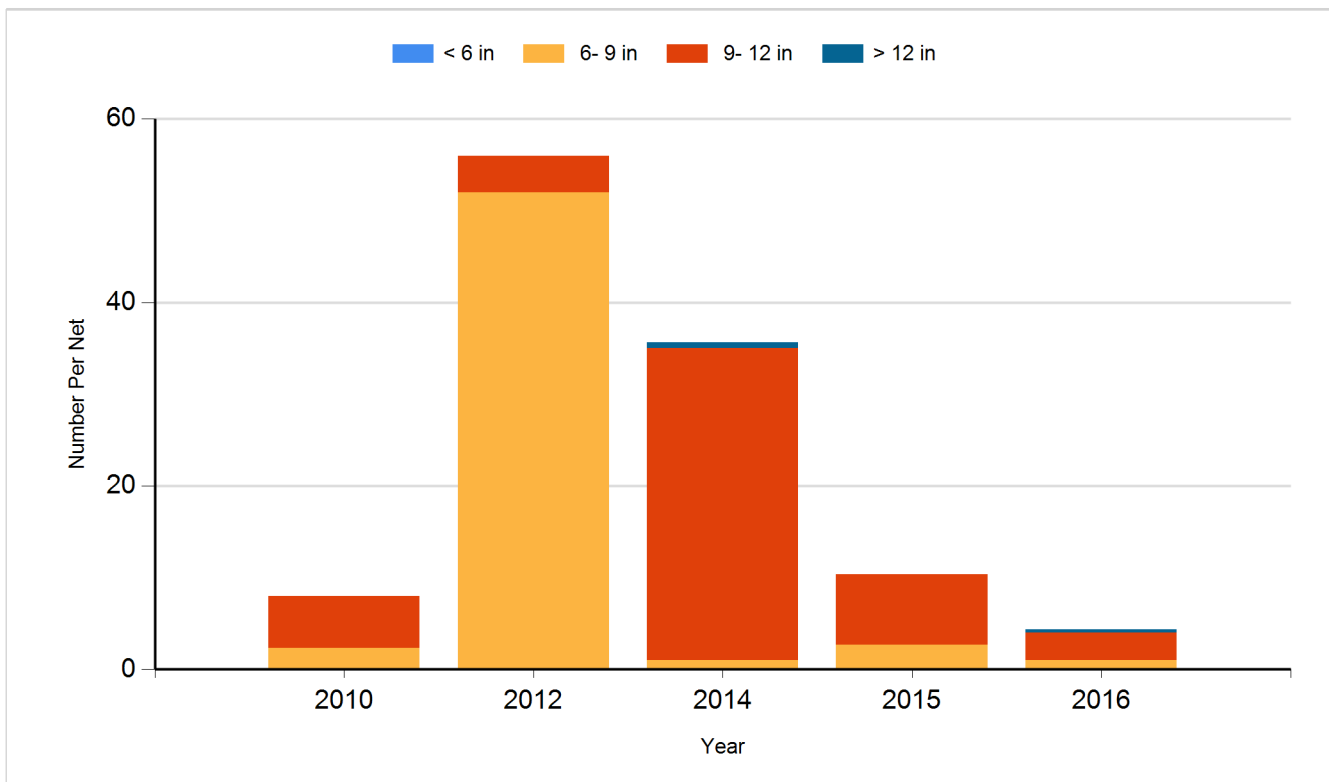
Historic Fish Sizes and Relative Abundance

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

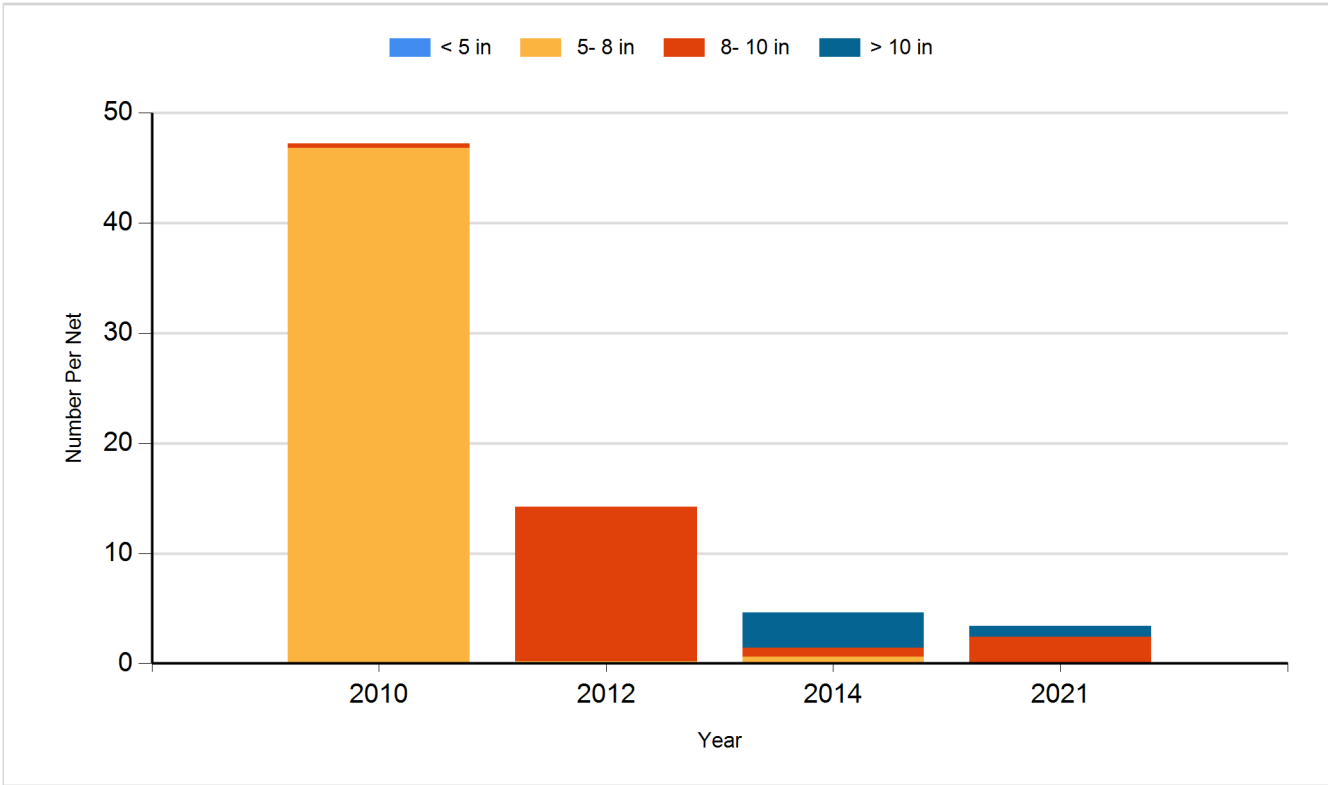
Species: Black Bullhead
Gear: AFS std gill net



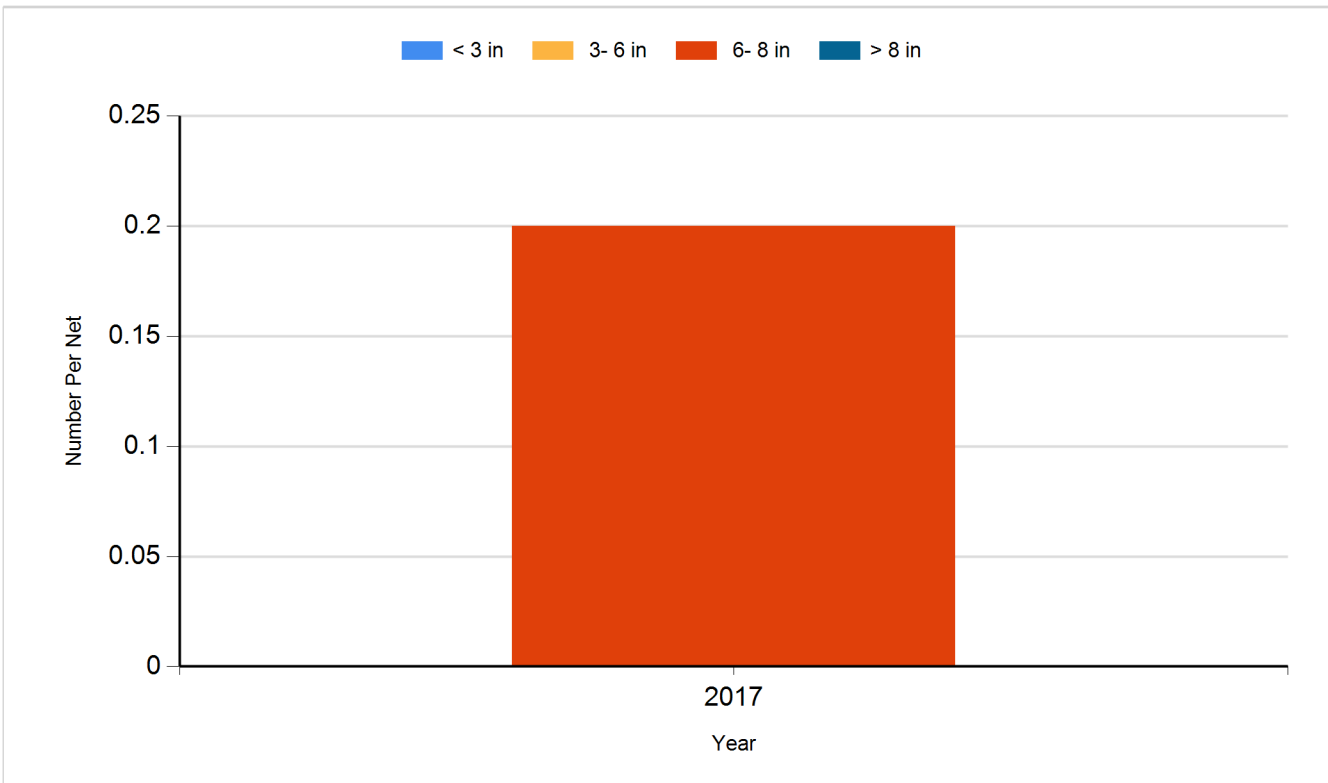
Species: Black Bullhead
Gear: std exp gill net



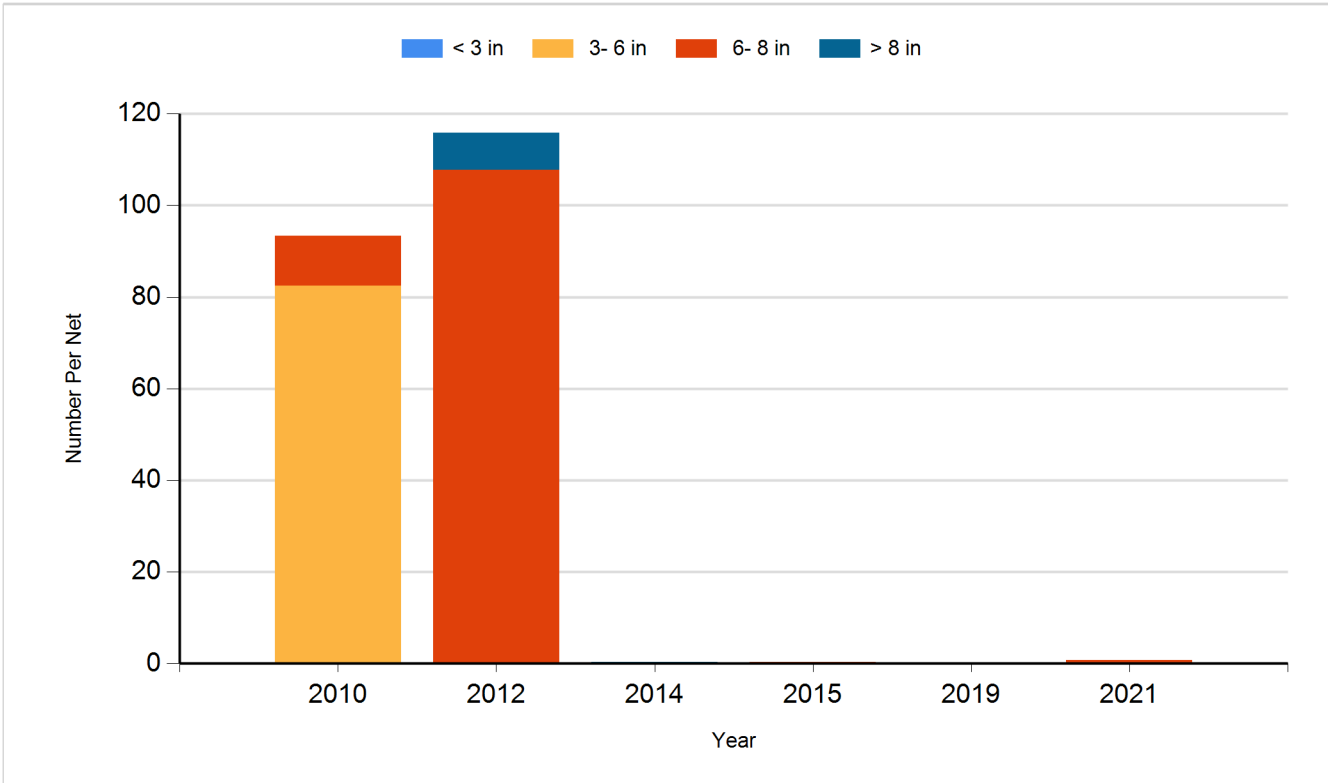
Species: Black Crappie
Gear: frame net (std 3/4 in)



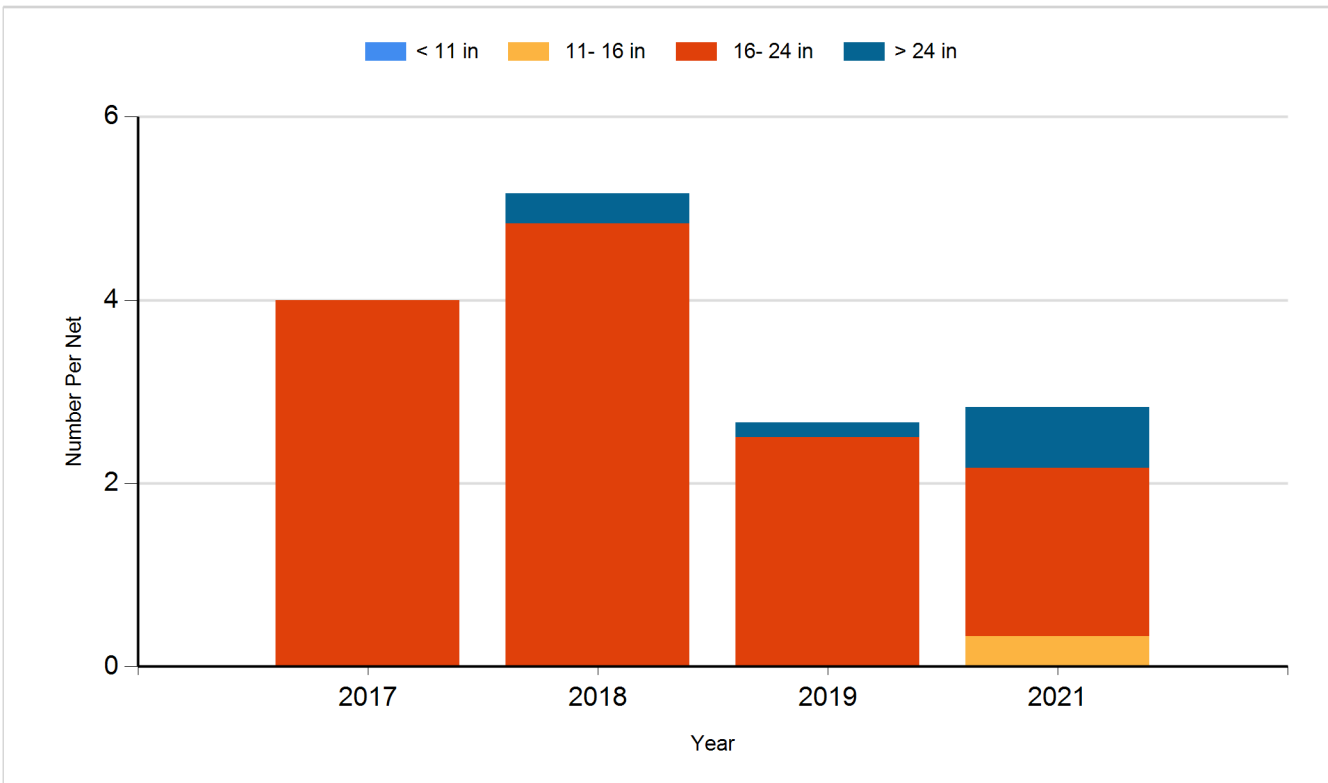
Species: Bluegill
Gear: AFS std frame net



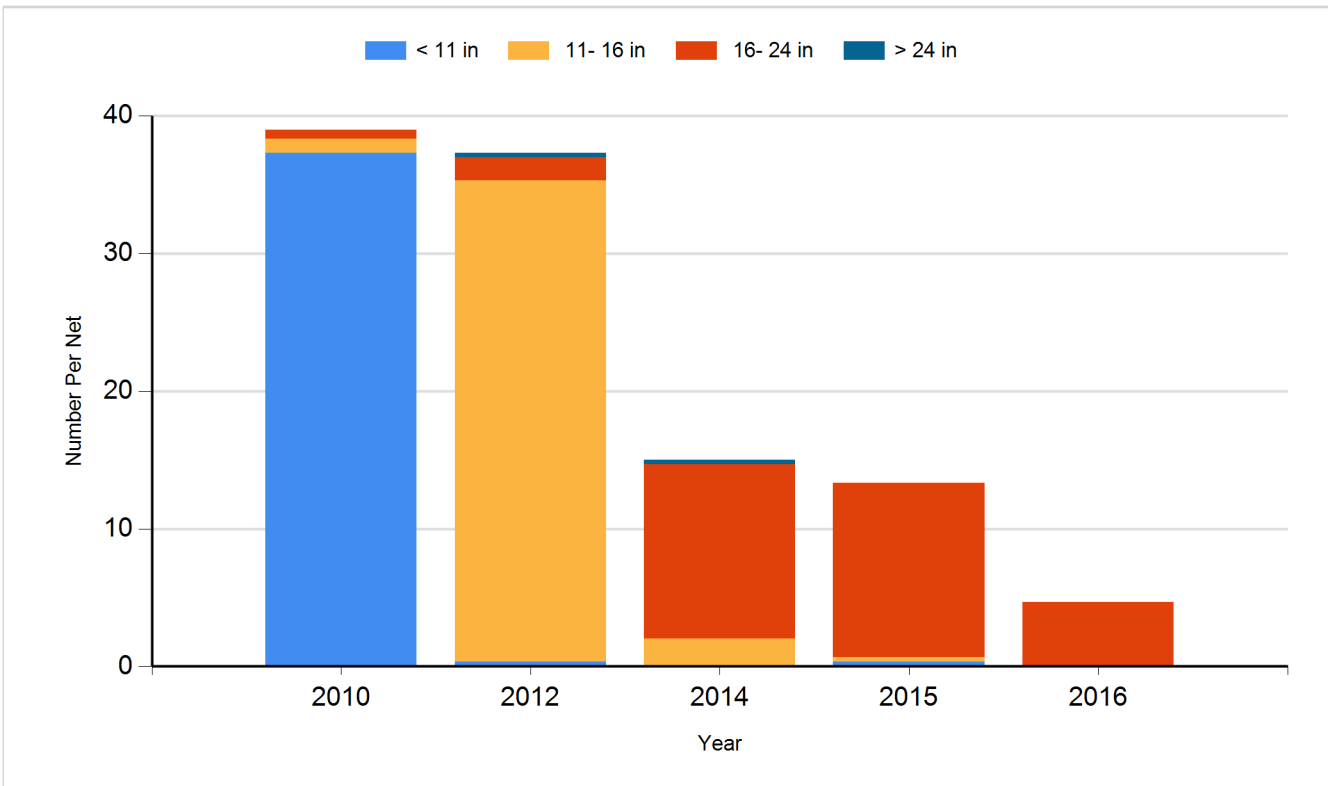
Species: Bluegill
Gear: frame net (std 3/4 in)



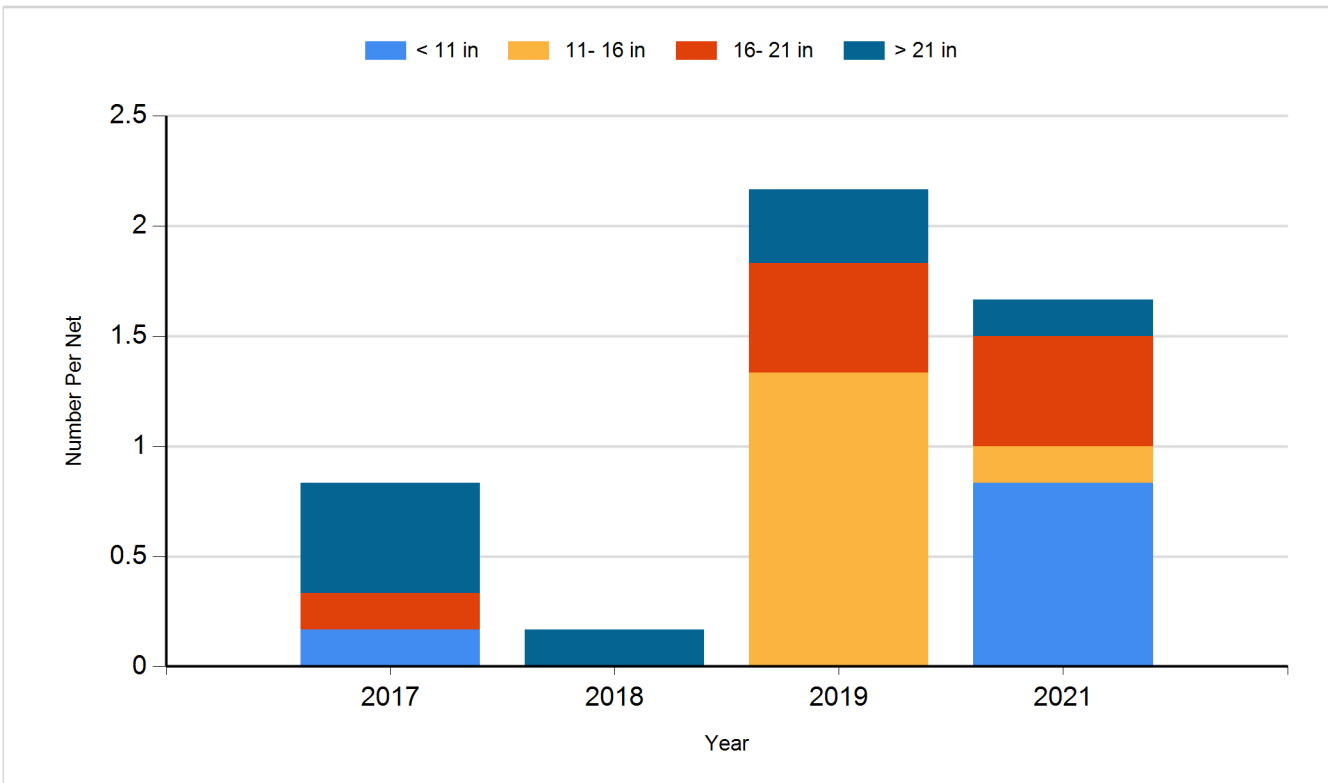
Species: Channel Catfish
Gear: AFS std gill net



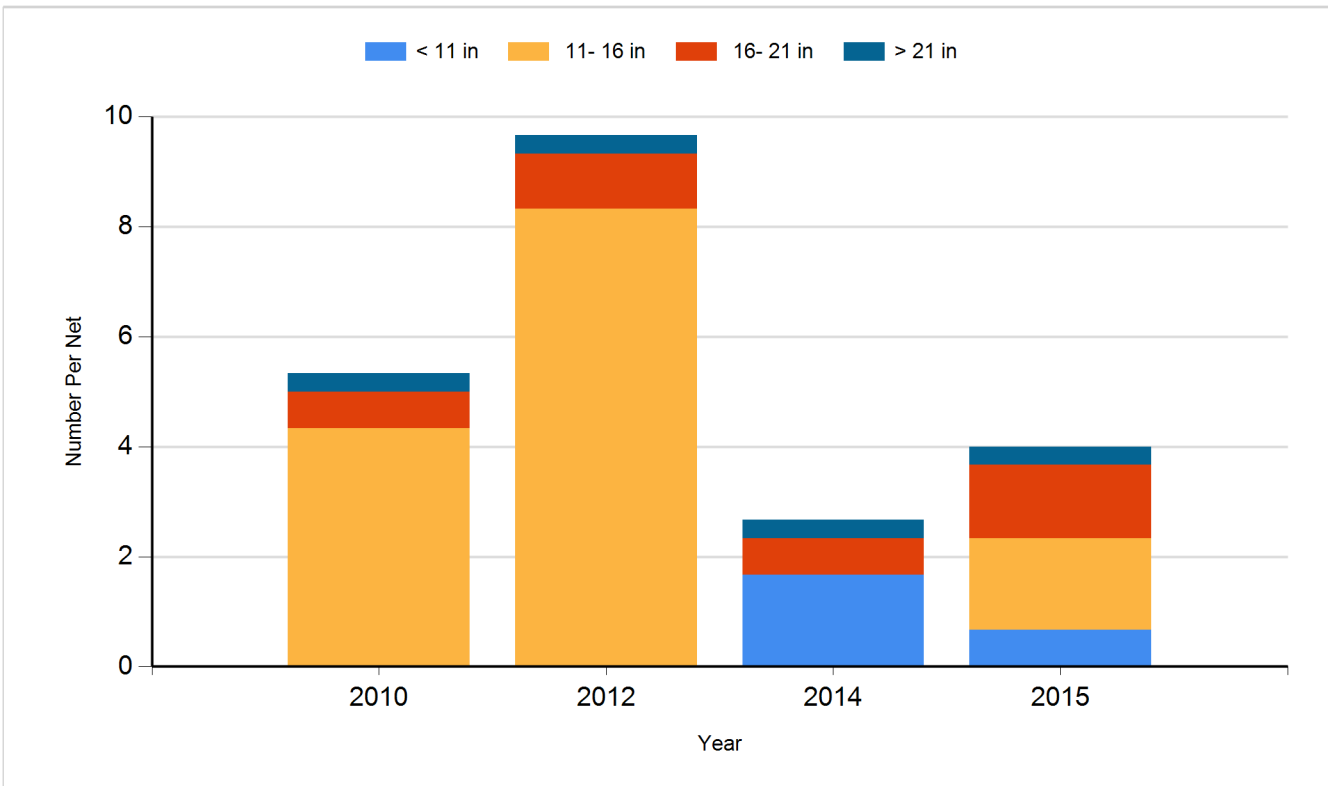
Species: Channel Catfish
Gear: std exp gill net



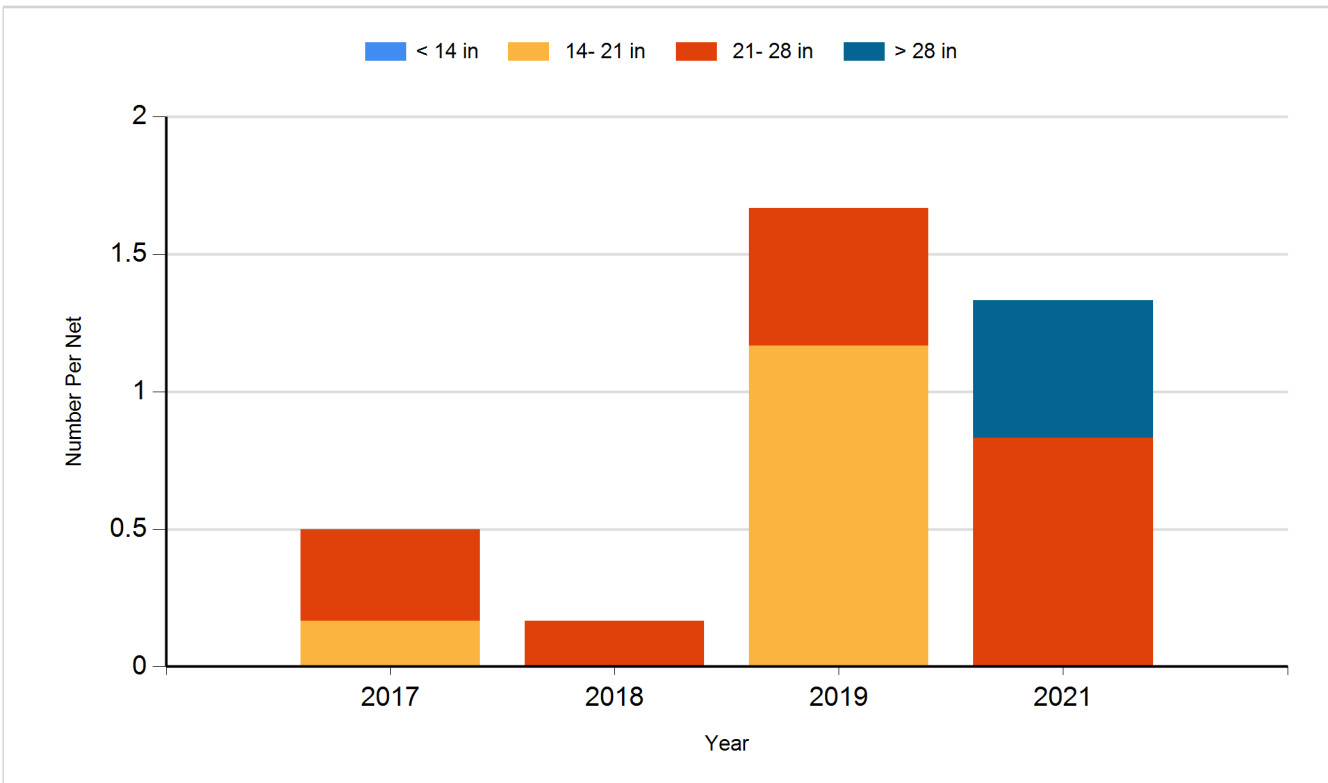
Species: Common Carp
Gear: AFS std gill net



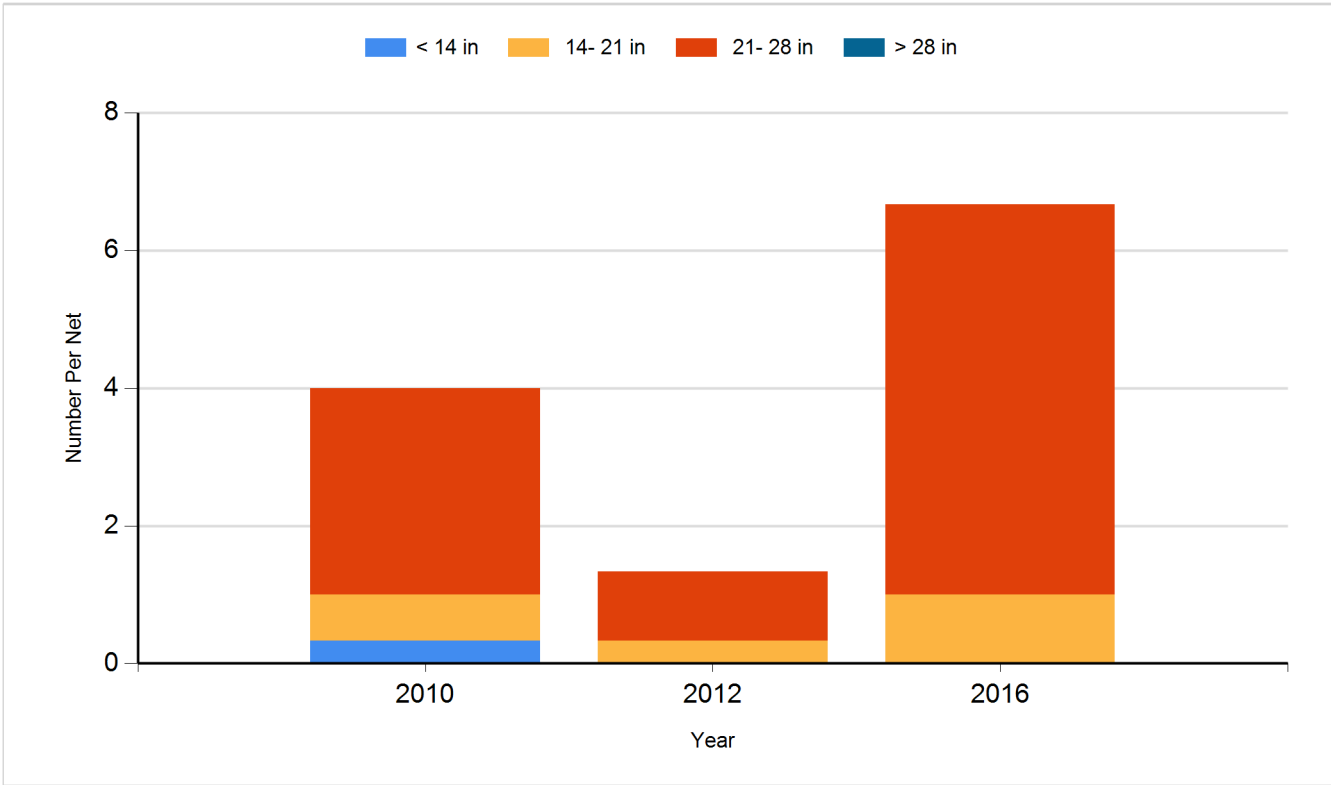
Species: Common Carp
Gear: std exp gill net



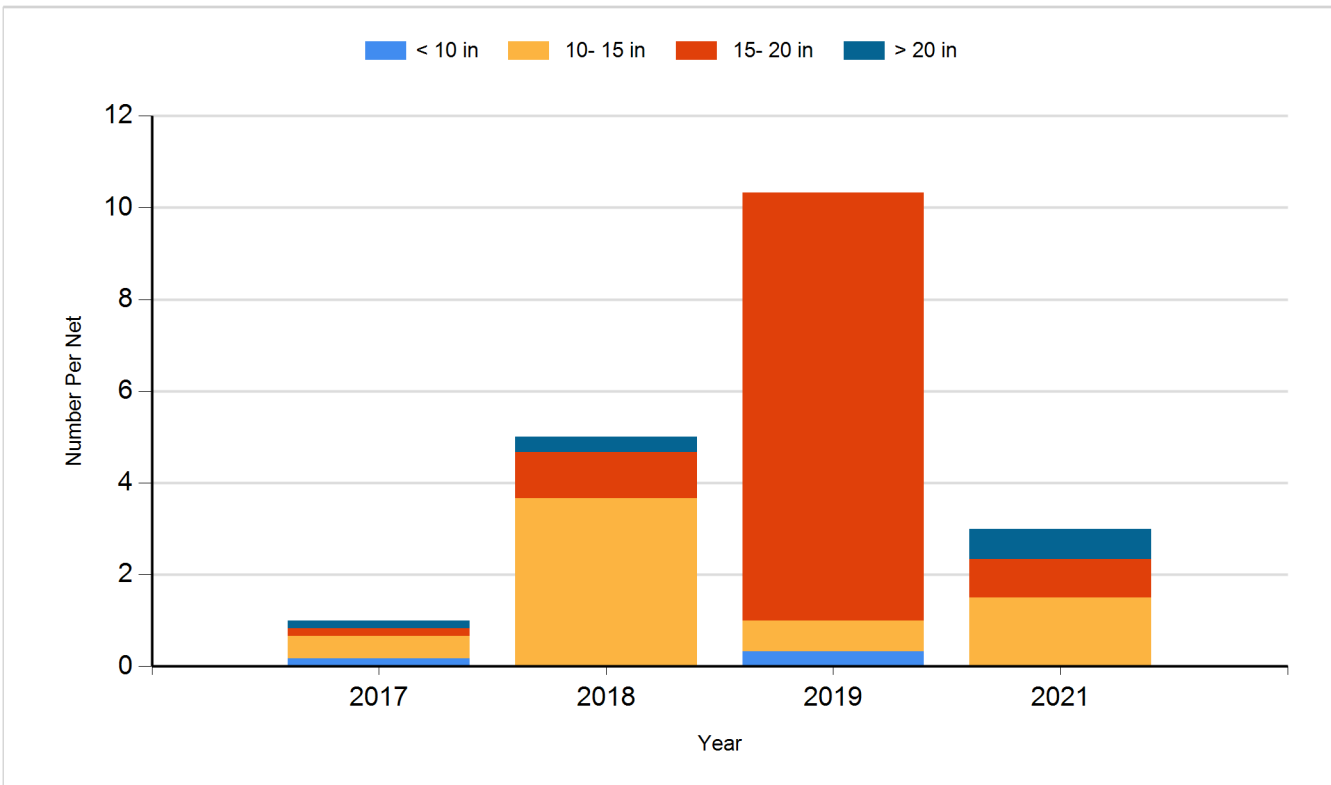
Species: Northern Pike
Gear: AFS std gill net



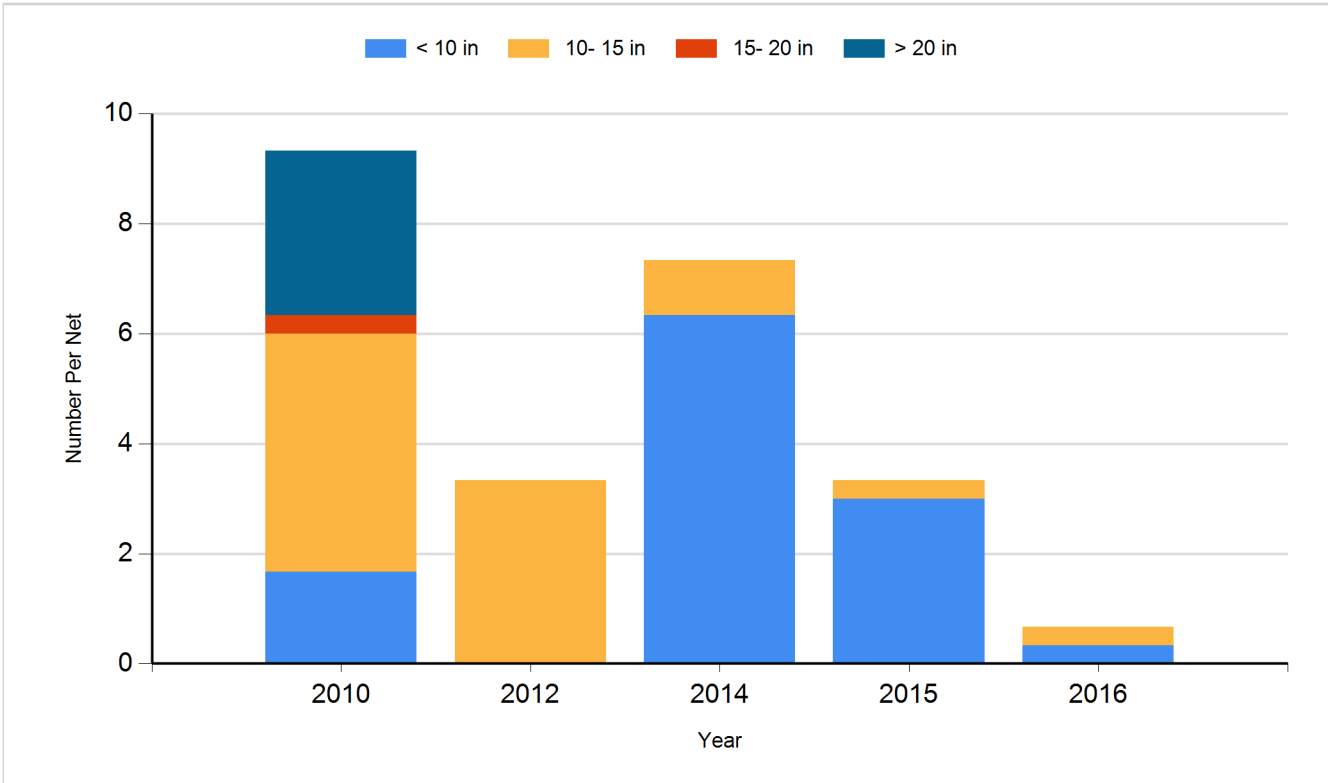
Species: Northern Pike
Gear: std exp gill net



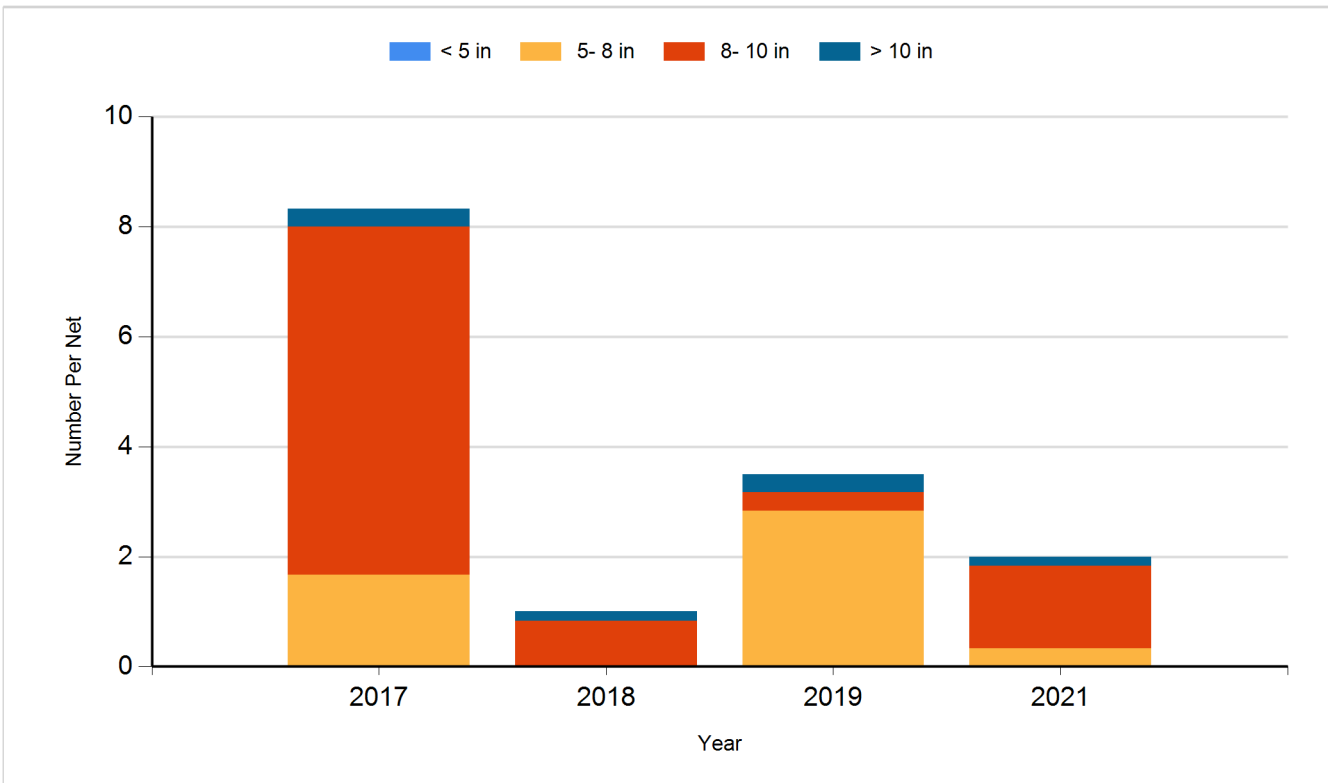
Species: Walleye
Gear: AFS std gill net



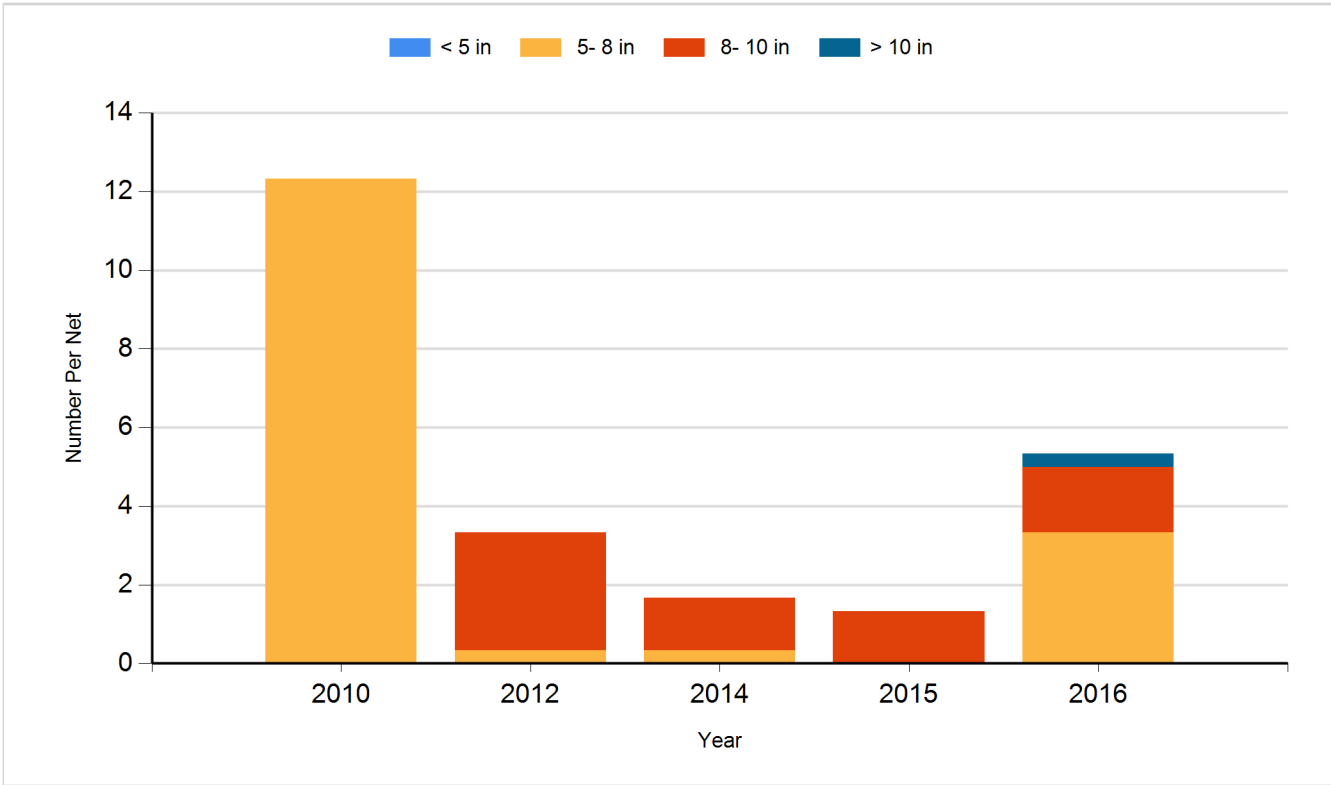
Species: Walleye
Gear: std exp gill net



Species: 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
2010	Walleye	Fingerling	1,345
2010	Walleye	Large Fingerling	2,100
2010	Walleye	Small Fingerling	20,340
2010	Yellow Perch	Adult	870
2011	Walleye	Small Fingerling	20,800
2011	Yellow Perch	Adult	2,124
2012	Northern Pike	Adult	6
2012	Walleye	Adult	724
2012	Walleye	Large Fingerling	178
2012	Yellow Perch	Adult	133
2013	Walleye	Small Fingerling	14,850
2014	Walleye	Small Fingerling	20,900
2015	Northern Pike	Adult	862
2015	Walleye	Fingerling	457
2015	Walleye	Small Fingerling	15,120
2016	Walleye	Juvenile	1,135
2016	Walleye	Small Fingerling	15,120
2016	Yellow Perch	Adult	10,350
2017	Walleye	Large Fingerling	384
2017	Yellow Perch	Adult	10,337
2018	Walleye	Large Fingerling	911
2019	Walleye	Small Fingerling	14,640
2021	Walleye	Adult	660
2021	Walleye	Fingerling	15,200