

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Wall, Minnehaha County

LBS-Lake-95-000

2019

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 28, 2019	6 net-nights
frame net (std 3/4 in)	May 28, 2019	5 net-nights

Common Fish Species Present

Walleye

Black Bullhead

Yellow Perch

Channel Catfish

Common Carp

Northern Pike

Pumpkinseed

Bigmouth Buffalo

Green Sunfish

Yellow Bullhead

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	45	6.5	4.7	13	9	5		
	Black Crappie	1	0.0	0.0	0		0		
	Channel Catfish	16	2.7	1.1	100		6	108	3
	Common Carp	13	2.2	1.1	38		15		
	Northern Pike	10	1.7	0.8	30		0	89	1
	Pumpkinseed	1	0.2	0.2	100		0	112	
	Walleye	62	10.0	1.9	93		0	91	1
	White Sucker	1	0.2	0.2	100		100		
	Yellow Perch	21	3.5	1.4	19		10	104	3
frame net (std 3/4 in)	Bigmouth Buffalo	3	0.6	0.6	100		33		
	Black Bullhead	850	161.4	96.6	49	2	18	2	
	Bluegill	1	0.2	0.3	0		0	123	
	Channel Catfish	3	0.6	0.6	100		0	108	1
	Common Carp	8	1.6	1.0	63		25		
	Green Sunfish	2	0.4	0.6	50		0	95	8
	Pumpkinseed	6	1.2	1.5	67		0	112	5
	Walleye	6	1.0	1.0	100		0	92	2
Yellow Bullhead	2	0.4	0.4	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.

Gear	Species	CPUE										Avg	
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
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	0.07	
	Black Bullhead								1.0	1.5	6.5	3.00	
	Black Crappie								0.0	0.0	0.0	0.00	
	Channel Catfish								4.0	5.2	2.7	3.97	
	Common Carp								0.7	0.2	2.2	1.03	
	Green Sunfish								0.0	0.2	0.0	0.07	
	Northern Pike								0.5	0.2	1.7	0.80	
	Pumpkinseed								0.0	0.2	0.2	0.13	
	Walleye								0.8	5.0	10.0	5.27	
	White Sucker								0.3	1.0	0.2	0.50	
Yellow Perch								8.3	1.0	3.5	4.27		
frame net (std 3/4 in)	Bigmouth Buffalo	4.1	0.7		0.2	1.2	0.8			0.2	0.6	1.11	
	Black Bullhead	20.4	89.5		210.8	80.8	24.6			55.2	161.4	91.81	
	Black Crappie	47.2	14.2		4.6	0.0	0.0			0.0	0.0	9.43	
	Bluegill	93.4	115.9		0.4	0.4	0.0			0.0	0.2	30.04	
	Channel Catfish	1.0	1.6		6.8	3.4	0.6			0.2	0.6	2.03	
	Common Carp	0.3	7.4		0.6	0.6	0.0			0.0	1.6	1.50	
	Green Sunfish	0.2	1.2		0.0	0.0	0.0			2.0	0.4	0.54	
	Largemouth Bass	0.1	0.0		0.0	0.0	0.0			0.0	0.0	0.01	
	Northern Pike	0.1	0.5		0.0	0.4	0.0			0.4	0.0	0.20	
	Orangespotted Sunfish	0.0	0.0		0.0	0.0	0.0			0.0	0.0	0.00	
	Pumpkinseed	5.0	4.1		1.4	12.4	2.6			6.0	1.2	4.67	
	Sunfish Hybrid	0.0	0.0		0.0	0.0	0.0			0.0	0.0	0.00	
	Walleye	0.5	1.2		0.6	0.8	0.6			1.6	1.0	0.90	
	White Crappie	0.0	0.0		0.0	0.0	0.0			0.0	0.0	0.00	
	White Sucker	0.2	0.0		0.2	0.2	0.0			0.0	0.0	0.09	
	Yellow Bullhead	0.1	1.3		0.0	1.0	0.0			0.2	0.4	0.43	
	Yellow Perch	1.3	0.0		0.0	0.0	1.8			0.0	0.0	0.44	
	hoop net	Black Bullhead								3.0			3.00

		CPUE										
Gear	Species	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg
hoop net	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		0.0		0.7	0.0	0.0				0.14
	Black Bullhead	8.0		56.0		35.7	10.3	4.3				22.86
	Black Crappie	20.0		0.3		0.0	0.0	0.3				4.12
	Bluegill	2.3		0.7		0.0	0.0	0.0				0.60
	Channel Catfish	1.7		37.0		15.0	13.0	4.7				14.28
	Common Carp	5.3		9.7		1.0	3.3	0.0				3.86
	Northern Pike	3.7		1.3		0.0	0.0	6.7				2.34
	Orangespotted Sunfish	0.0		0.0		0.0	0.0	0.0				0.00
	Pumpkinseed	1.7		0.3		0.0	0.3	0.0				0.46
	Sunfish Hybrid	0.0		0.0		0.0	0.0	0.0				0.00
	Walleye	7.7		3.3		1.0	0.3	0.3				2.52
	White Sucker	1.0		1.3		0.7	0.3	0.0				0.66
	Yellow Perch	12.3		3.3		1.7	1.3	5.3				4.78

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										
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
AFS std frame net	Black Bullhead	PSD									100		
		PSD-P									52		
	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
		PSD-P									83	0	5
	Channel Catfish	PSD									100	100	100
		PSD-P									0	6	6
		Wr									104	105	108
	Common Carp	PSD									100	100	38
		PSD-P									75	100	15
	Green Sunfish	PSD										0	
		PSD-P										0	
		Wr										112	
	Northern Pike	PSD									67	100	30
		PSD-P									0	0	0
		Wr									87	77	89
	Walleye	PSD									40	27	93
		PSD-P									20	7	0
		Wr									89	91	91
	Yellow Perch	PSD									80	100	19
		PSD-P									4	17	10
		Wr									96	96	104
frame net (std 3/4 in)	Bigmouth Buffalo	PSD	100		100		100	0	100			100	100
		PSD-P	10		29		100	0	25			0	33
		Wr	81		79		90						
	Black Bullhead	PSD	97		28		84	98	100			55	49
		PSD-P	12		1		0	3	28			18	18
		Wr	88		93		102						

Gear	Species	Index	Year									
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
frame net (std 3/4 in)	Channel Catfish	PSD	10		38		97	100	100		100	100
		PSD-P	0		0		0	0	0		0	0
		Wr	83		90		101	109	103		110	108
	Common Carp	PSD	67		4		33	33				63
		PSD-P	33		0		33	0				25
		Wr	78		106		105					
	Green Sunfish	PSD	50		58						50	50
		PSD-P	50		0						0	0
		Wr	115		104						121	95
	Northern Pike	PSD	100		100				100		50	
		PSD-P	0		0				50		0	
		Wr	77		93				95		82	
	Walleye	PSD	60		17		33	25	0		0	100
		PSD-P	60		0		0	25	0		0	0
		Wr	81		76		82	76	81		85	92
	Yellow Bullhead	PSD	100		100				100		100	100
		PSD-P	0		23				100		100	100
		Wr	79		101							
	Yellow Perch	PSD	0							33		
		PSD-P	0							0		
		Wr	82							101		
hoop net	Black Bullhead	PSD							100			
		PSD-P							22			
	Green Sunfish	PSD							100			
		PSD-P							0			
		Wr							118			
std exp gill net	Bigmouth Buffalo	PSD					100					
		PSD-P					50					
		Wr					81					
	Black Bullhead	PSD	71		7		97	74	77			
		PSD-P	0		0		2	0	8			
		Wr	88		93		94					
	Channel Catfish	PSD	40		5		87	97	100			
		PSD-P	0		1		2	0	0			
		Wr	107		86		101	99	106			
	Common Carp	PSD	19		14		100	50				

Gear	Species	Index	Year									
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
std exp gill net	Common Carp	PSD-P	6		3		33	10				
		Wr	90		95		101					
	Northern Pike	PSD	82		75					85		
		PSD-P	0		0					0		
		Wr	81		94					79		
	Walleye	PSD	43		0		0	0	0			
		PSD-P	39		0		0	0	0			
		Wr	82		73		77	77	85			
	Yellow Perch	PSD	0		90		80	100	38			
		PSD-P	0		0		0	0	6			
		Wr	92		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)		
2010	28	221 (5)	336 (13)		547 (2)	546 (4)	653 (1)	604 (3)			

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)					
2010	37		146 (37)								

Fish Condition

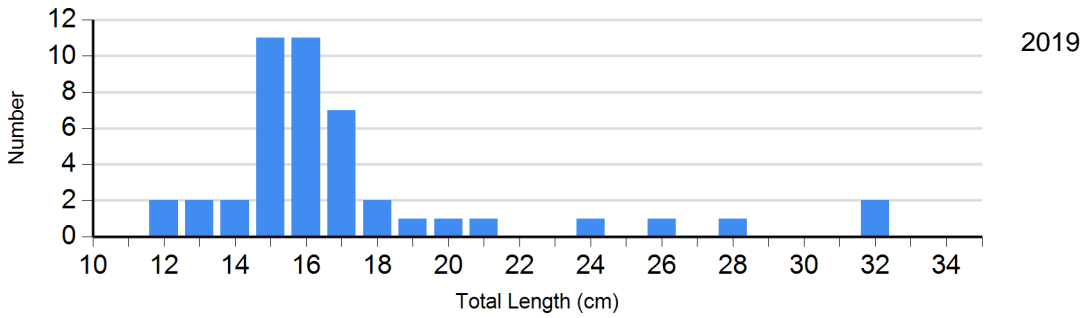
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Channel Catfish Gill Net	2015	1	103	38	99 (1.2)	0		0	
	2016	0		14	106 (1.6)	0		0	
	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
Northern Pike Gill Net	2016	3	78 (4.8)	17	79 (3.2)	0		0	
	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	
Walleye Gill Net	2015	1	77	0		0		0	
	2016	1	85	0		0		0	
	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	
Yellow Perch Gill Net	2015	0		4	111 (6.1)	0		0	
	2016	10	96 (3.7)	5	90 (7.7)	1	101	0	
	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	

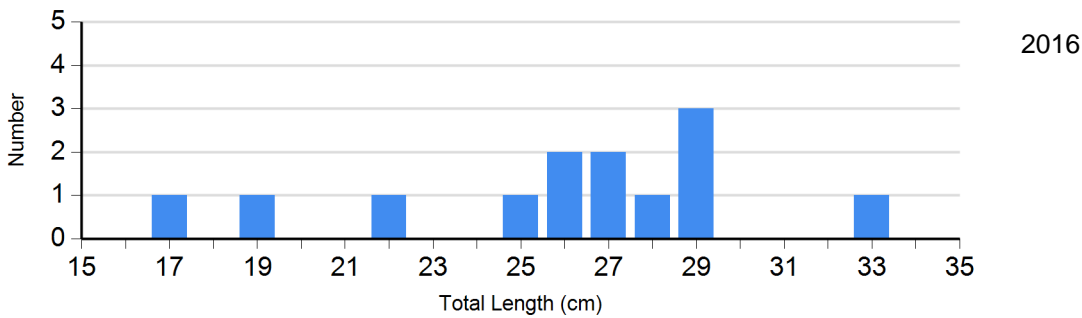
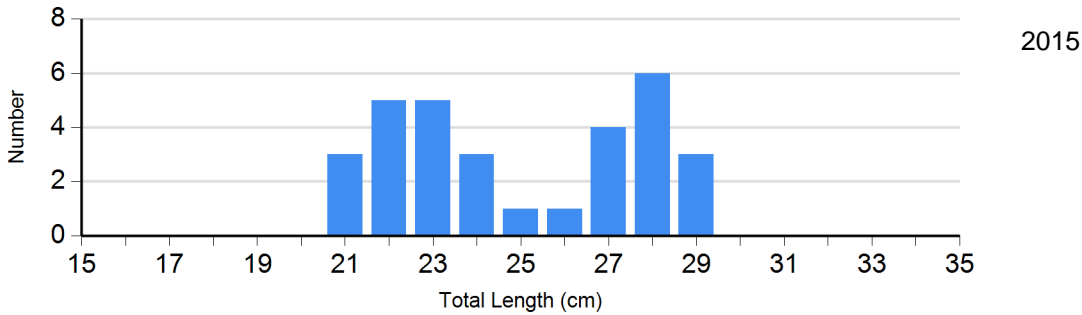
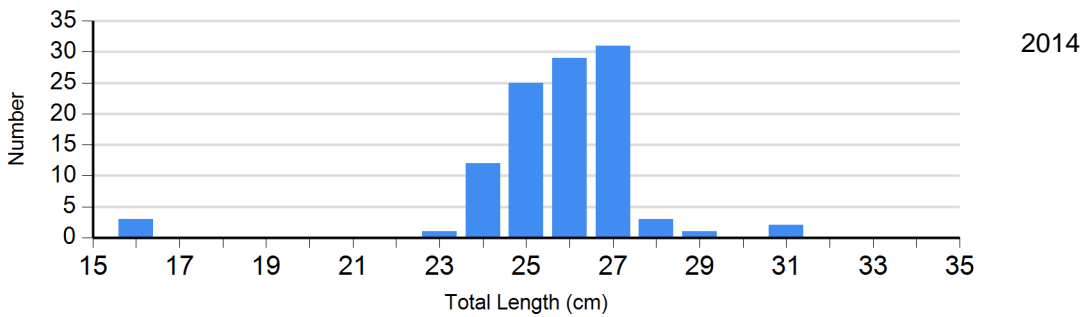
Length Frequency Distribution

Length frequency histogram of species sampled by year.

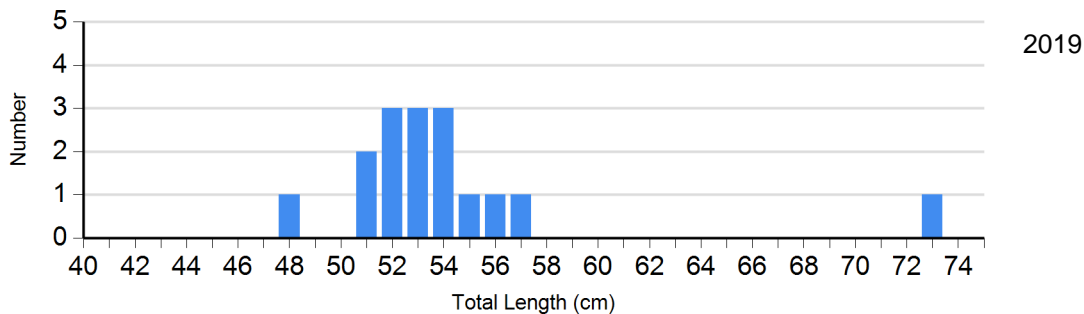
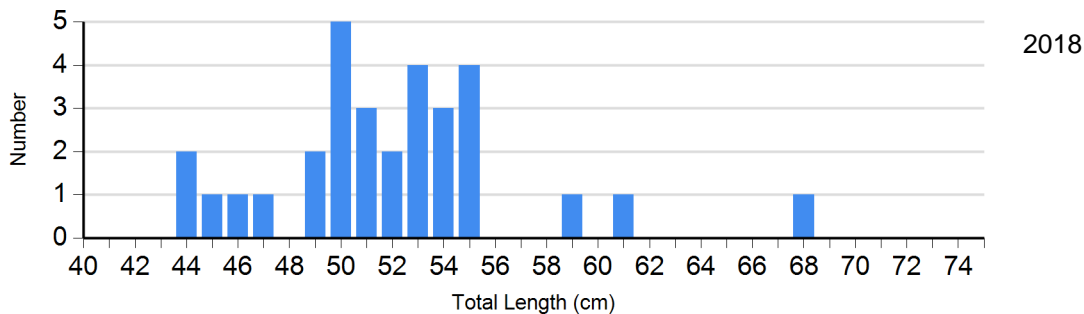
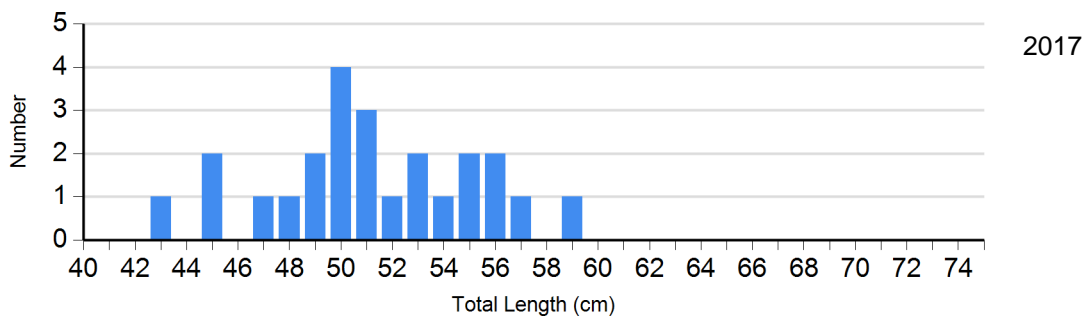
Species: Black Bullhead
Gear: AFS std gill net



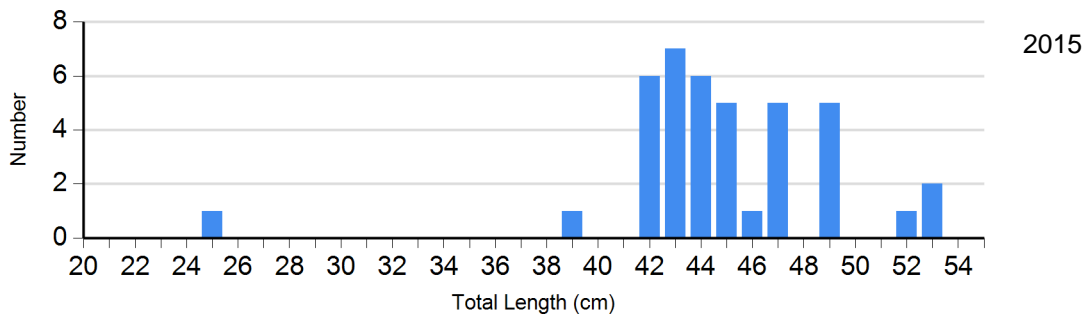
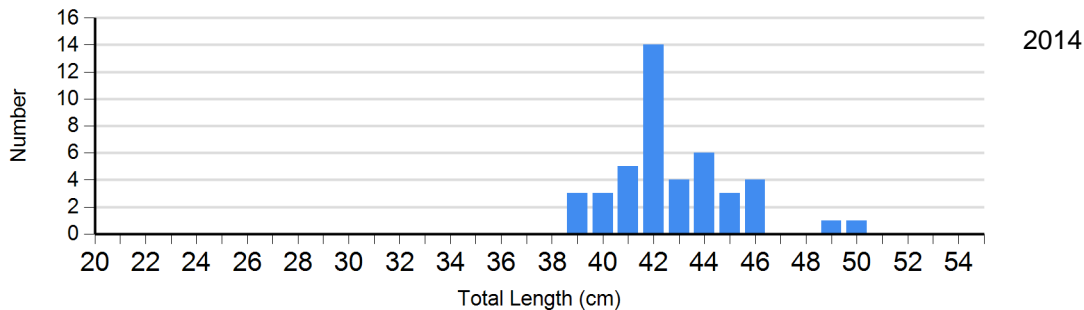
Species: Black Bullhead
Gear: std exp gill net

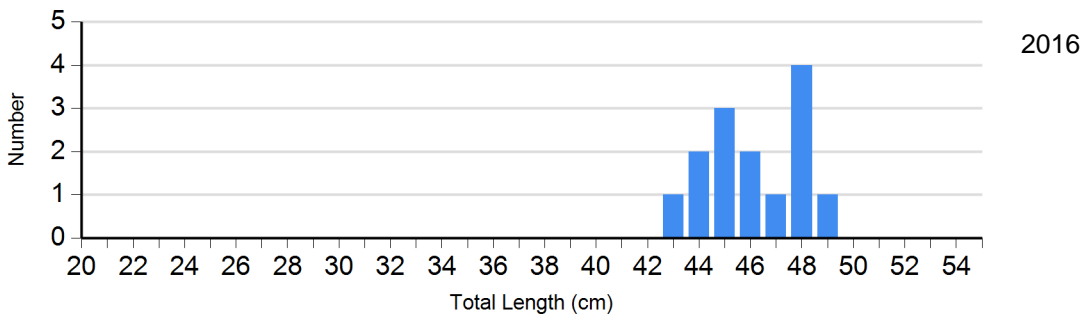


Species: Channel Catfish
 Gear: AFS std gill net

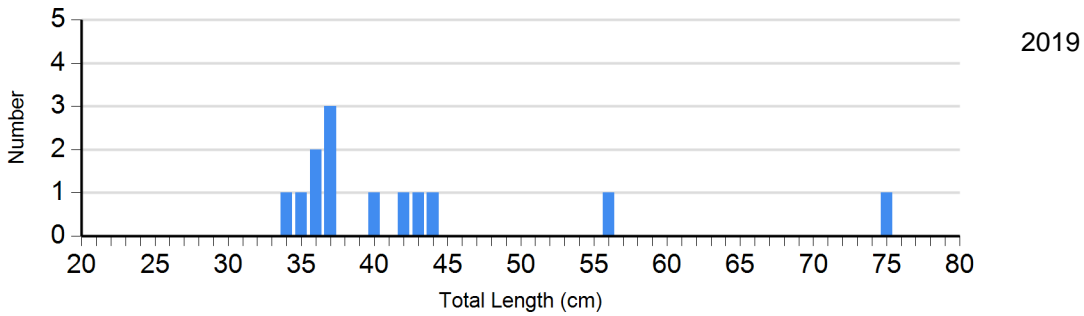


Species: Channel Catfish
 Gear: std exp gill net

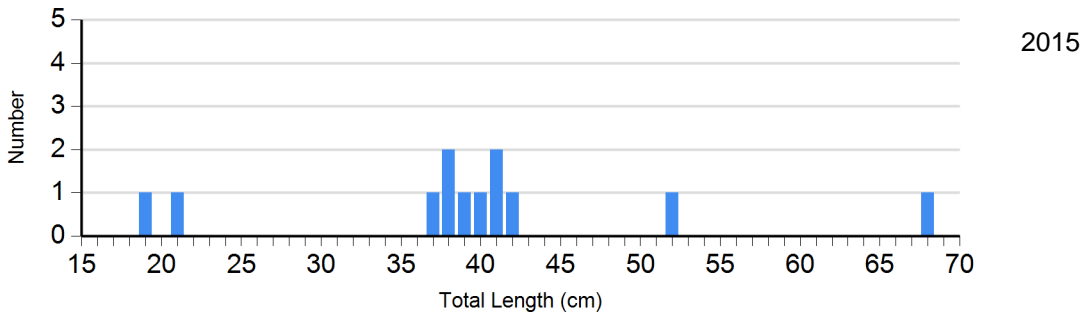




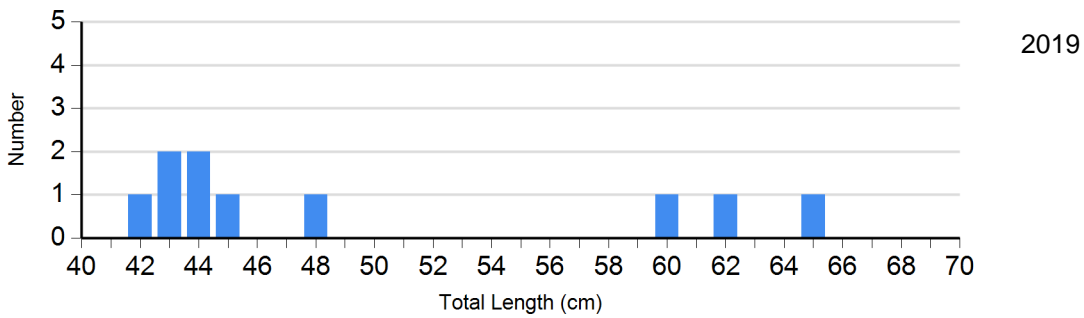
Species: Common Carp
Gear: AFS std gill net



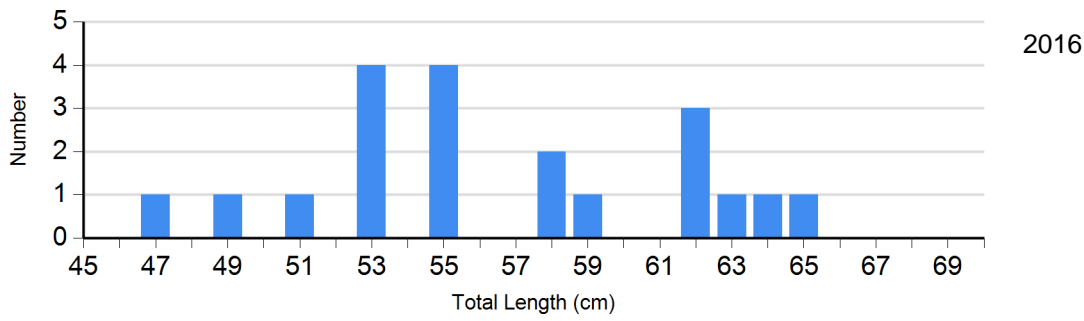
Species: Common Carp
Gear: std exp gill net



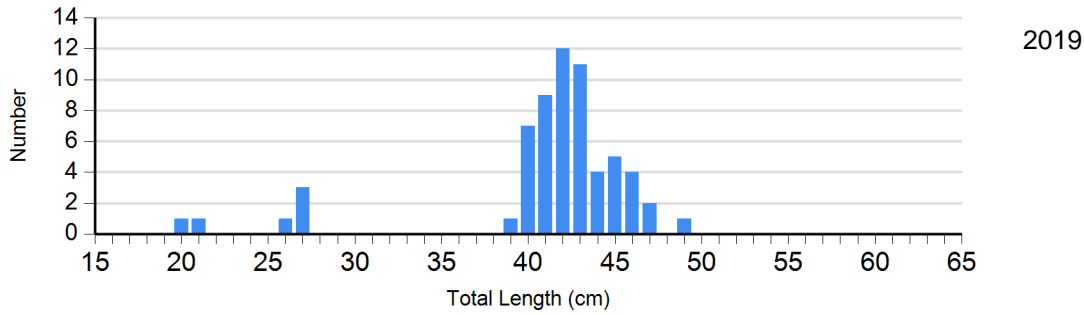
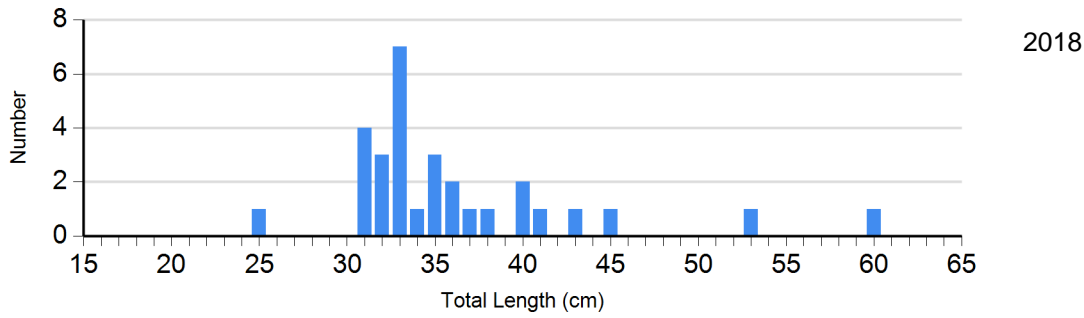
Species: Northern Pike
Gear: AFS std gill net



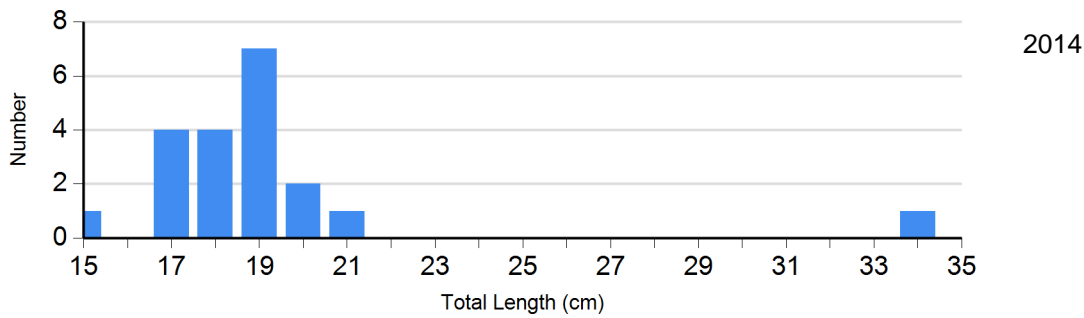
Species: Northern Pike
Gear: std exp gill net

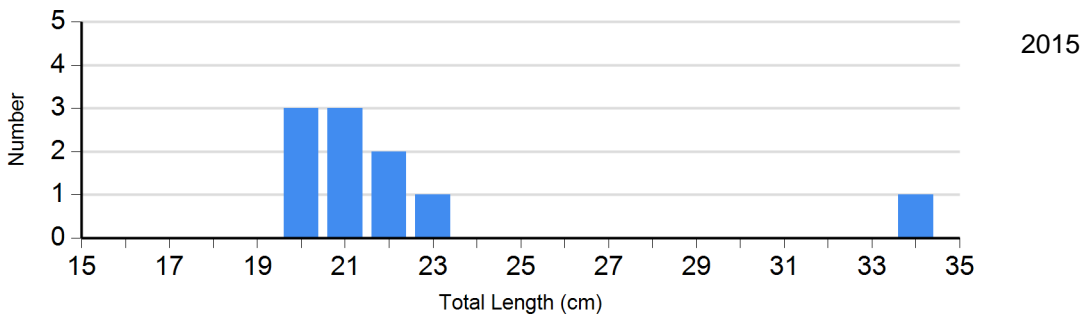


Species: Walleye
Gear: AFS std gill net

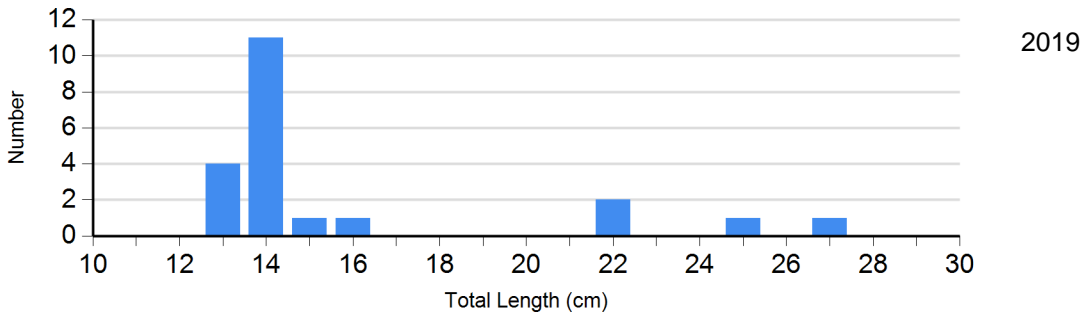
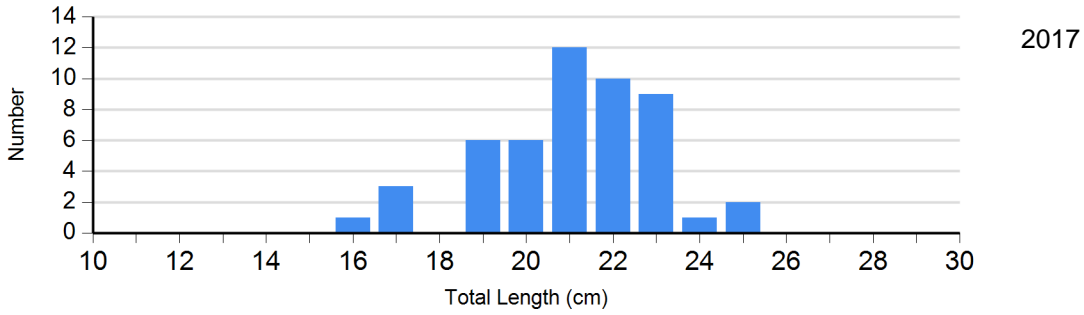


Species: Walleye
Gear: std exp gill net

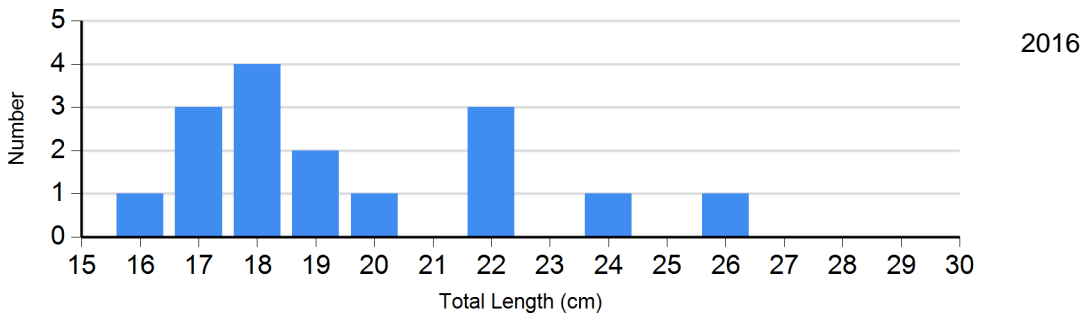




Species: Yellow Perch
Gear: AFS std gill net



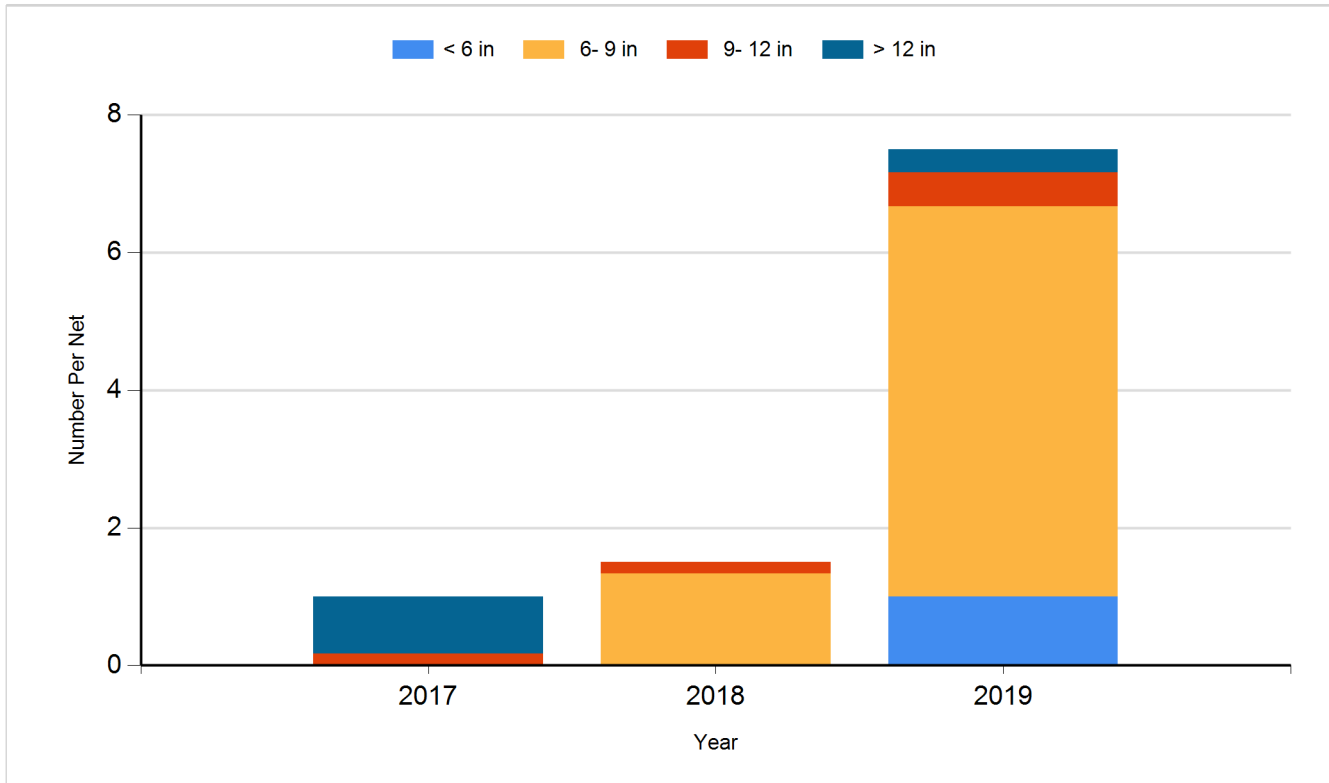
Species: Yellow Perch
Gear: std exp gill net



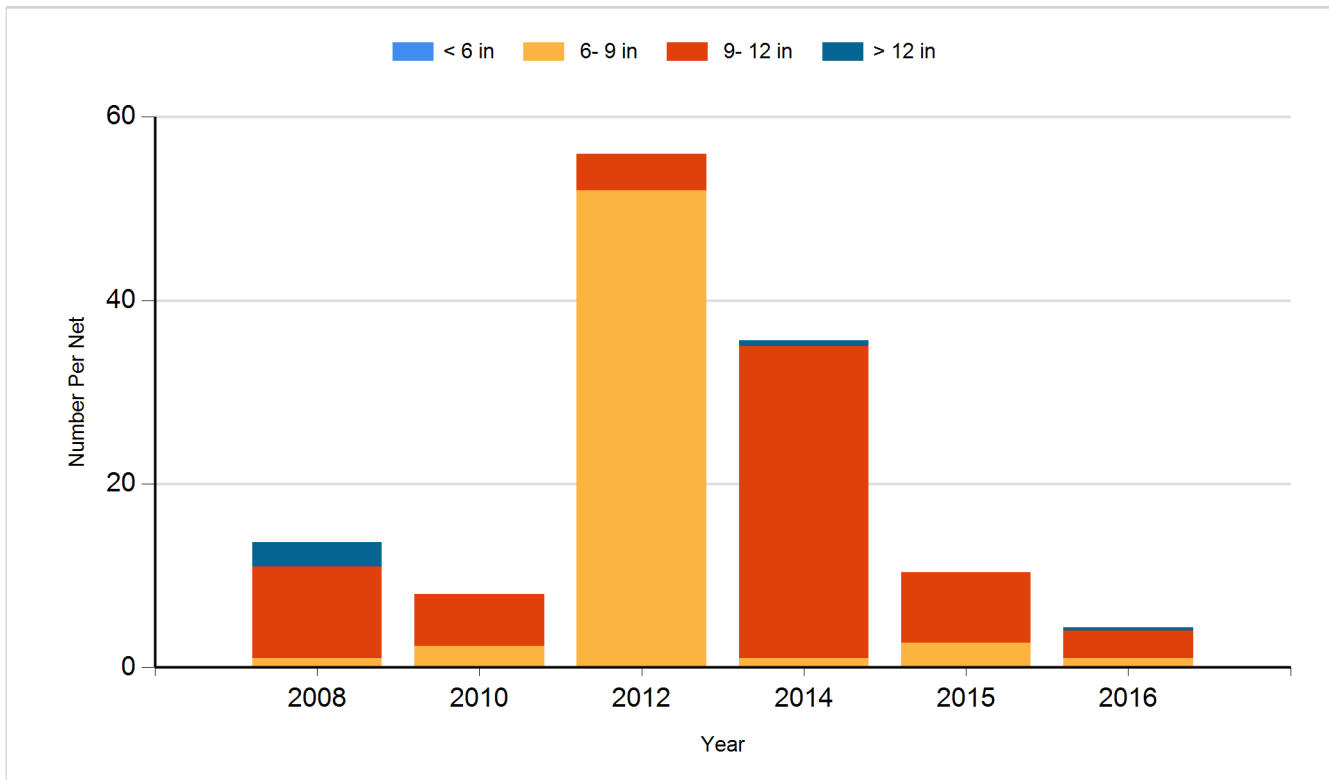
Historic Fish Sizes and Relative Abundance

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

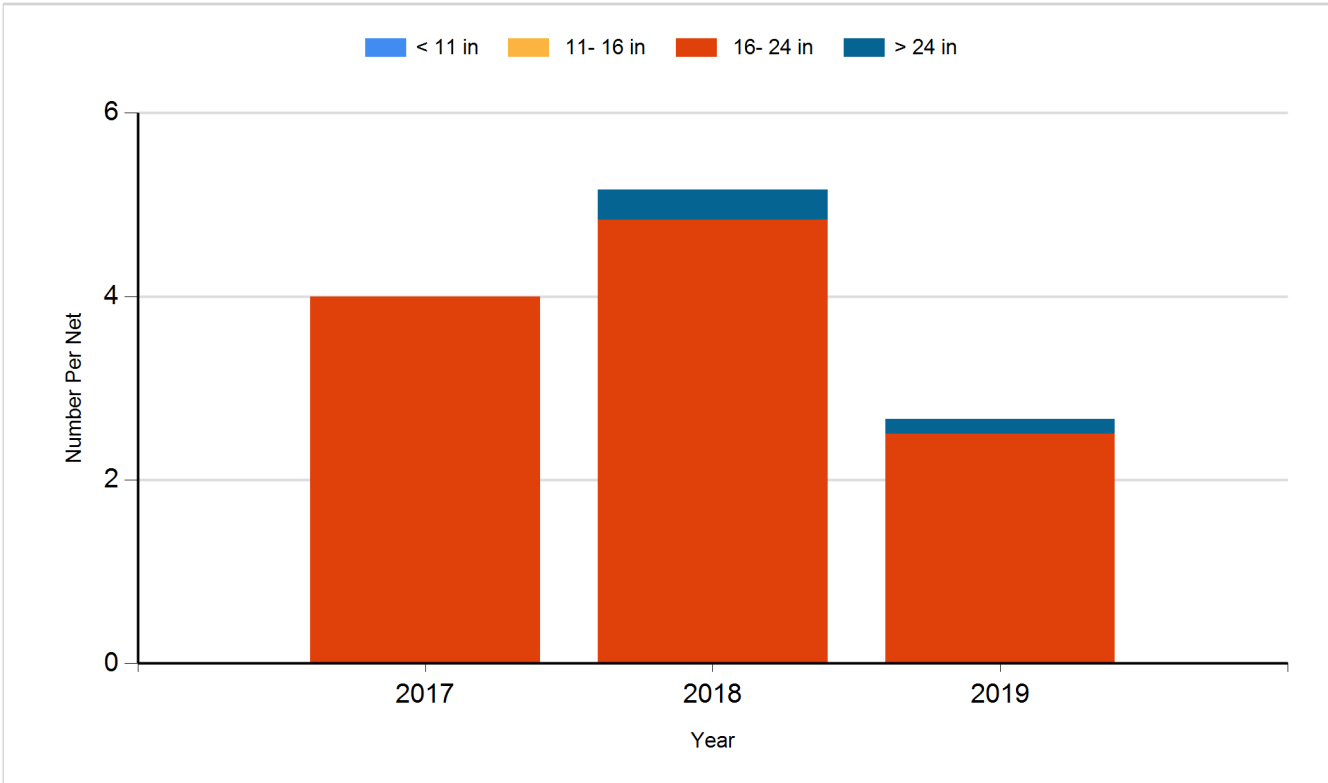
Species: Black Bullhead
Gear: AFS std gill net



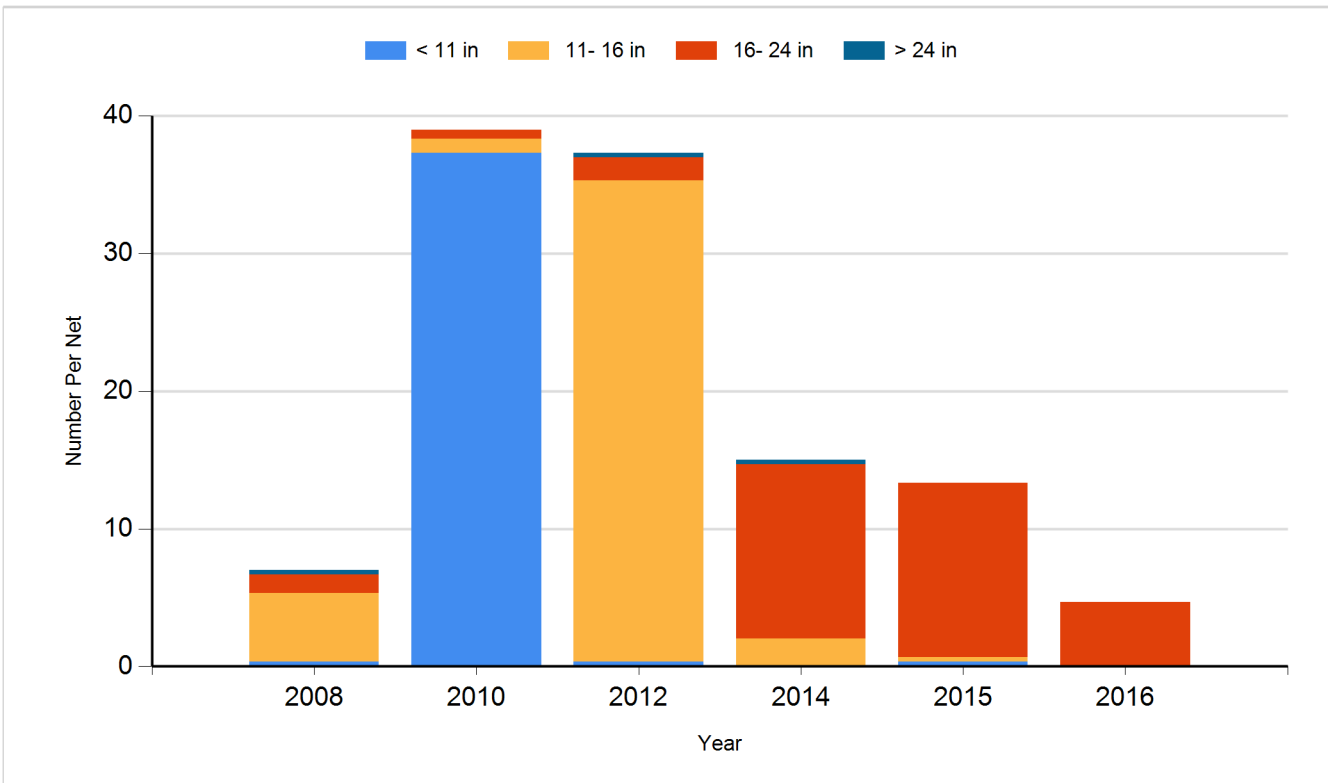
Species: Black Bullhead
Gear: std exp gill net



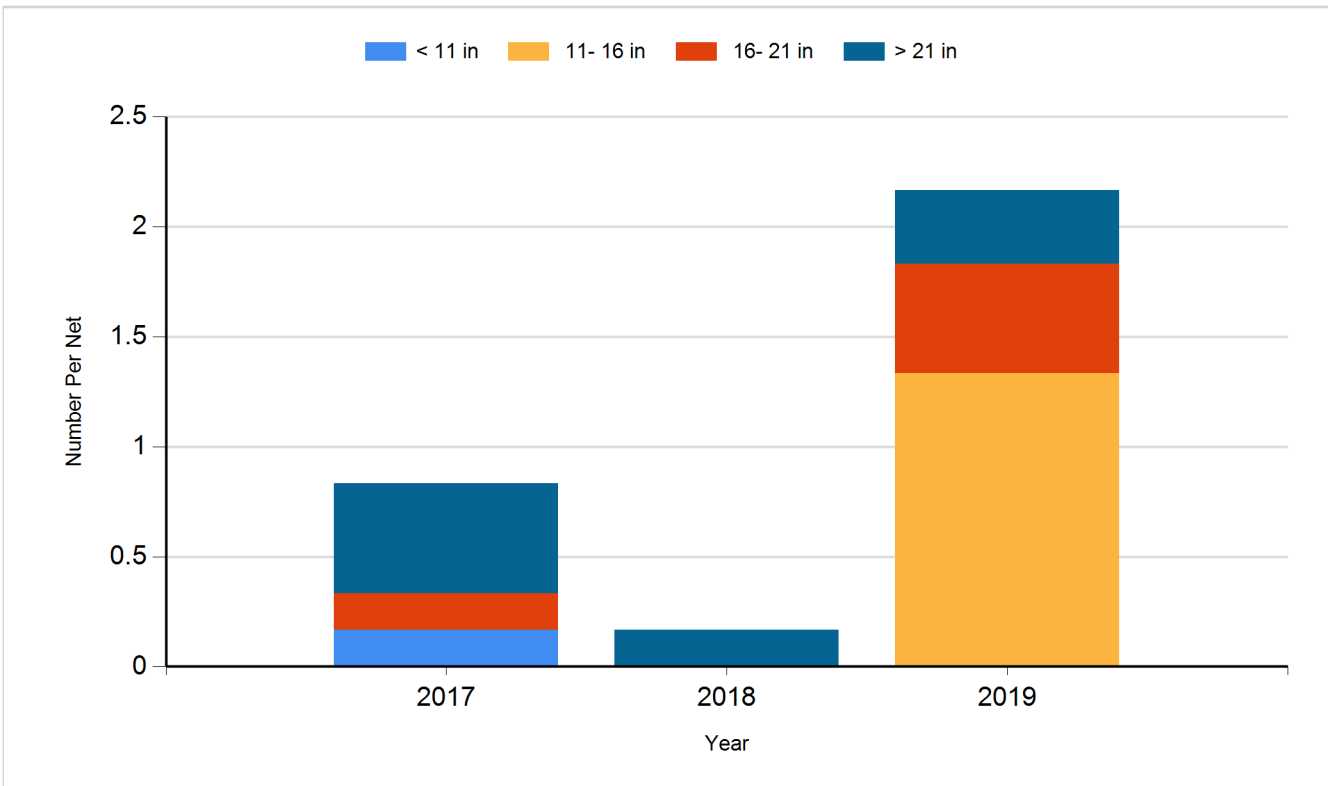
Species: Channel Catfish
Gear: AFS std gill net



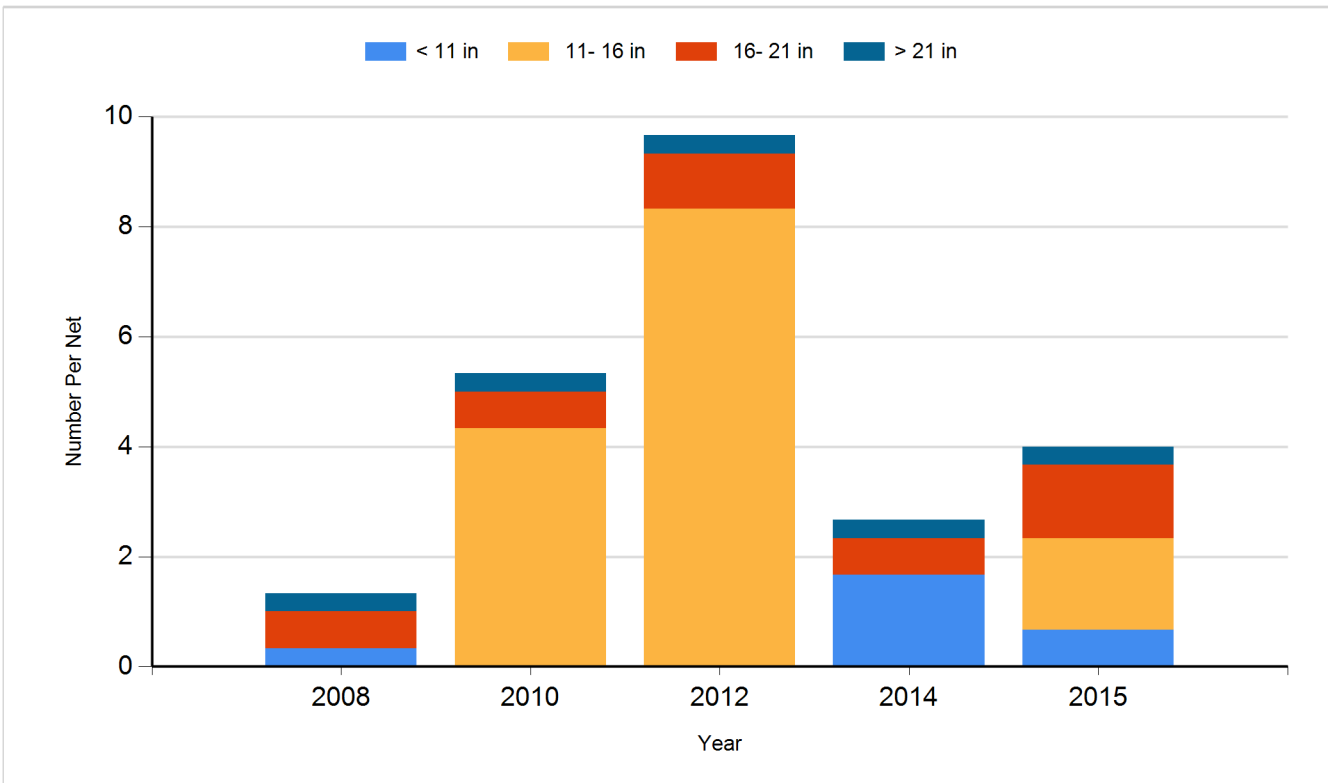
Species: Channel Catfish
Gear: std exp gill net



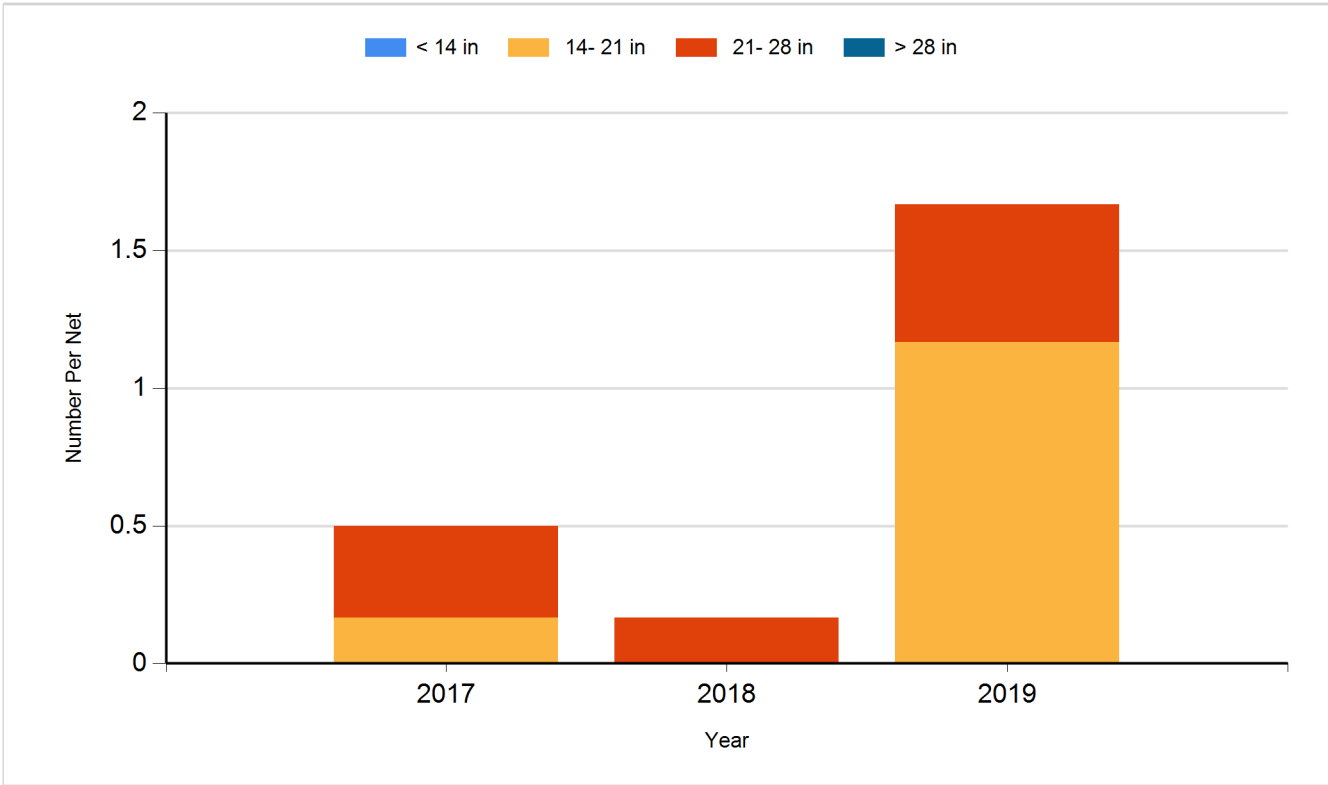
Species: Common Carp
Gear: AFS std gill net



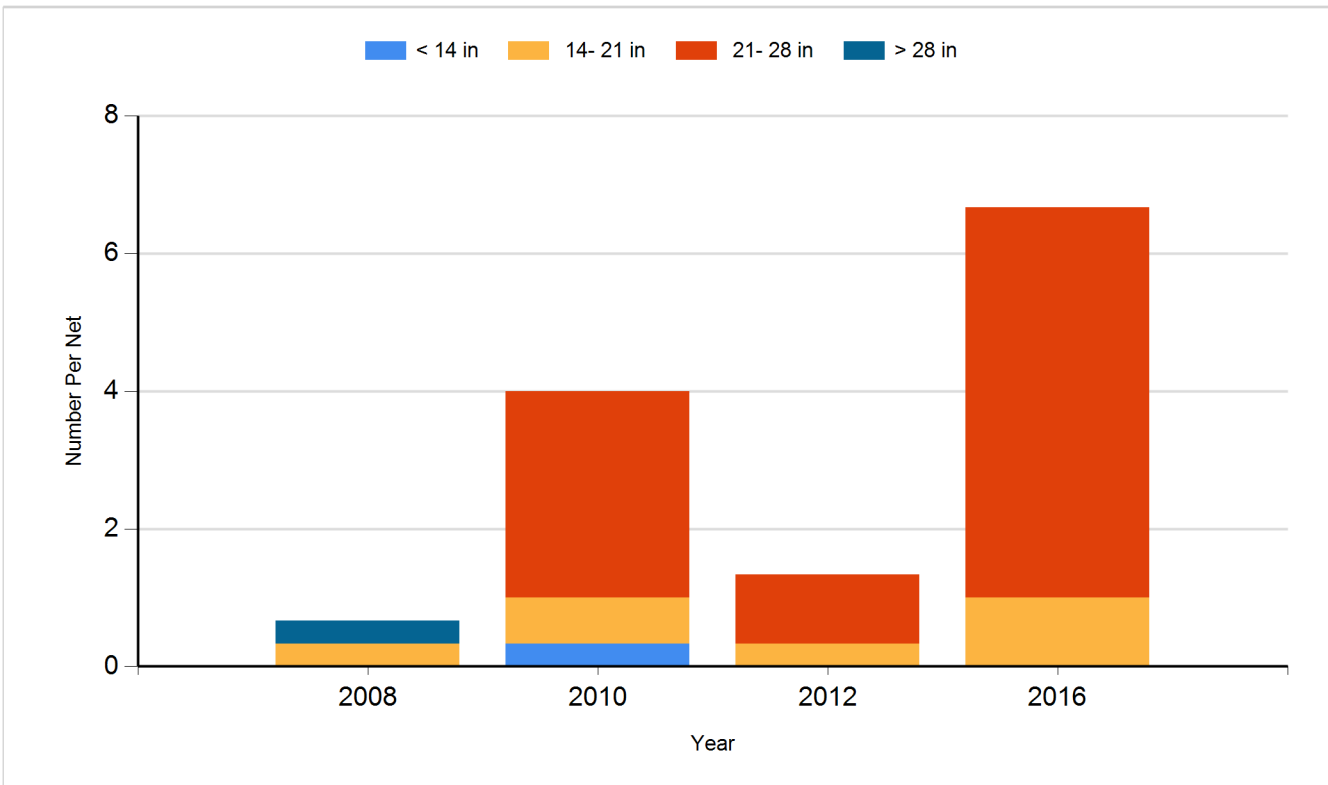
Species: Common Carp
Gear: std exp gill net



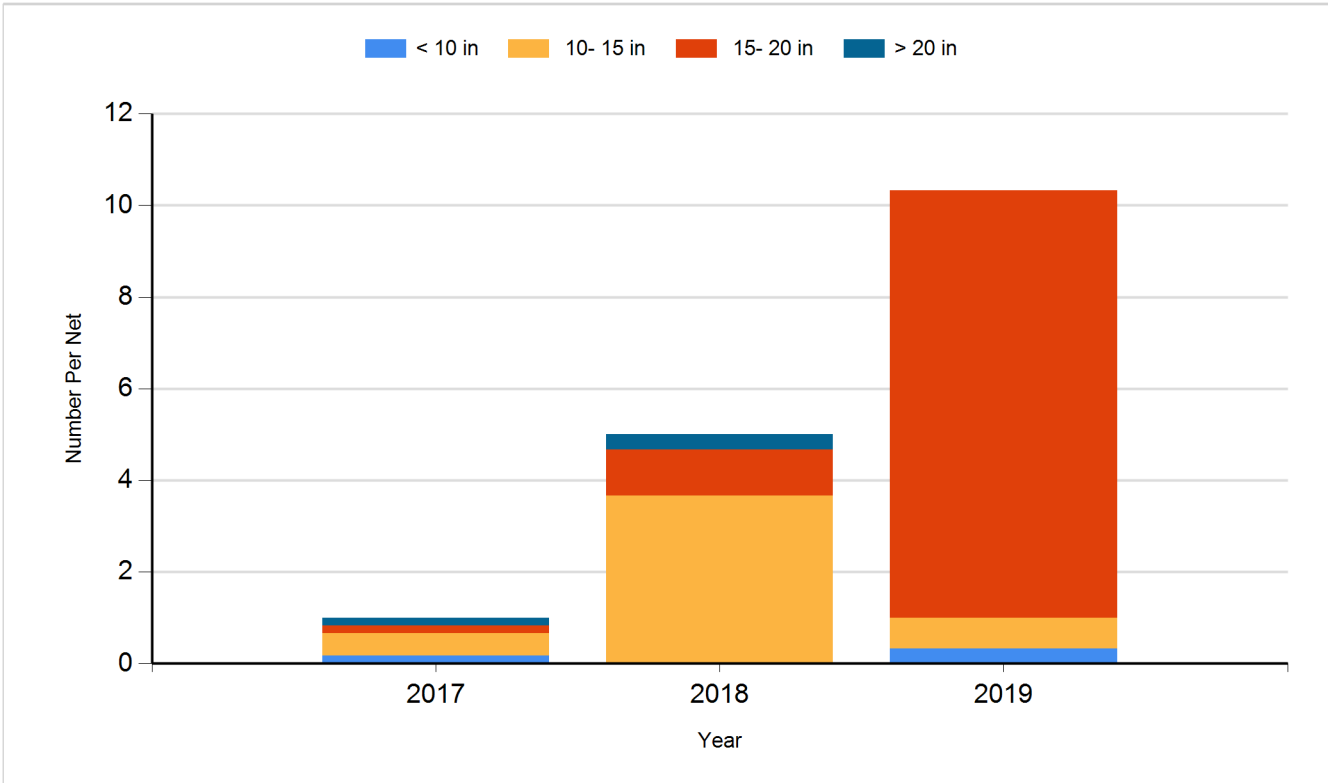
Species: Northern Pike
Gear: AFS std gill net



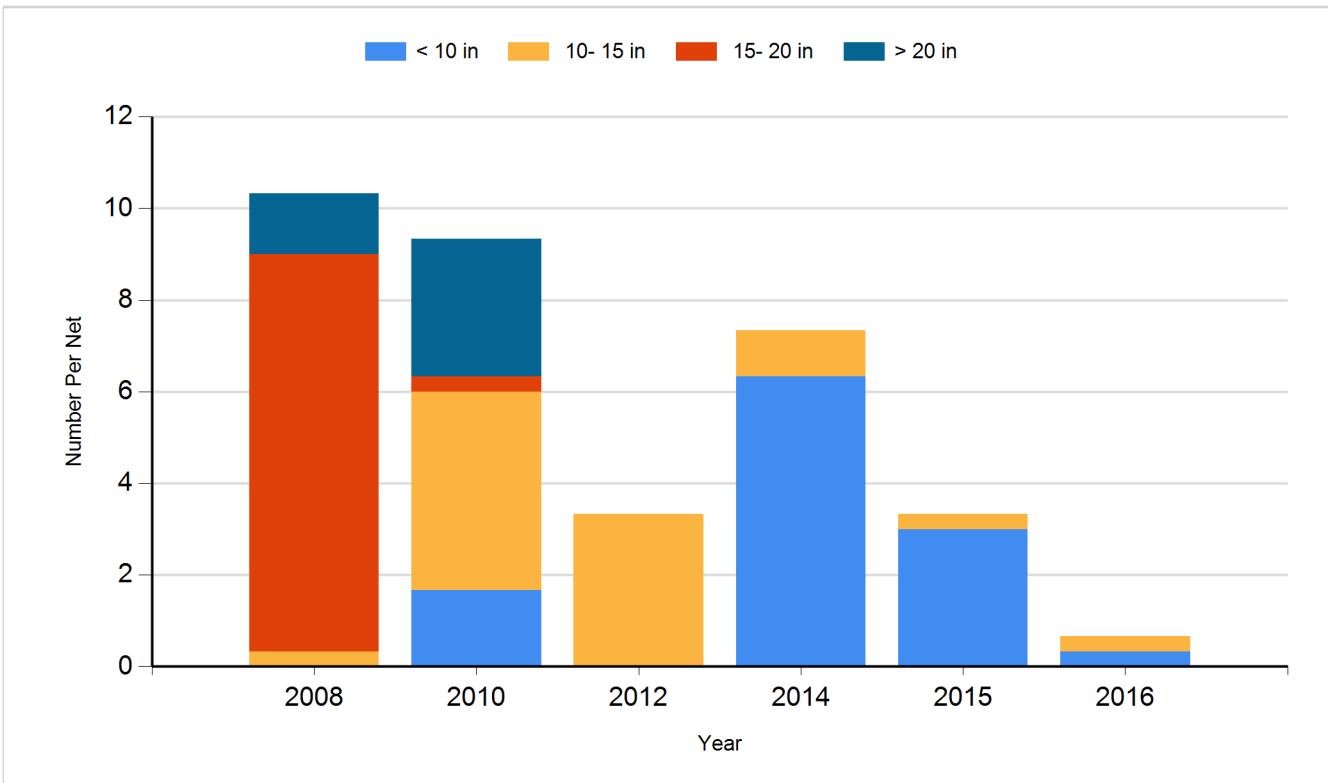
Species: Northern Pike
Gear: std exp gill net



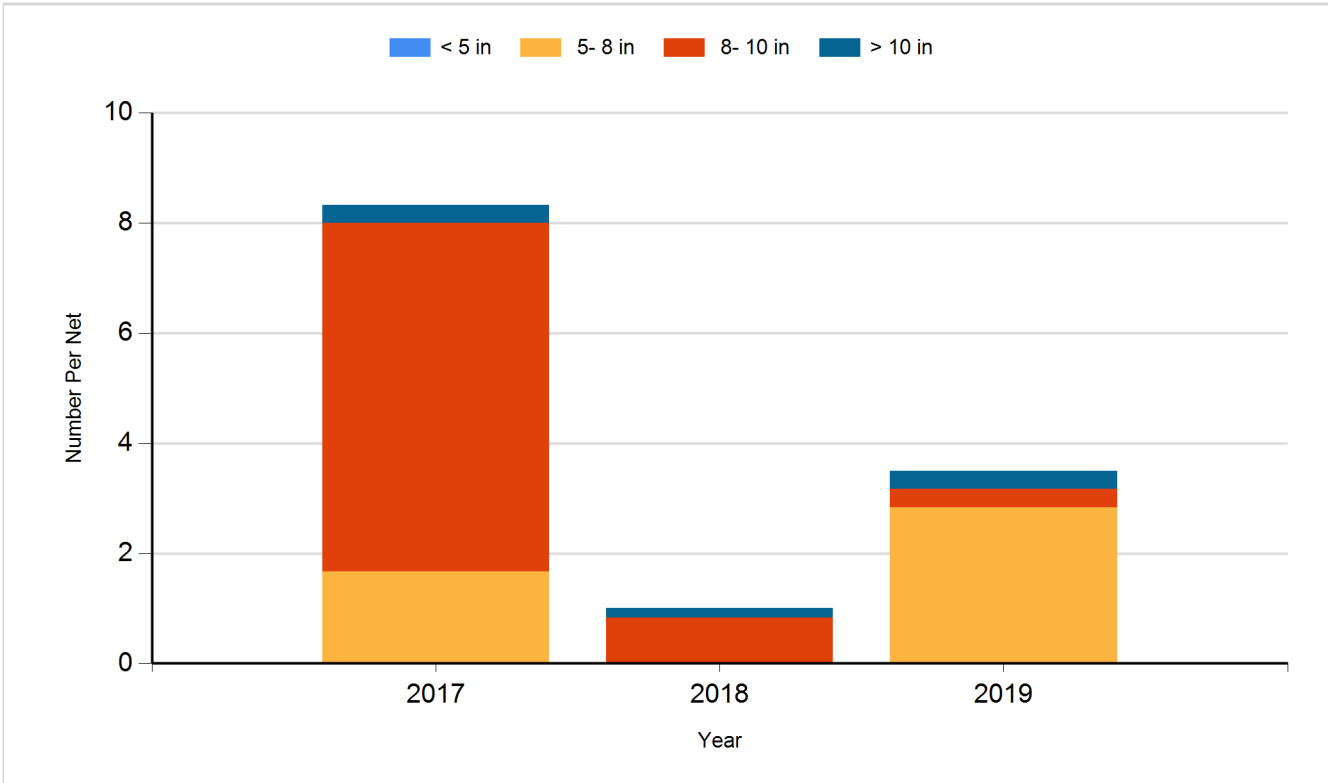
Species: Walleye
Gear: AFS std gill net



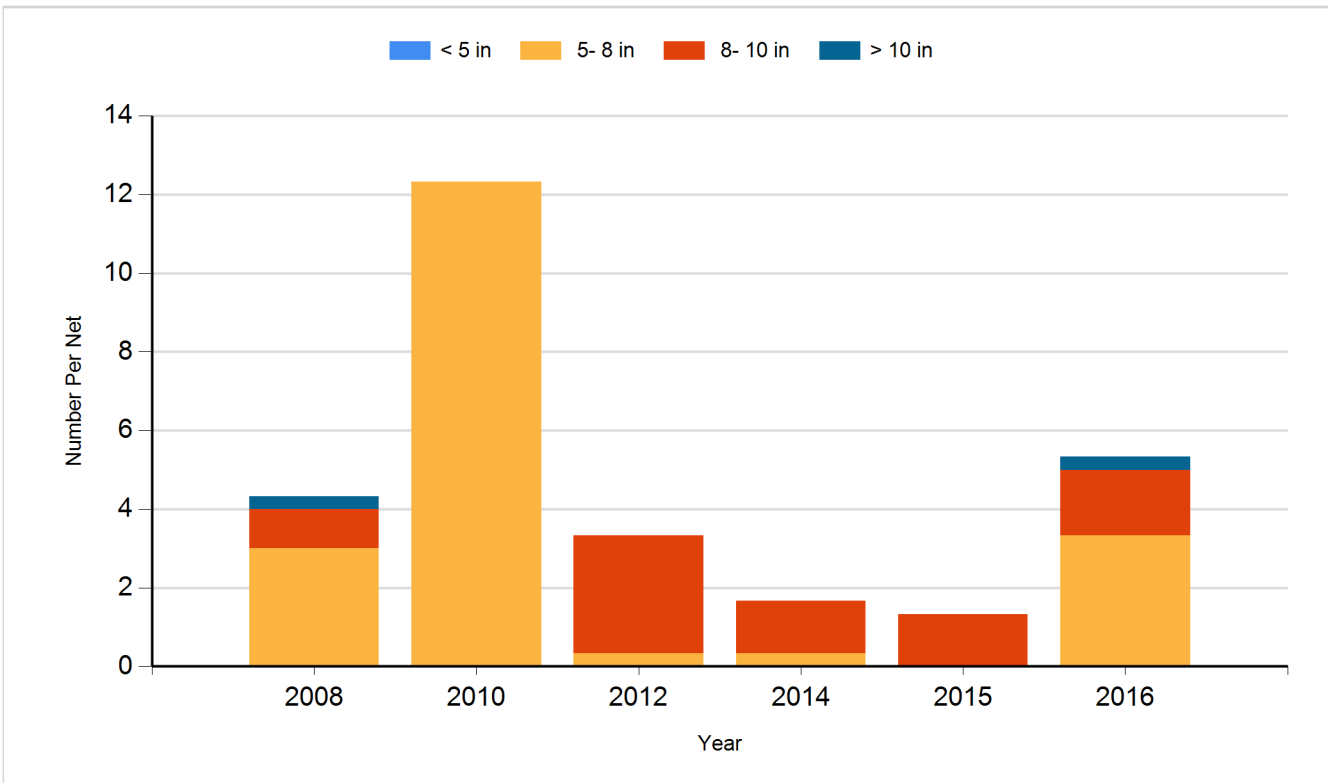
Species: Walleye
Gear: std exp gill net



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
2008	Walleye	Large Fingerling	2,472
2009	Walleye	Adult	292
2009	Walleye	Large Fingerling	1,800
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