

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Wall, Minnehaha County

LBS-Lake-95-000

2018

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 29, 2018	3 net-nights
AFS std gill net	May 30, 2018	3 net-nights
frame net (std 3/4 in)	May 29, 2018	5 net-nights

Common Fish Species Present

Walleye

Black Bullhead

Pumpkinseed

Channel Catfish

Green Sunfish

White Sucker

Yellow Perch

Northern Pike

Common Carp

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	Bigmouth Buffalo	1	0.2	0.2	100		0		
	Black Bullhead	9	1.5	0.7	11		0		
	Channel Catfish	31	5.2	2.9	100		6	105	2
	Common Carp	1	0.2	0.2	100		100		
	Green Sunfish	1	0.2	0.2	0		0	112	
	Northern Pike	1	0.2	0.2	100		0	77	
	Pumpkinseed	1	0.2	0.2	0		0	113	
	Walleye	30	5.0	2.2	27	13	7	91	6
	White Sucker	6	1.0	0.5	100		83		
	Yellow Perch	6	1.0	1.0	100		17	96	5
frame net (std 3/4 in)	Bigmouth Buffalo	1	0.2	0.3	100		0		
	Black Bullhead	282	56.4	30.0	64	4	18	3	
	Channel Catfish	1	0.2	0.3	100		0	110	
	Green Sunfish	10	2.0	0.5	50	28	0	121	3
	Northern Pike	2	0.4	0.4	50		0	82	2
	Orangespotted Sunfish	3	0.0	0.0					
	Pumpkinseed	30	6.0	4.4	63	14	7	118	2
	Sunfish Hybrid	3	0.0	0.0					
	Walleye	8	1.6	1.0	0		0	85	3
	Yellow Bullhead	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.

Gear	Species	CPUE										Avg	
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
AFS std frame net	Black Bullhead									5.0		5.0	
	Bluegill									0.2		0.2	
	Pumpkinseed									7.4		7.4	
	Sunfish Hybrid									0.0		0.0	
	Yellow Perch									0.6		0.6	
AFS std gill net	Bigmouth Buffalo										0.2	0.2	
	Black Bullhead									1.0	1.5	1.3	
	Channel Catfish									4.0	5.2	4.6	
	Common Carp									0.7	0.2	0.5	
	Green Sunfish										0.2	0.2	
	Northern Pike									0.5	0.2	0.4	
	Pumpkinseed										0.2	0.2	
	Walleye									0.8	5.0	2.9	
	White Sucker									0.3	1.0	0.7	
	Yellow Perch									8.3	1.0	4.7	
frame net (std 3/4 in)	Bigmouth Buffalo	4.1		0.7		0.2	1.2	0.8			0.2	1.2	
	Black Bullhead	20.4		89.5		210.8	80.8	24.6			56.4	80.4	
	Black Crappie	47.2		14.2		4.6						22.0	
	Bluegill	93.4		115.9		0.4	0.4					52.5	
	Channel Catfish	1.0		1.6		6.8	3.4	0.6			0.2	2.3	
	Common Carp	0.3		7.4		0.6	0.6					2.2	
	Green Sunfish	0.2		1.2							2.0	1.1	
	Largemouth Bass	0.1										0.1	
	Northern Pike	0.1		0.5			0.4				0.4	0.4	
	Orangespotted Sunfish			0.0							0.0	0.0	
	Pumpkinseed	5.0		4.1		1.4	12.4	2.6			6.0	5.3	
	Sunfish Hybrid	0.0		0.0		0.0		0.0			0.0	0.0	
	Walleye	0.5		1.2		0.6	0.8	0.6			1.6	0.9	
	White Crappie							0.0				0.0	
	White Sucker		0.2				0.2	0.2				0.2	
	Yellow Bullhead		0.1		1.3			1.0			0.2	0.7	
	Yellow Perch		1.3							1.8		1.6	
	hoop net	Black Bullhead									3.0		3.0
		Green Sunfish									0.3		0.3

		CPUE										
Gear	Species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg
hoop net	Pumpkinseed								3.7			3.7
	Sunfish Hybrid								0.0			0.0
std exp gill net	Bigmouth Buffalo						0.7					0.7
	Black Bullhead		8.0		56.0		35.7	10.3	4.3			22.9
	Black Crappie		20.0		0.3				0.3			6.9
	Bluegill		2.3		0.7							1.5
	Channel Catfish		1.7		37.0		15.0	13.0	4.7			14.3
	Common Carp		5.3		9.7		1.0	3.3				4.8
	Northern Pike		3.7		1.3				6.7			3.9
	Pumpkinseed		1.7		0.3				0.3			0.8
	Sunfish Hybrid				0.0							0.0
	Walleye		7.7		3.3		1.0	0.3	0.3			2.5
	White Sucker		1.0		1.3		0.7	0.3				0.8
	Yellow Perch		12.3		3.3		1.7	1.3	5.3			4.8

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										
			2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
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
		PSD-P										83	0
	Channel Catfish	PSD										100	100
		PSD-P										0	6
		Wr										104	105
	Common Carp	PSD										100	100
		PSD-P										75	100
		Wr											
	Green Sunfish	PSD											0
		PSD-P											0
		Wr											112
	Northern Pike	PSD										67	100
		PSD-P										0	0
		Wr										87	77
	Walleye	PSD										40	27
		PSD-P										20	7
		Wr										89	91
	White Sucker	PSD										100	100
PSD-P											100	83	
Wr													
Yellow Perch	PSD										80	100	
	PSD-P										4	17	
	Wr										96	96	
frame net (std 3/4 in)	Bigmouth Buffalo	PSD		100		100		100		0	100		100
		PSD-P		10		29		100		0	25		0
		Wr		81		79		90					
	Black Bullhead	PSD		97		28		84		98	100		64

Gear	Species	Index	Year									
			2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
frame net (std 3/4 in)	Black Bullhead	PSD-P		12		1		0	3	28		18
		Wr		88		93		102				
	Channel Catfish	PSD		10		38		97	100	100		100
		PSD-P		0		0		0	0	0		0
		Wr		83		90		101	109	103		110
		PSD		67		4		33	33			
	Common Carp	PSD-P		33		0		33	0			
		Wr		78		106		105				
	Green Sunfish	PSD		50		58						50
		PSD-P		50		0						0
		Wr		115		104						121
		PSD		100		100			100			50
	Northern Pike	PSD-P		0		0			50			0
		Wr		77		93			95			82
	Walleye	PSD		60		17		33	25	0		0
		PSD-P		60		0		0	25	0		0
		Wr		81		76		82	76	81		85
		PSD		100				100	100			
	White Sucker	PSD-P		100				100	100			
		Wr		104				75				
	Yellow Perch	PSD		0							33	
PSD-P			0							0		
	Wr		82							101		
	PSD									100		
hoop net	Black Bullhead	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		

Gear	Species	Index	Year											
			2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
std exp gill net	Channel Catfish	Wr		107		86		101	99	106				
		Common Carp	PSD		19		14		100	50				
			PSD-P		6		3		33	10				
	Northern Pike		Wr		90		95		101					
			PSD		82		75					85		
			PSD-P		0		0					0		
	Walleye		Wr		81		94					79		
			PSD		43		0		0	0	0			
			PSD-P		39		0		0	0	0			
	White Sucker		Wr		82		73		77	77	85			
			PSD		100		100		100	0				
			PSD-P		100		100		100	0				
	Yellow Perch		Wr		103		105		103					
			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

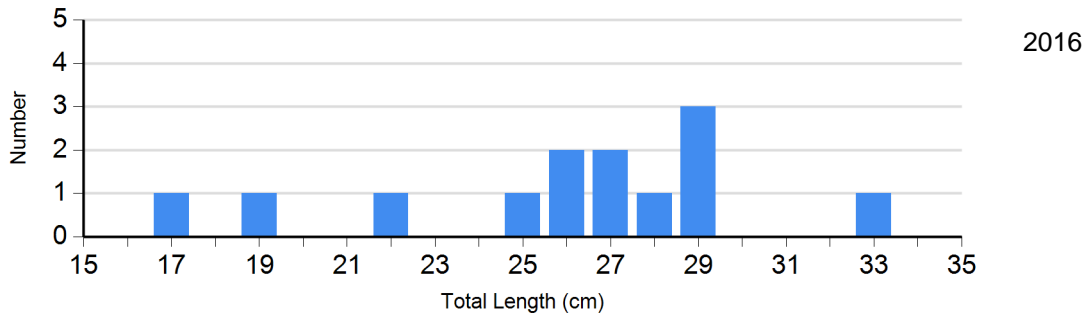
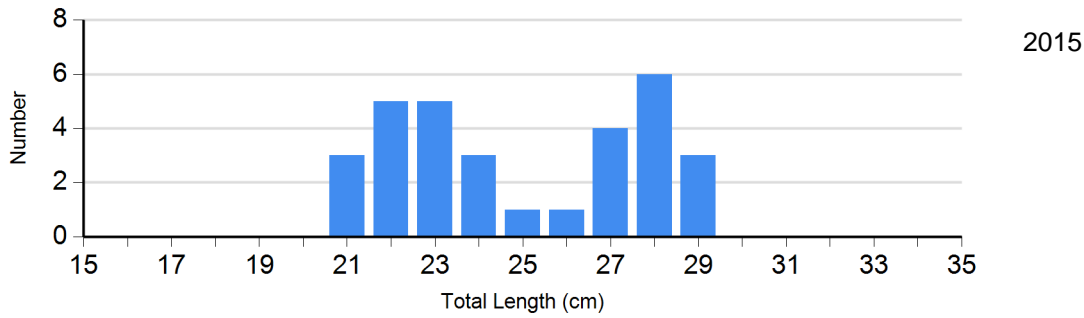
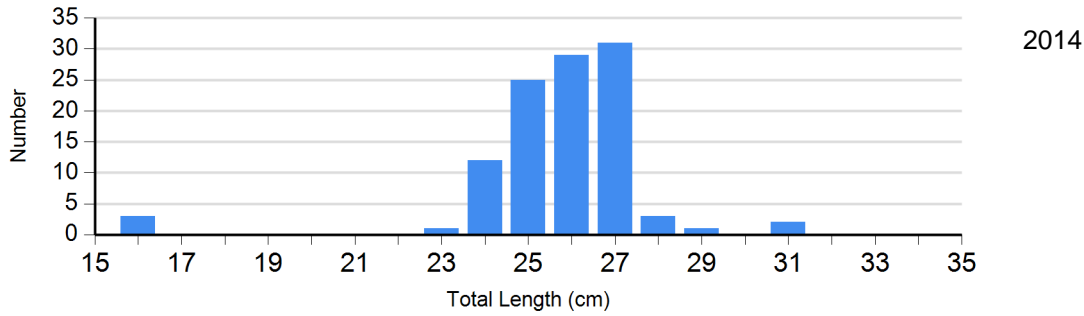
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Bullhead Gill Net	2014	3	94	102	96 (1.1)	2	49 (1.7)	0	
Channel Catfish Gill Net	2014	6	103 (3.1)	38	101 (1.4)	1	83	0	
	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	
Common Carp Gill Net	2014	0		2	101 (0.6)	1	100	0	
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	
Walleye Gill Net	2014	3	77 (1.9)	0		0		0	
	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	
White Sucker Gill Net	2014	0		0		0		2	103 (5.1)
Yellow Perch Gill Net	2014	1	97	4	103 (4.2)	0		0	
	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	

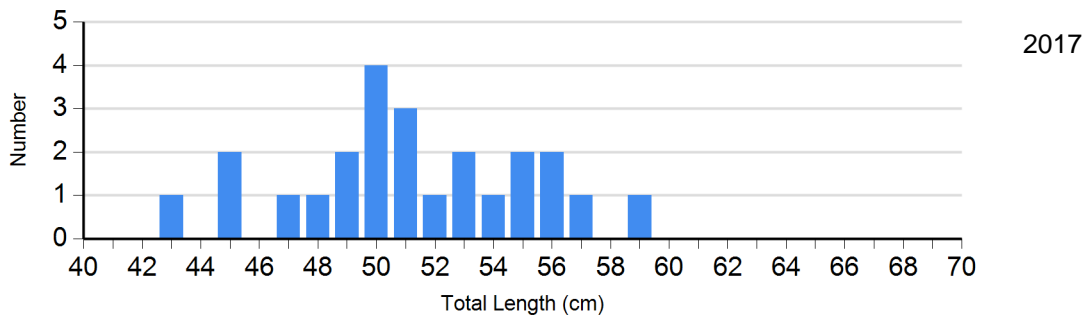
Length Frequency Distribution

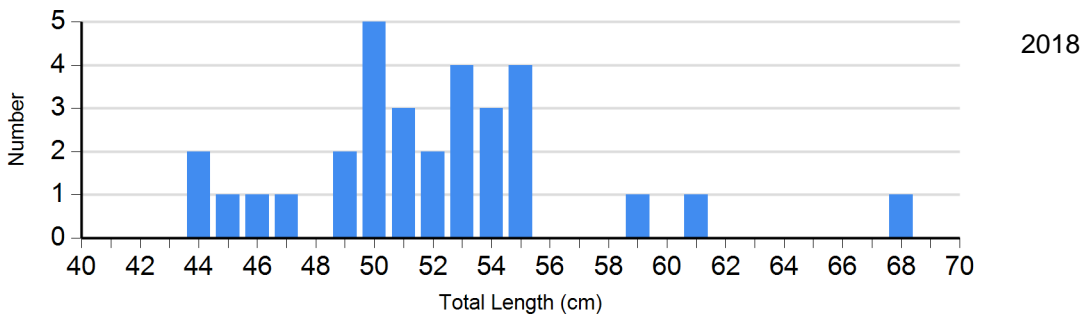
Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: std exp gill net

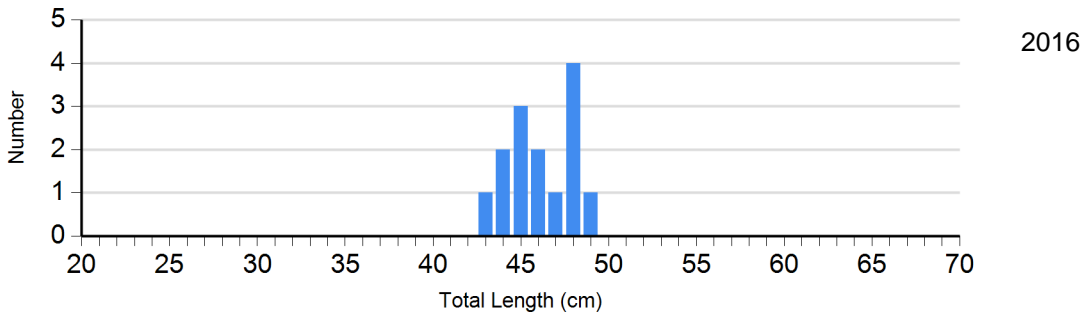
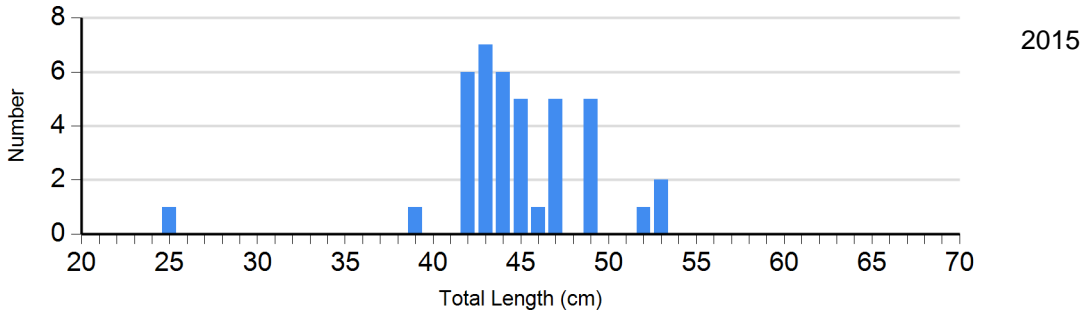
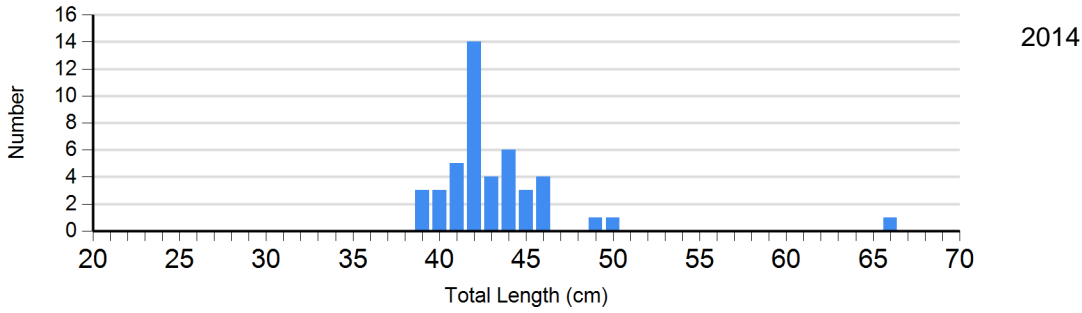


Species: Channel Catfish
Gear: AFS std gill net

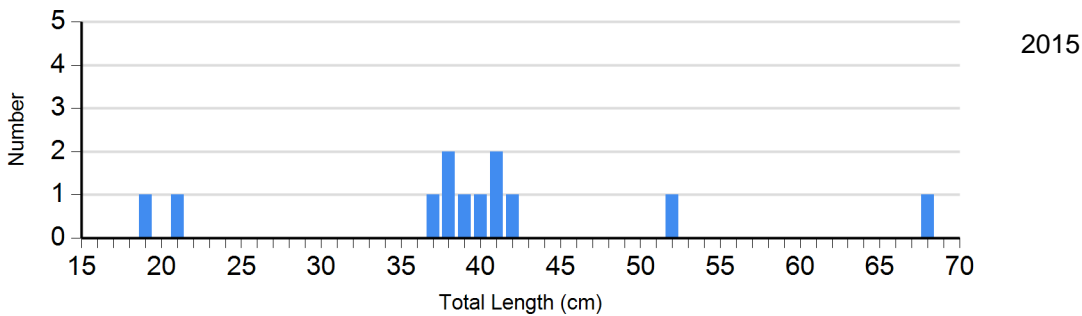




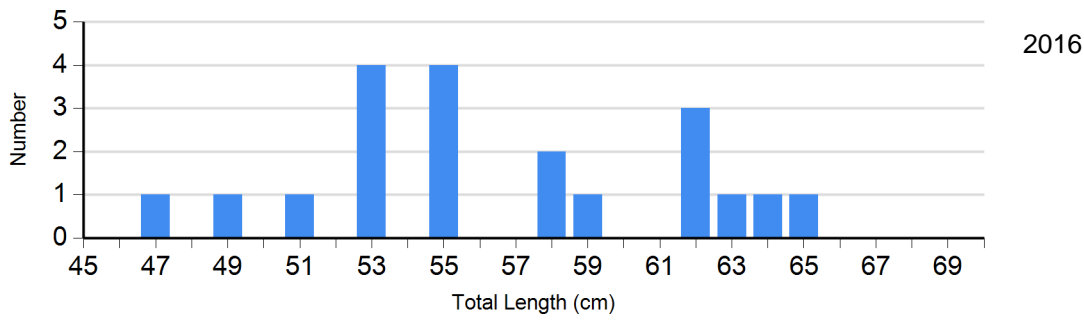
Species: Channel Catfish
Gear: std exp gill net



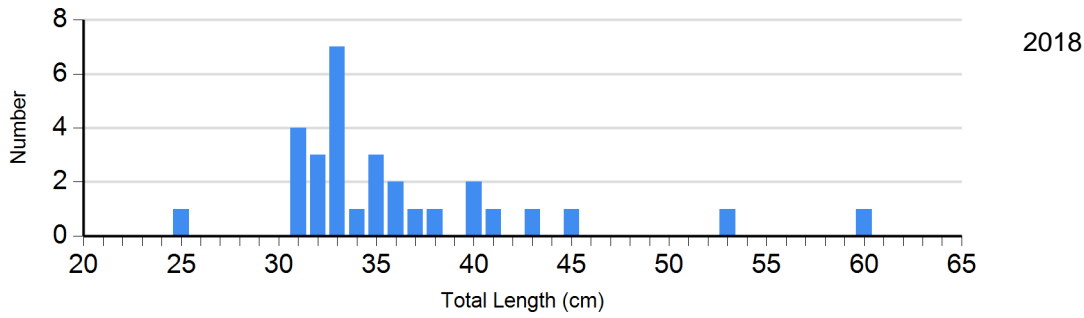
Species: Common Carp
Gear: std exp gill net



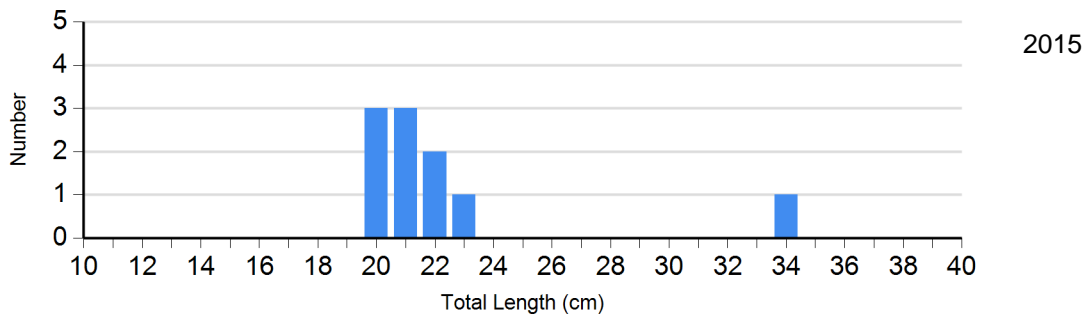
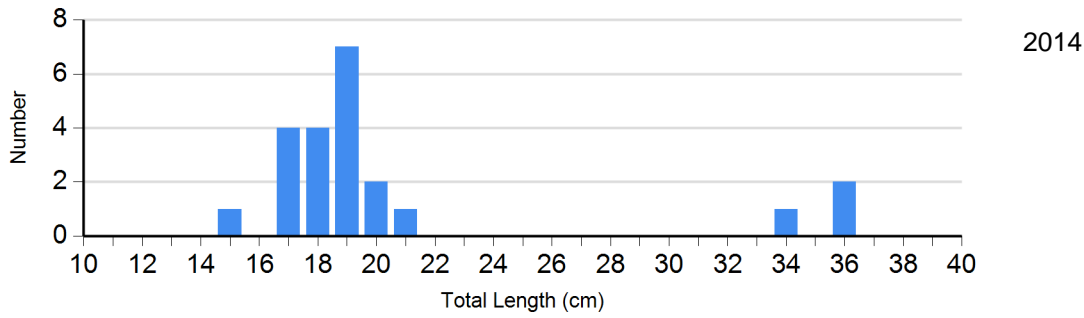
Species: Northern Pike
Gear: std exp gill net



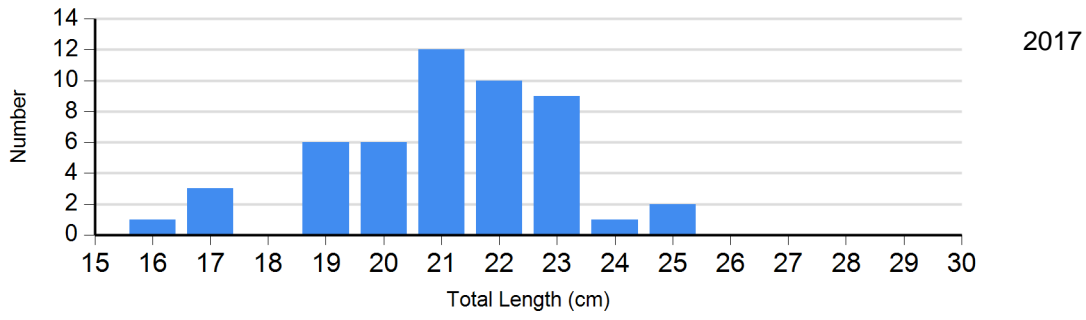
Species: Walleye
Gear: AFS std gill net



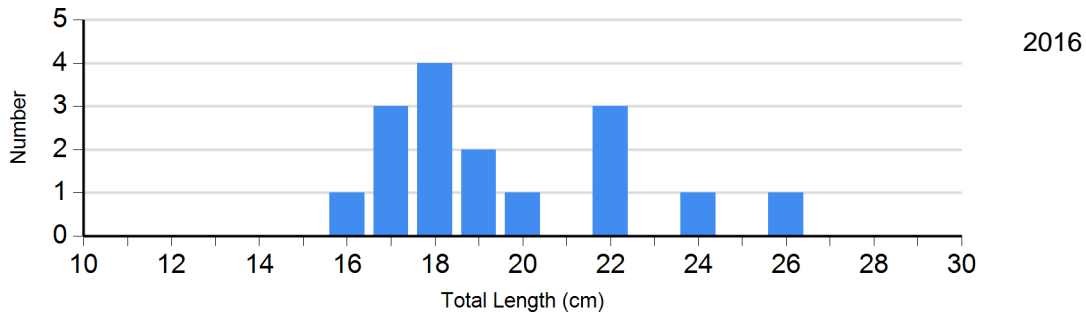
Species: Walleye
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std gill net



Species: Yellow Perch
Gear: std exp gill net

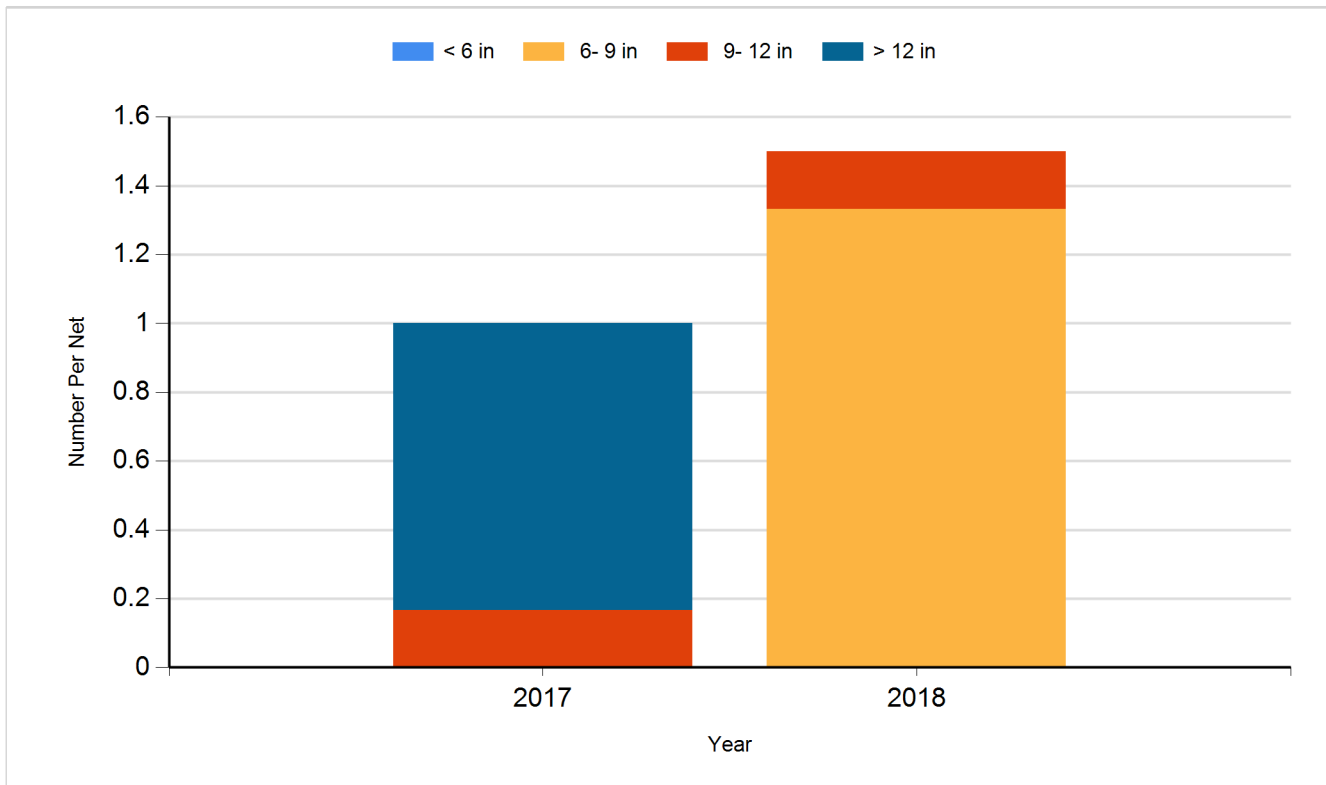


Historic Fish Sizes and Relative Abundance

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

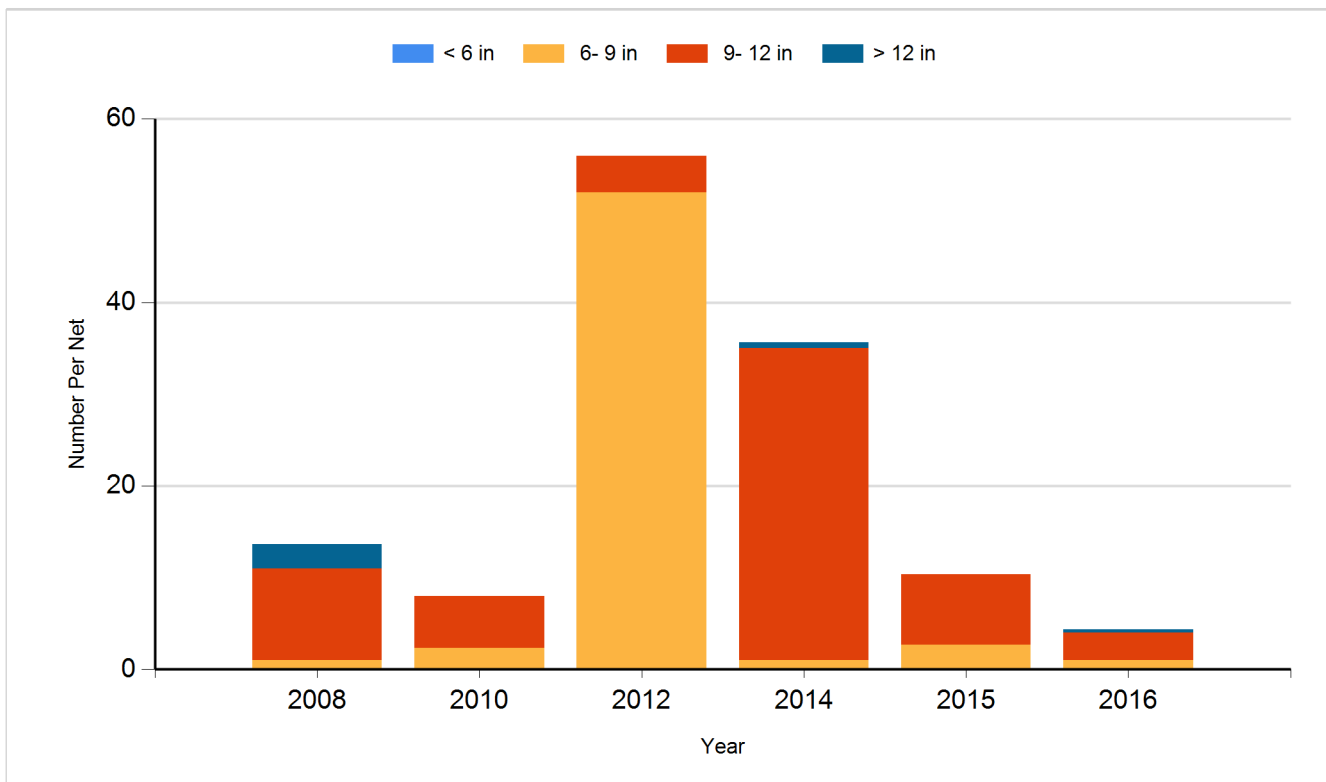
Species: Black Bullhead

Gear: AFS std gill net

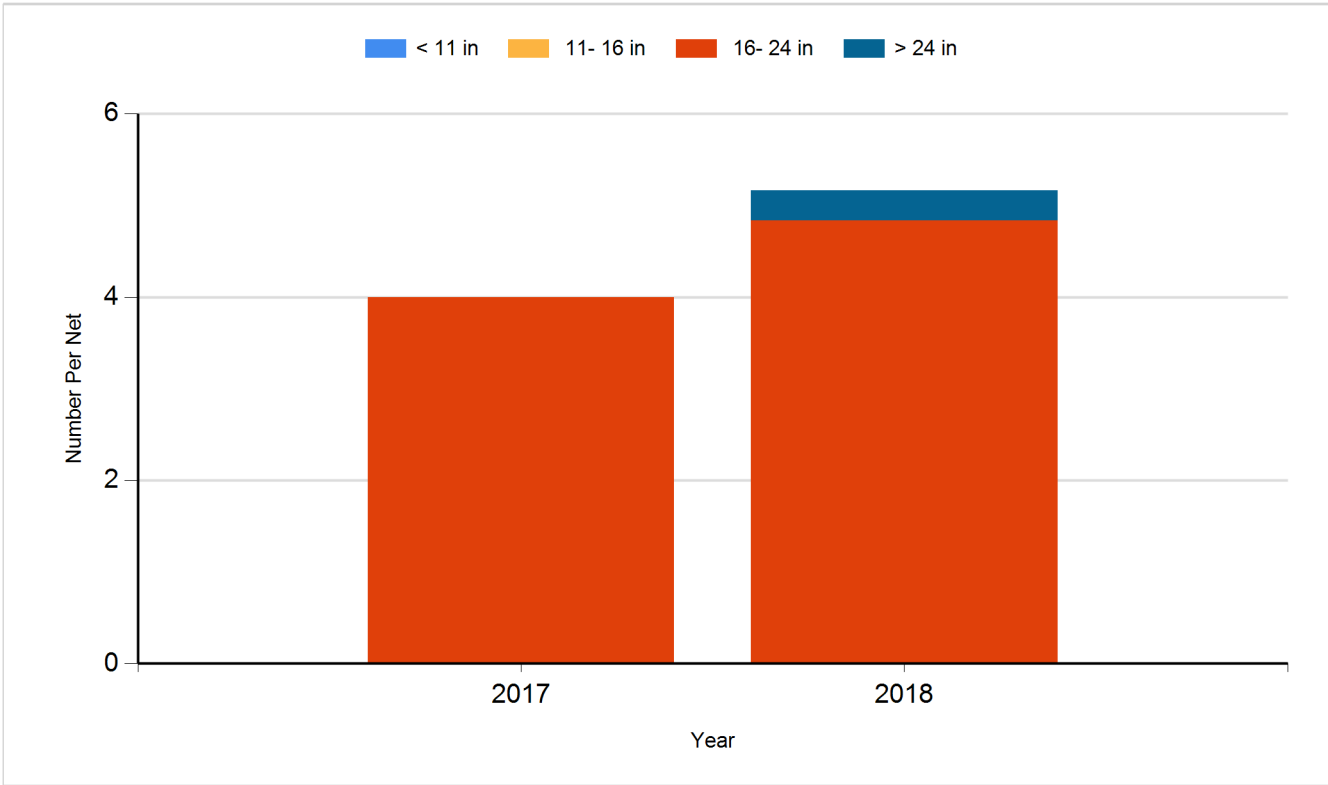


Species: Black Bullhead

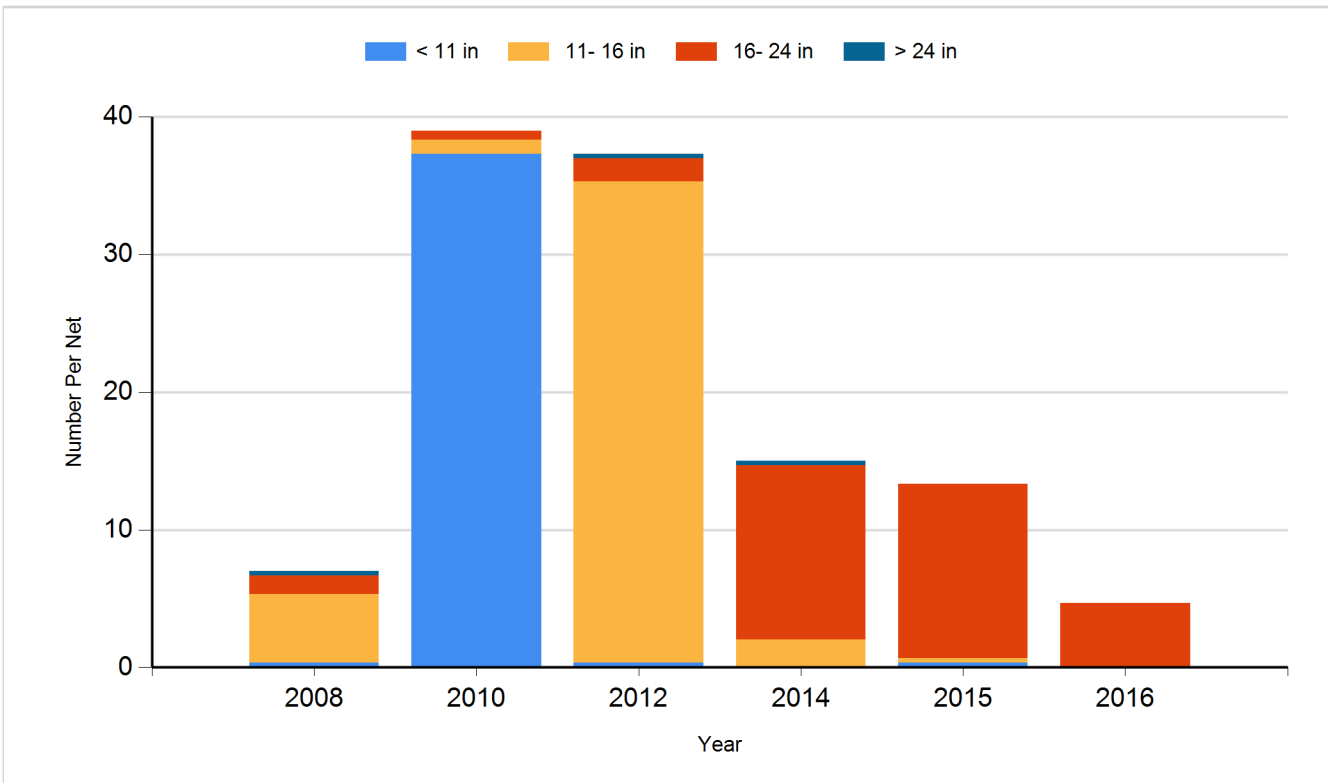
Gear: std exp gill net



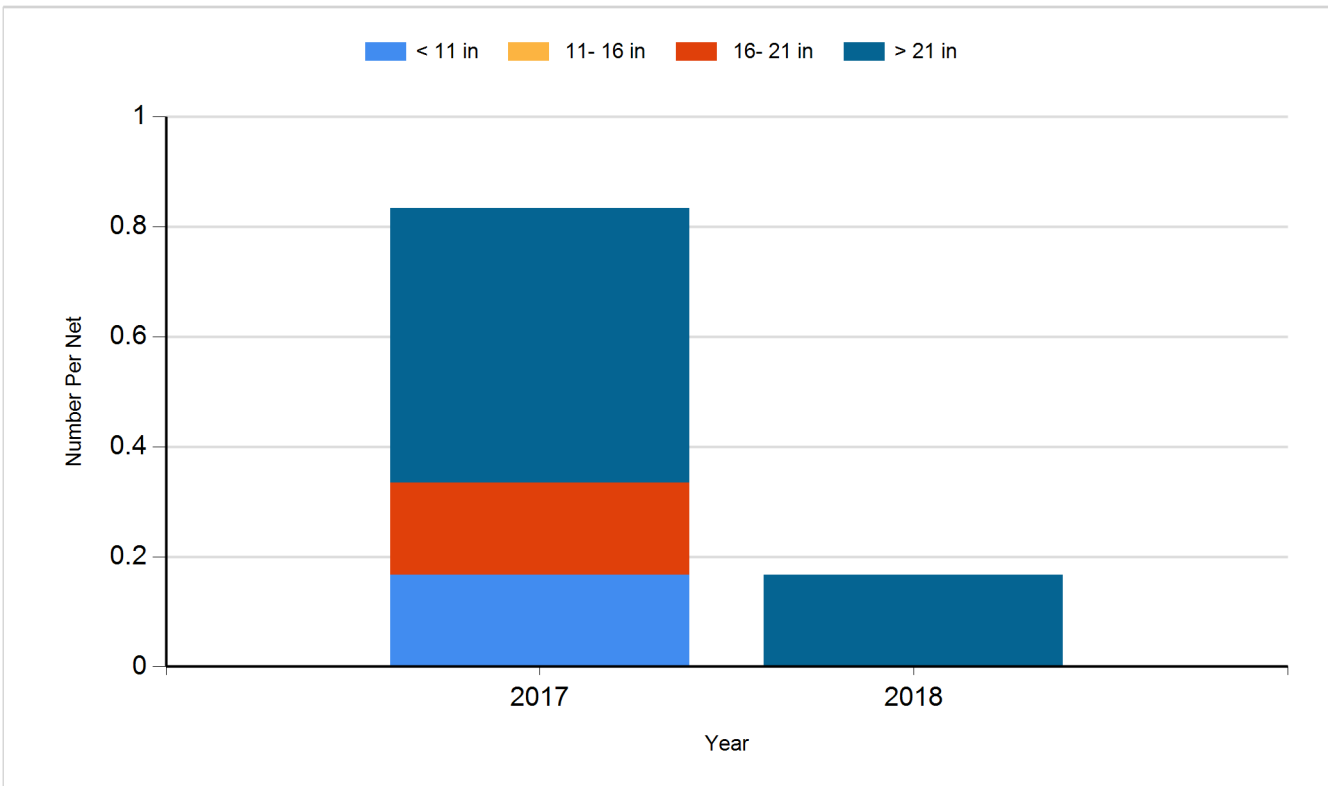
Species: Channel Catfish
Gear: AFS std gill net



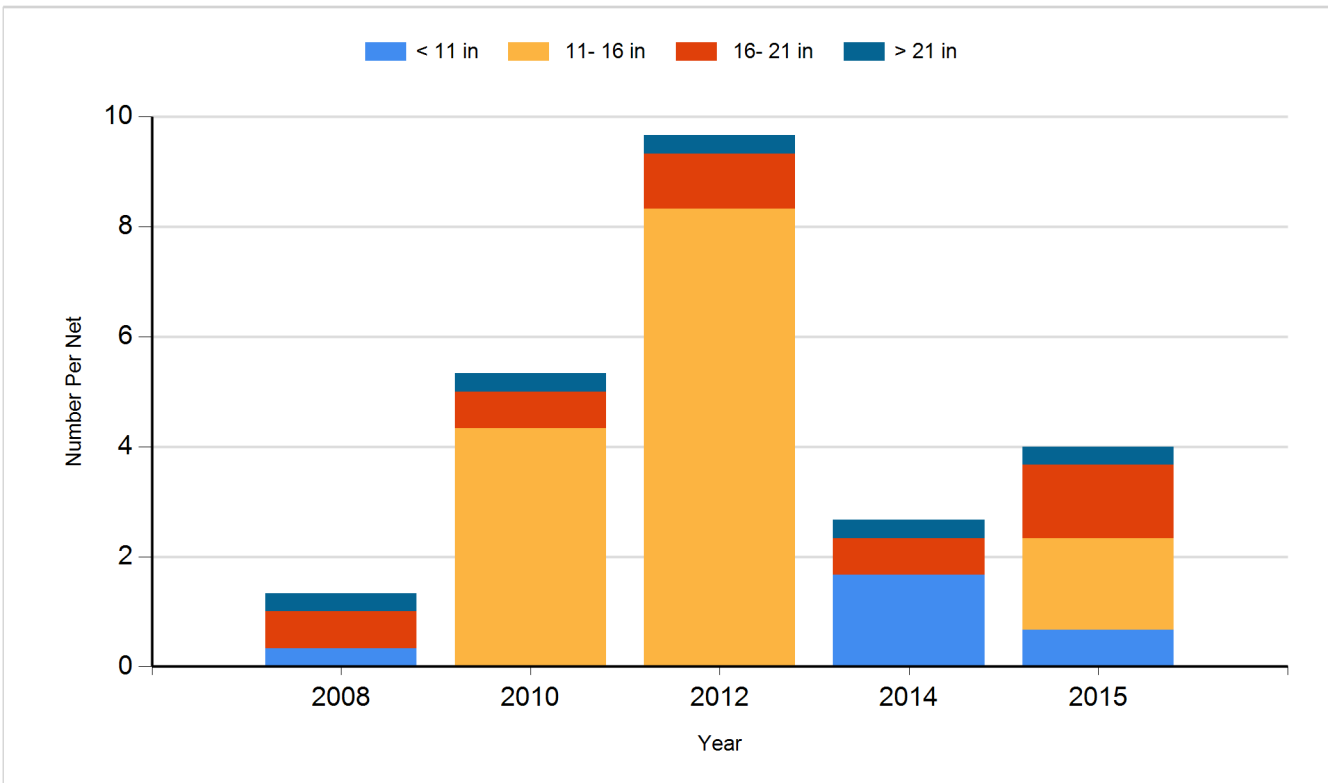
Species: Channel Catfish
Gear: std exp gill net



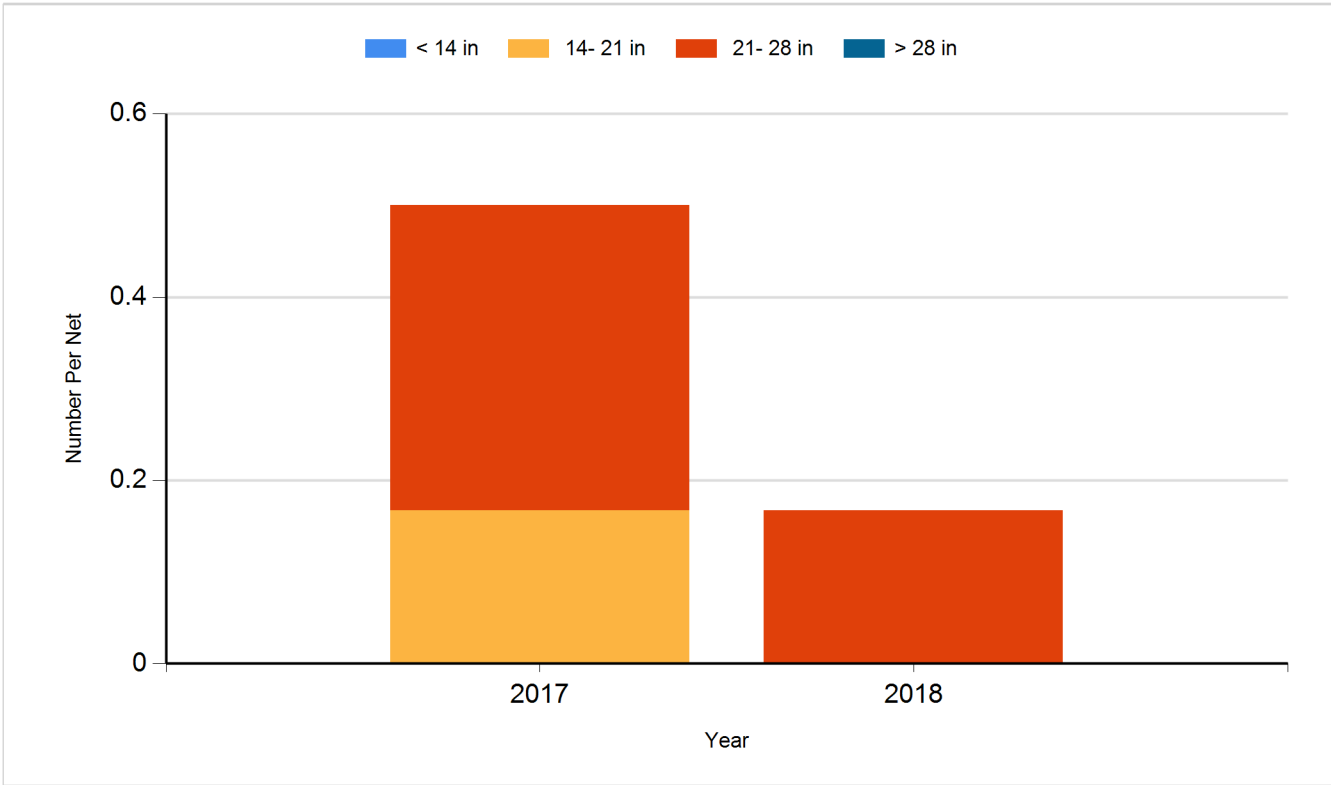
Species: Common Carp
Gear: AFS std gill net



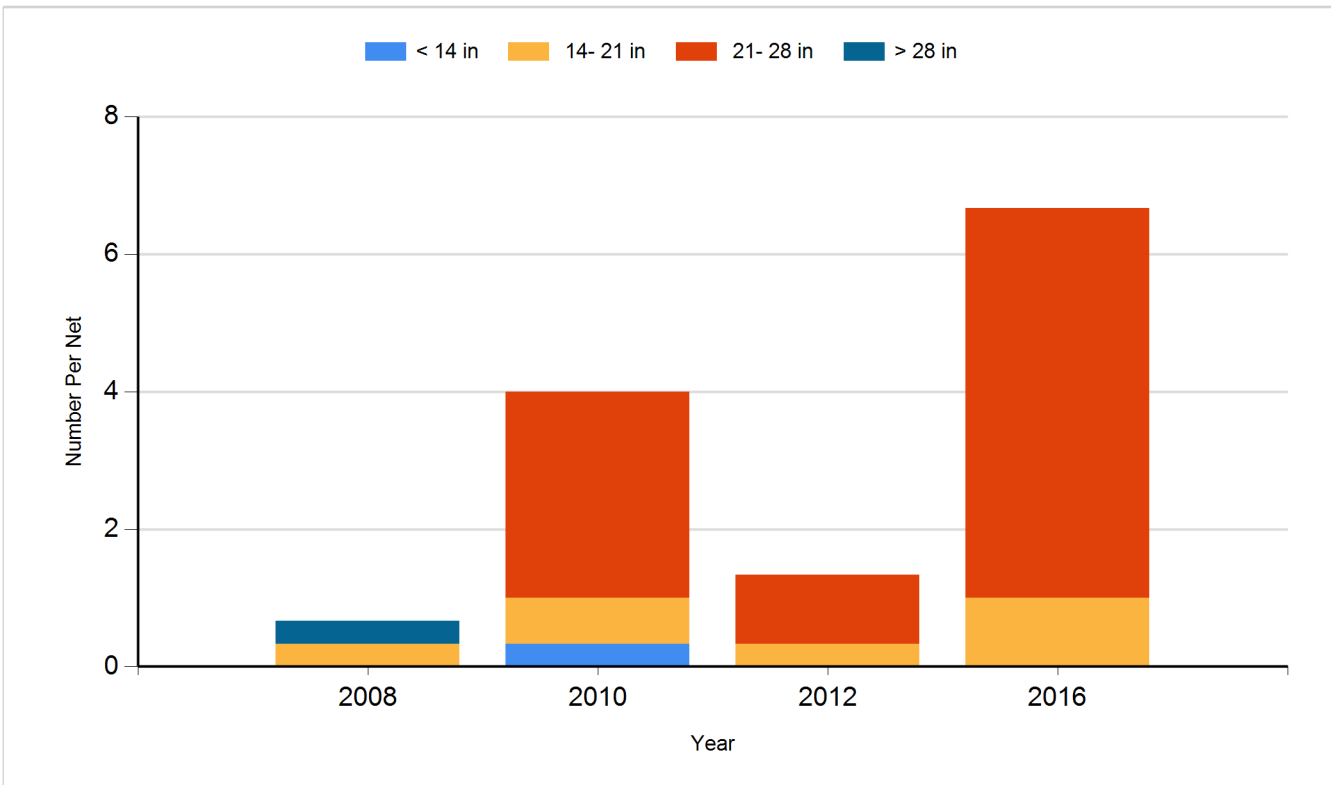
Species: Common Carp
Gear: std exp gill net



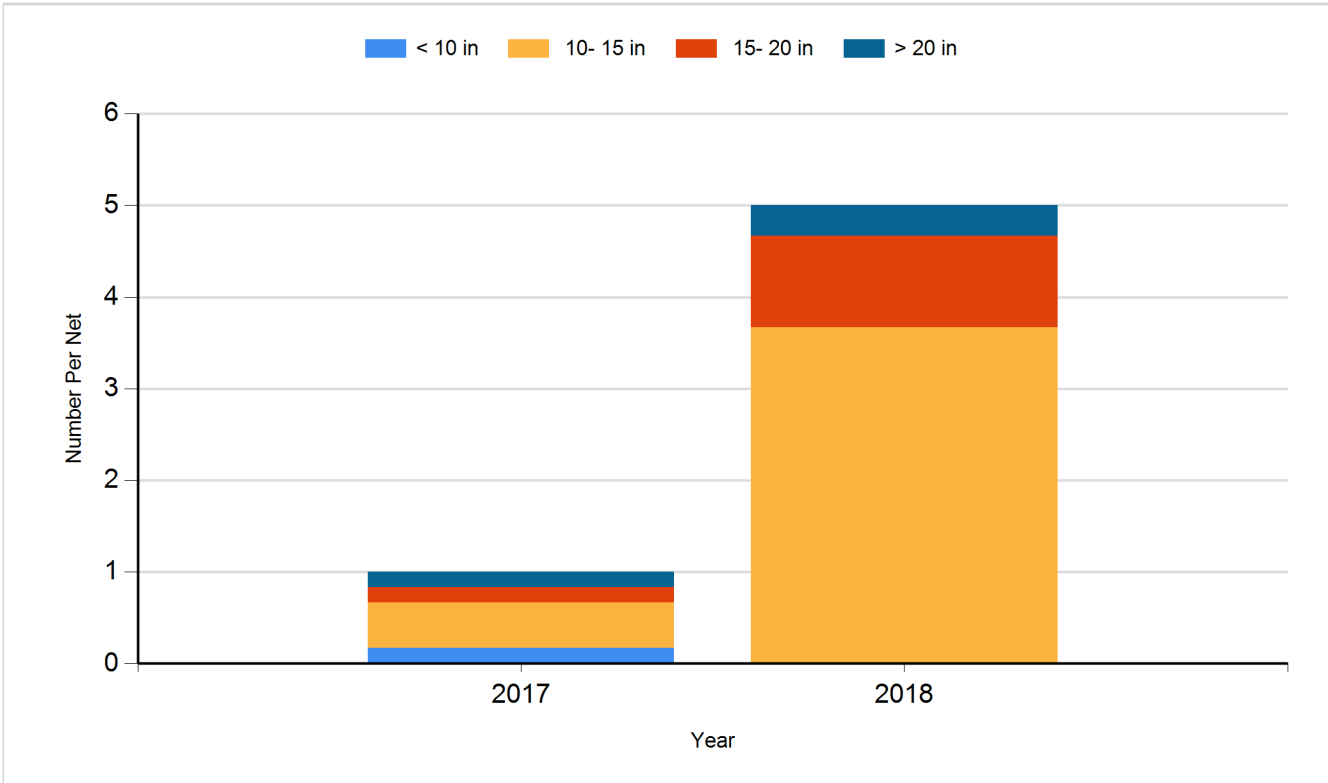
Species: Northern Pike
Gear: AFS std gill net



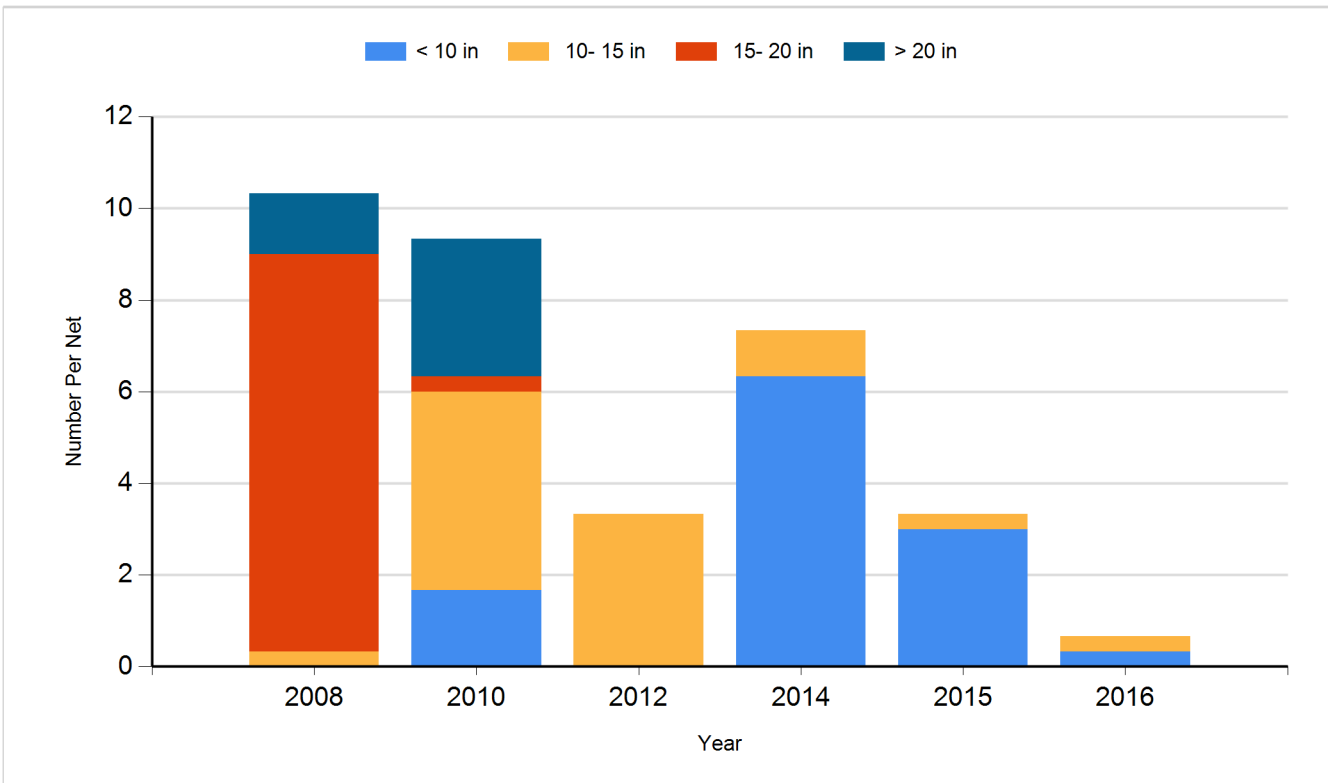
Species: Northern Pike
Gear: std exp gill net



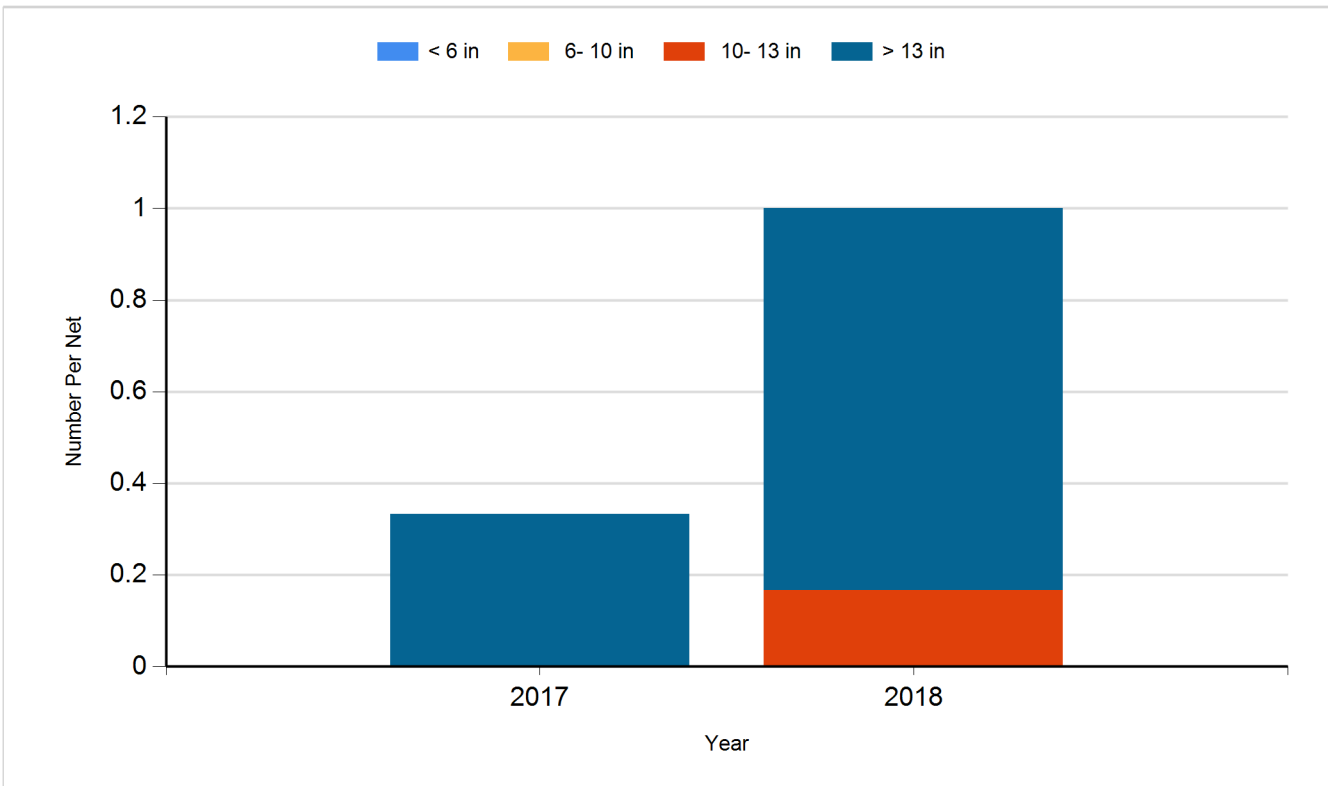
Species: Walleye
Gear: AFS std gill net



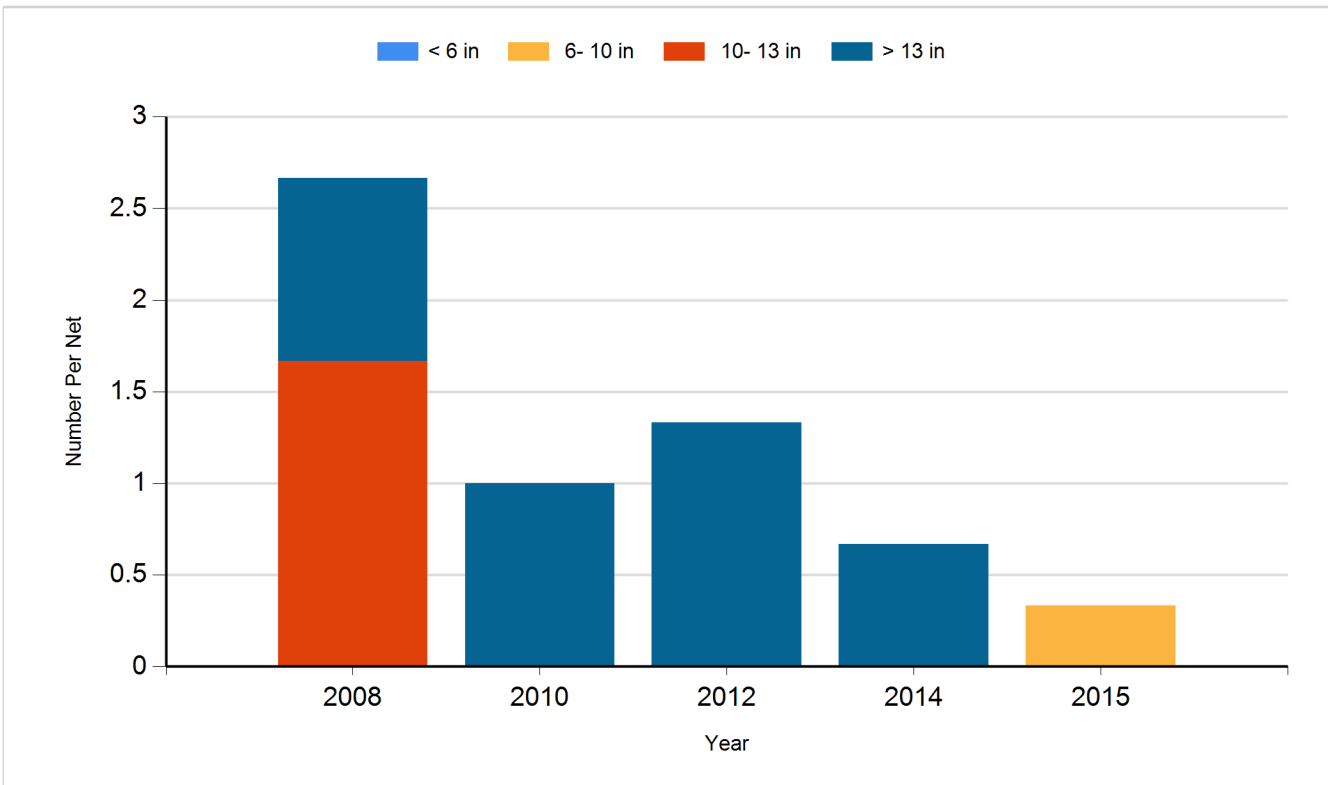
Species: Walleye
Gear: std exp gill net



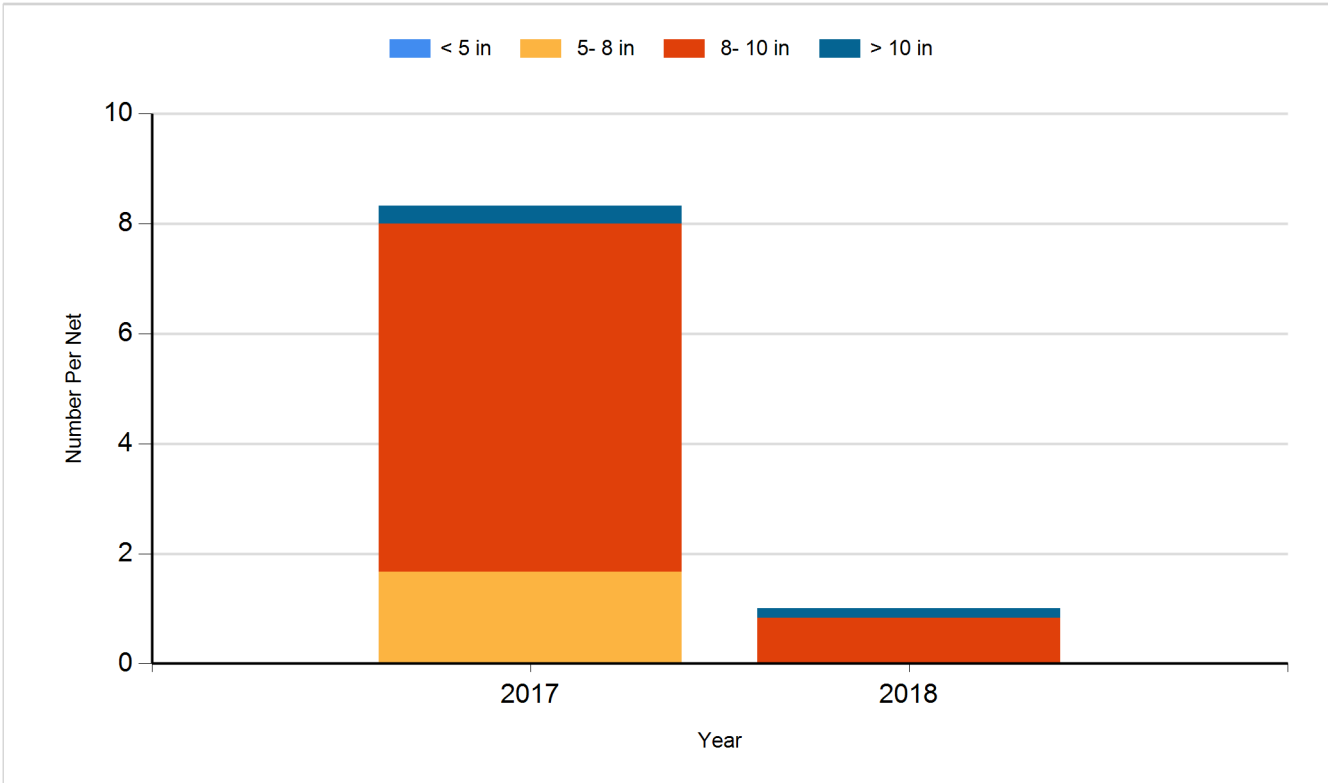
Species: White Sucker
Gear: AFS std gill net



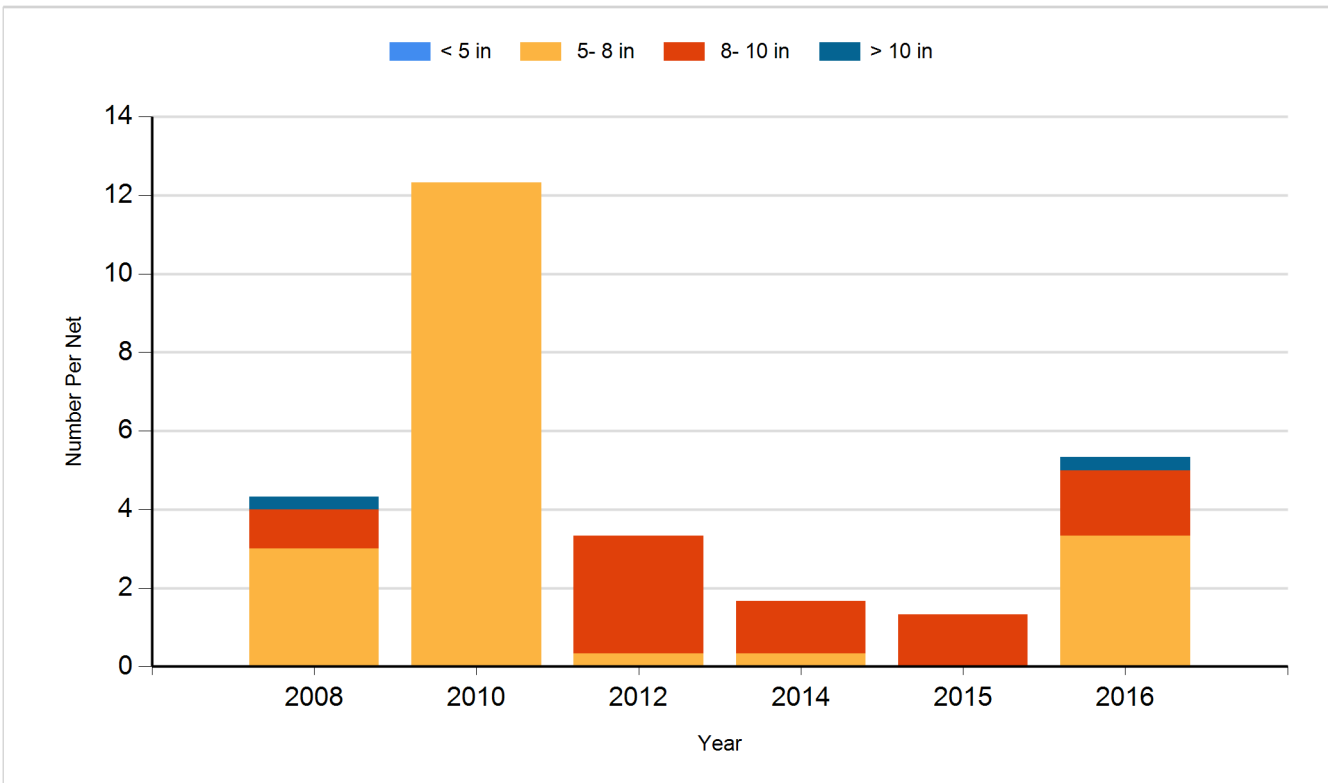
Species: White Sucker
Gear: std exp gill net



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