

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Poinsett, Hamlin County

MBS-Lake-405-000

2020

## Lake Information

<b>Name:</b>	Poinsett	<b>Maximum Depth:</b>	22 Feet
<b>County:</b>	Hamlin	<b>Mean Depth:</b>	17 Feet
		<b>OHWM Elevation:</b>	1,652
<b>Surface Area:</b>	7,978 Acres	<b>Outlet Elevation:</b>	1,651

## Surveys and Investigations

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

Gear	Date	Effort
fall night EF-WAE	Sep 09, 2020	3600 seconds

## **Common Fish Species Present**

Yellow Perch

Walleye

Smallmouth Bass

Northern Pike

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## 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



## 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
		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
AFS std gill net	Bigmouth Buffalo						2.8	0.4	0.3	2.4		1.48
	Black Bullhead						0.4	0.3	0.4	0.6		0.43
	Black Crappie						3.9	0.8	1.3	1.1		1.78
	Channel Catfish						1.1	0.8	0.5	1.1		0.88
	Common Carp						0.2	0.4	1.7	0.8		0.78
	Northern Pike						0.0	0.1	0.2	0.3		0.15
	Shorthead Redhorse						0.0	0.0	0.2	0.0		0.05
	Smallmouth Bass						0.6	0.6	0.6	0.1		0.48
	Walleye						8.9	12.4	8.8	5.3		8.85
	White Bass						7.3	6.2	5.8	1.8		5.28
	White Sucker						4.5	3.0	2.3	3.1		3.23
	Yellow Bullhead						0.2	0.4	0.0	0.0		0.15
Yellow Perch						25.1	14.3	22.1	9.3		17.70	
boat shocker (night)	Smallmouth Bass	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.00
	Walleye*	4.0	305.0	2.0	992.2	1,722 .0	335.0	49.7				487.1 3
boat shocker (night, DC)	Smallmouth Bass		30.6				73.5					52.05
fall night EF- WAE*	Walleye								29.8	86.9	526.0	214.2 3
frame net (std 3/4 in)	Bigmouth Buffalo		0.0	4.2	0.5							1.57
	Black Bullhead		79.7	4.4	10.2							31.43
	Black Crappie		4.5	0.4	1.5							2.13
	Bluegill		0.1	0.0	0.0							0.03
	Channel Catfish		0.8	0.2	0.0							0.33
	Common Carp		0.3	2.7	0.2							1.07
	Northern Pike		5.9	3.6	1.0							3.50
	Shorthead Redhorse		0.2	0.1	0.0							0.10
	Smallmouth Bass		2.2	1.2	1.4							1.60
	Walleye		4.0	1.4	2.4							2.60
	White Bass		3.1	0.4	0.8							1.43
	White Sucker		1.1	0.2	0.4							0.57
Yellow Bullhead		19.3	2.7	6.3							9.43	
Yellow Perch		0.6	0.1	0.1							0.27	
std exp gill net	Bigmouth Buffalo	0.0	0.7	0.0	0.5	0.3						0.30

		CPUE										
Gear	Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
std exp gill net	Black Bullhead	0.0	2.5	0.2	0.5	3.2						1.28
	Black Crappie	0.0	0.0	0.0	0.3	2.0						0.46
	Channel Catfish	0.3	2.2	2.5	0.7	0.7						1.28
	Common Carp	0.1	2.8	1.3	0.8	0.5						1.10
	Northern Pike	2.4	2.0	1.3	1.2	0.0						1.38
	Orangespotted Sunfish	0.0	0.0	0.0	0.0	0.0						0.00
	Shorthead Redhorse	0.0	0.0	0.0	0.0	0.2						0.04
	Smallmouth Bass	0.1	1.3	1.3	0.7	0.0						0.68
	Spottail Shiner	0.0	0.0	0.0	0.0	0.0						0.00
	Walleye	9.2	12.5	6.7	11.7	15.3						11.08
	White Bass	0.4	2.2	0.8	0.8	2.2						1.28
	White Sucker	0.9	2.3	4.3	3.5	3.0						2.80
	Yellow Bullhead	0.0	2.7	0.3	0.0	0.3						0.66
Yellow Perch	7.3	22.0	15.0	40.5	124.2						41.80	

## 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										
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
AFS std gill net	Northern Pike	PSD								100	100	100	
		PSD-P								100	100	100	
		Wr								80	83	87	
	Smallmouth Bass	PSD								38	43	86	100
		PSD-P								25	43	43	0
		Wr								101	101	89	103
	Walleye	PSD								18	7	19	22
		PSD-P								5	1	4	5
		Wr								82	79	84	91
	Yellow Perch	PSD								99	99	96	87
		PSD-P								84	57	58	69
		Wr								115	115	110	113
boat shocker (night)	Walleye	PSD	0	0	0	0	0	0	0	0	0	0	
		PSD-P	0	0	0	0	0	0	0	0	0	0	
		Wr	88	85		87	97	96	93				
boat shocker (night, DC)	Smallmouth Bass	PSD		13					18				
		PSD-P		6					13				
		Wr		99					112				
frame net (std 3/4 in)	Northern Pike	PSD		67	76	100							
		PSD-P		19	32	88							
		Wr		77	71	81							
	Smallmouth Bass	PSD		46	65	83							
		PSD-P		8	30	39							
		Wr		98	96	107							
	Walleye	PSD		56	58	32							
		PSD-P		11	13	5							
		Wr		78	84	88							
	Yellow Perch	PSD		18	100	0							
		PSD-P		9	50	0							
		Wr		101	89	112							
std exp gill net	Northern Pike	PSD	55	92	100	100							



Gear	Species	Index	Year									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
std exp gill net	Northern Pike	PSD-P	5	25	25	43						
		Wr	92	88	83	87						
	Smallmouth Bass	PSD	50	75	25	100						
		PSD-P	50	38	0	75						
		Wr	108	96	105	100						
	Walleye	PSD	16	57	48	44	30					
		PSD-P	5	4	8	4	1					
		Wr	85	82	85	91	88					
	Yellow Perch	PSD	93	83	81	26	92					
		PSD-P	5	55	23	11	14					
		Wr	107	107	110	115	110					

## Length at Capture

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

### Species: Smallmouth Bass

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2016	70		239 (59)	338 (5)	375 (1)		433 (1)	440 (4)			
2012	32		241 (29)	302 (1)	390 (2)						

### Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	70	216 (8)	314 (4)	379 (2)	341 (38)	391 (16)					655 (2)
2018	110	233 (5)	304 (2)	313 (78)	390 (21)			631 (1)		662 (3)	
2017	140	201 (3)	272 (79)	361 (55)					522 (3)		
2016	203	229 (74)	355 (121)	436 (1)	476 (2)	463 (3)		599 (1)			628 (1)
2015	125	255 (97)		408 (12)	451 (8)		462 (7)				540 (1)
2014	70	264 (1)	317 (12)	361 (32)	422 (2)	458 (22)	581 (1)				
2013	41		280 (8)	371 (12)	409 (18)	528 (1)	556 (1)	623 (1)			
2012	87	205 (12)	307 (1)	394 (68)	476 (2)	508 (2)	577 (1)			706 (1)	
2011	166		346 (145)	441 (7)	499 (8)	547 (3)	444 (2)		535 (1)		

### Species: Yellow Perch

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	112	158 (3)	203 (23)	262 (47)	300 (10)	291 (5)	292 (22)		335 (1)		
2018	265	132 (1)	223 (105)	271 (101)	288 (32)	309 (27)					
2017	157		229 (65)	279 (10)	280 (79)		317 (3)				
2016	326	143 (3)	234 (24)	272 (282)	284 (16)			337 (1)			
2015	745	153 (16)	224 (570)	252 (146)	295 (13)						
2014	246	154 (140)	180 (56)	244 (41)	234 (2)	306 (8)					
2013	90	147 (8)	213 (56)	246 (7)	277 (19)						
2012	132	157 (23)	227 (11)	259 (98)							

Mean Length (expanded sample number) at capture by age

Year	N	1	2	3	4	5	6	7	8	9	10+
2011	132	156 (6)	228 (126)								

## **Fish Condition**

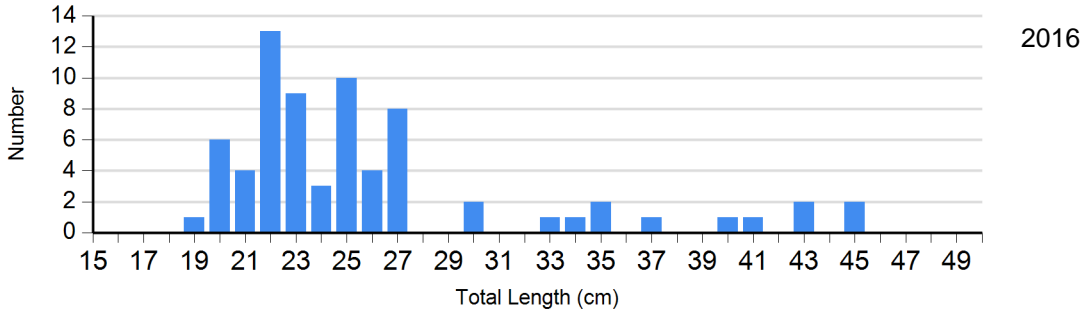
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Northern Pike Gill Net	2017	0		0		1	80	0	
	2018	0		0		1	91	1	74
	2019	0		0		2	87 (13.3)	1	
Smallmouth Bass Electro Fishing	2016	58	112 (0.8)	4	120 (2.5)	5	109 (3.3)	4	106 (3.5)
Walleye Gill Net	2016	132	82 (0.4)	20	81 (1.1)	4	87 (4.6)	4	92 (5.0)
	2017	127	79 (0.5)	8	79 (2.8)	1	88	0	
	2018	86	84 (0.6)	16	84 (2.1)	0		4	91 (1.4)
	2019	49	91 (0.8)	11	92 (2.3)	1	97	2	90 (0.4)
Yellow Perch Gill Net	2016	4	100 (3.7)	47	117 (1.4)	267	115 (0.6)	8	107 (3.9)
	2017	2	104 (1.5)	66	110 (1.2)	71	120 (1.2)	18	113 (1.9)
	2018	10	117 (4.5)	102	108 (1.2)	114	113 (1.2)	39	109 (1.7)
	2019	15	119 (3.5)	20	111 (2.1)	58	114 (1.1)	19	109 (1.5)

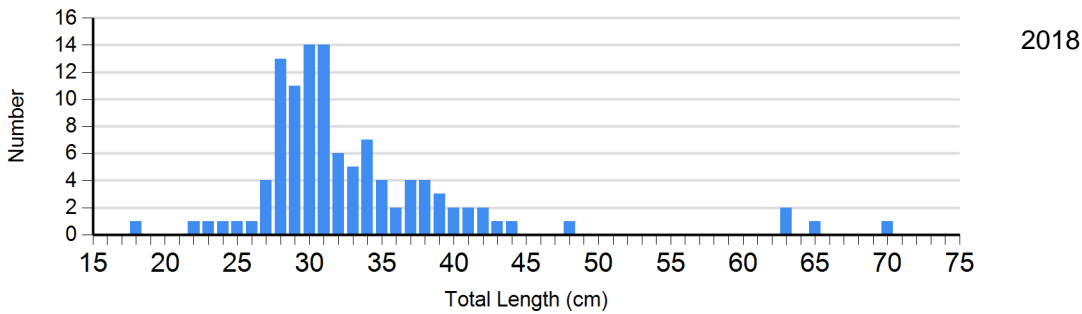
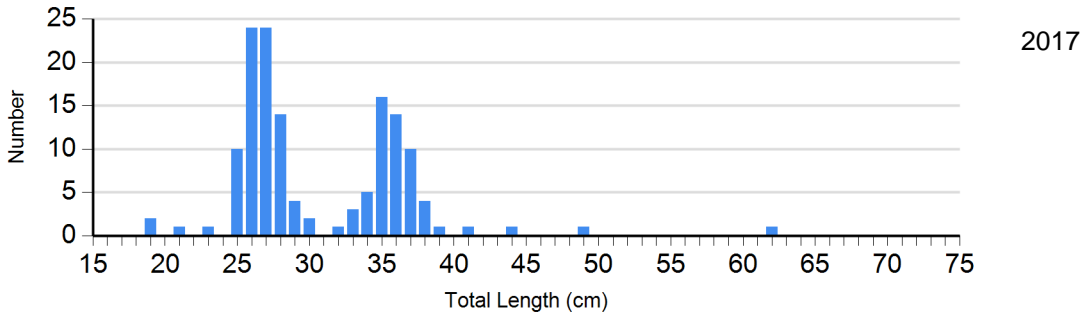
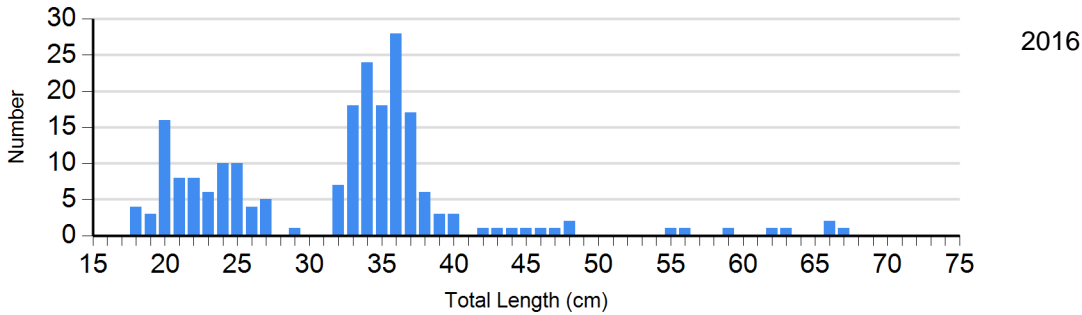
# Length Frequency Distribution

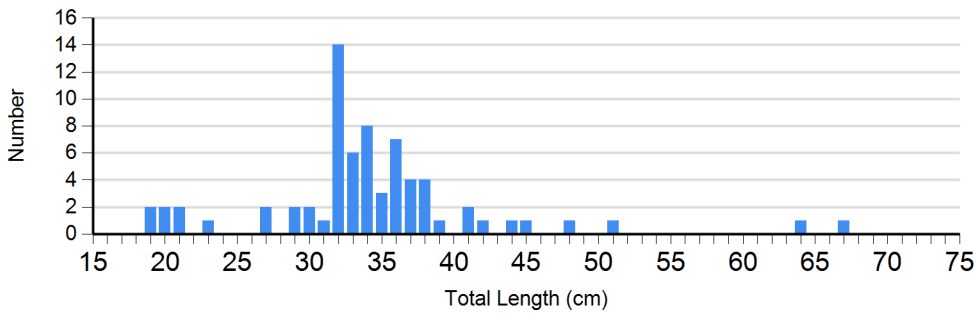
Length frequency histogram of species sampled by year.

Species: Smallmouth Bass  
Gear: boat shocker (night, DC)

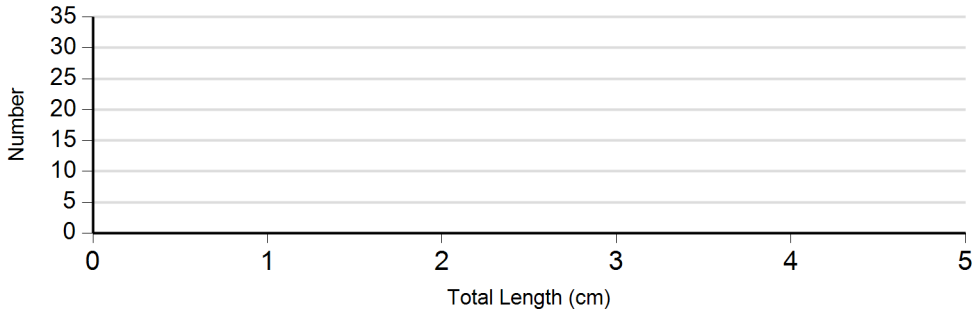


Species: Walleye  
Gear: AFS std gill net

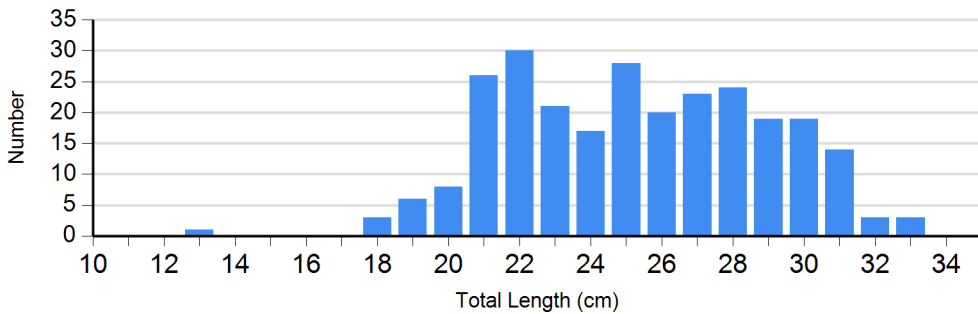
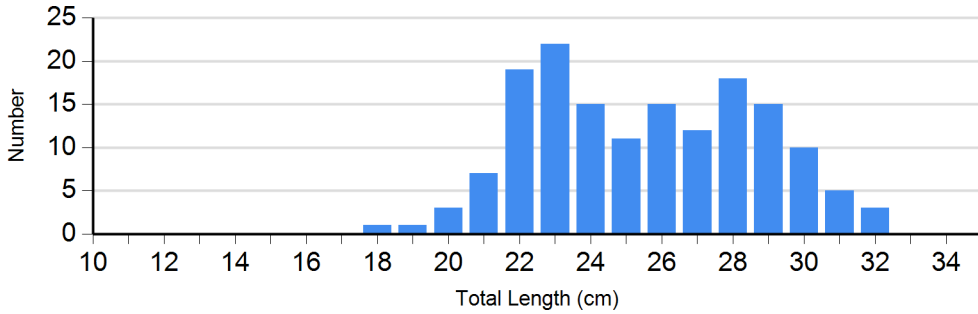
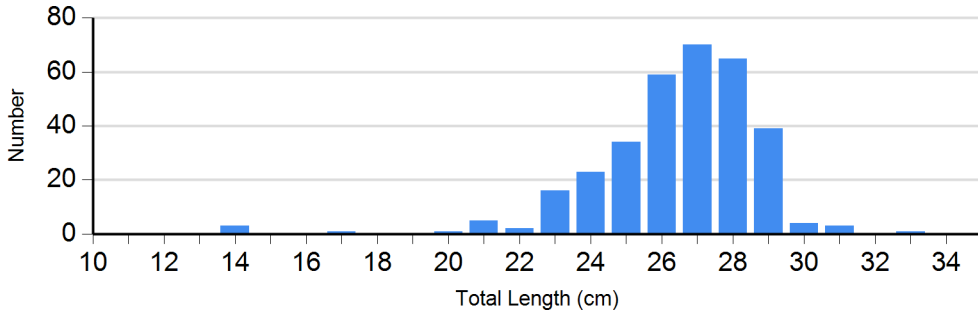


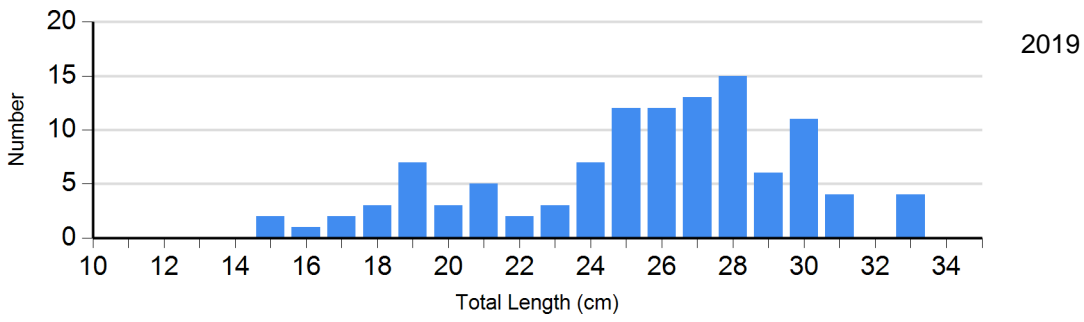


Species: Walleye  
Gear: std exp gill net

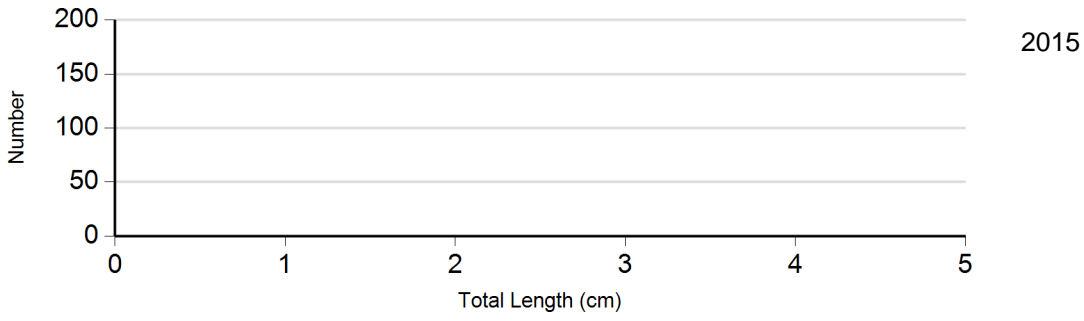


Species: Yellow Perch  
Gear: AFS std gill net





Species: Yellow Perch  
 Gear: std exp gill net

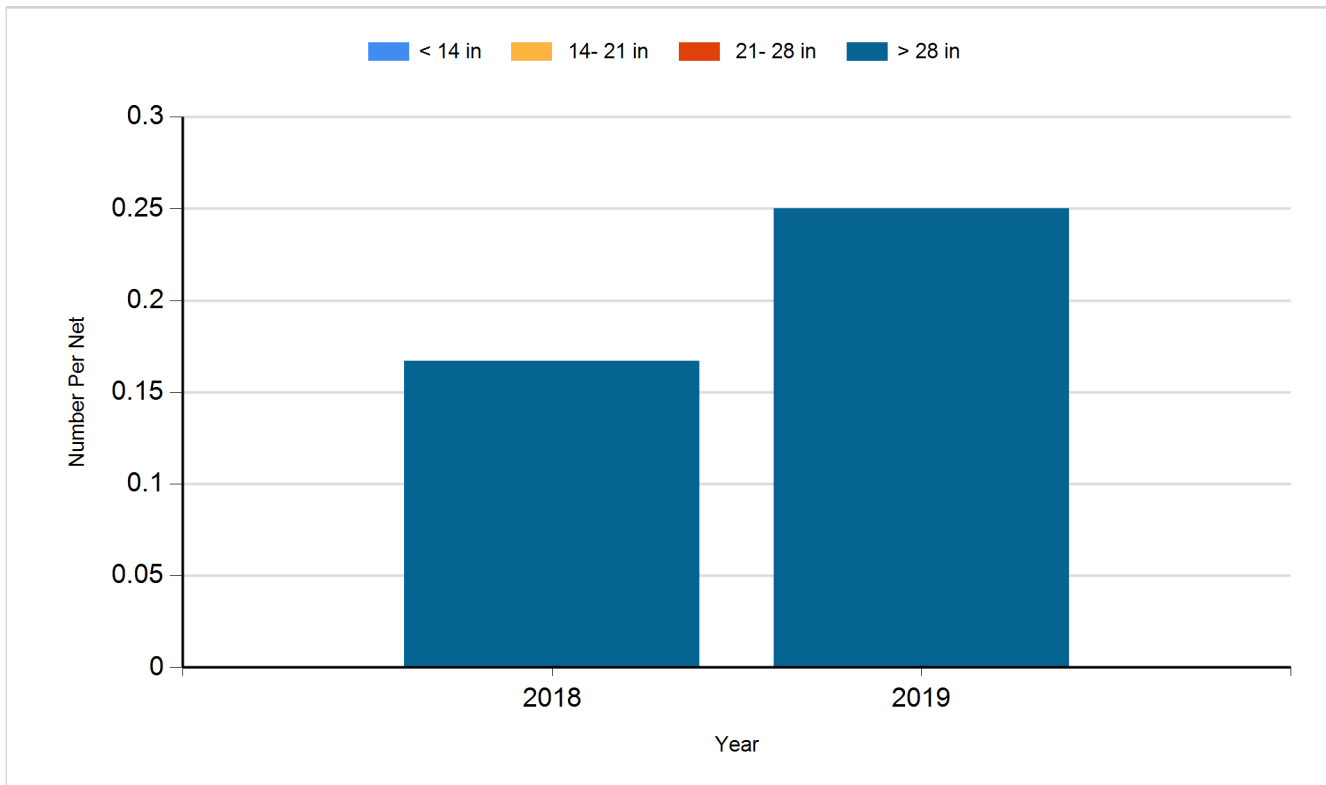


## Historic Fish Sizes and Relative Abundance

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

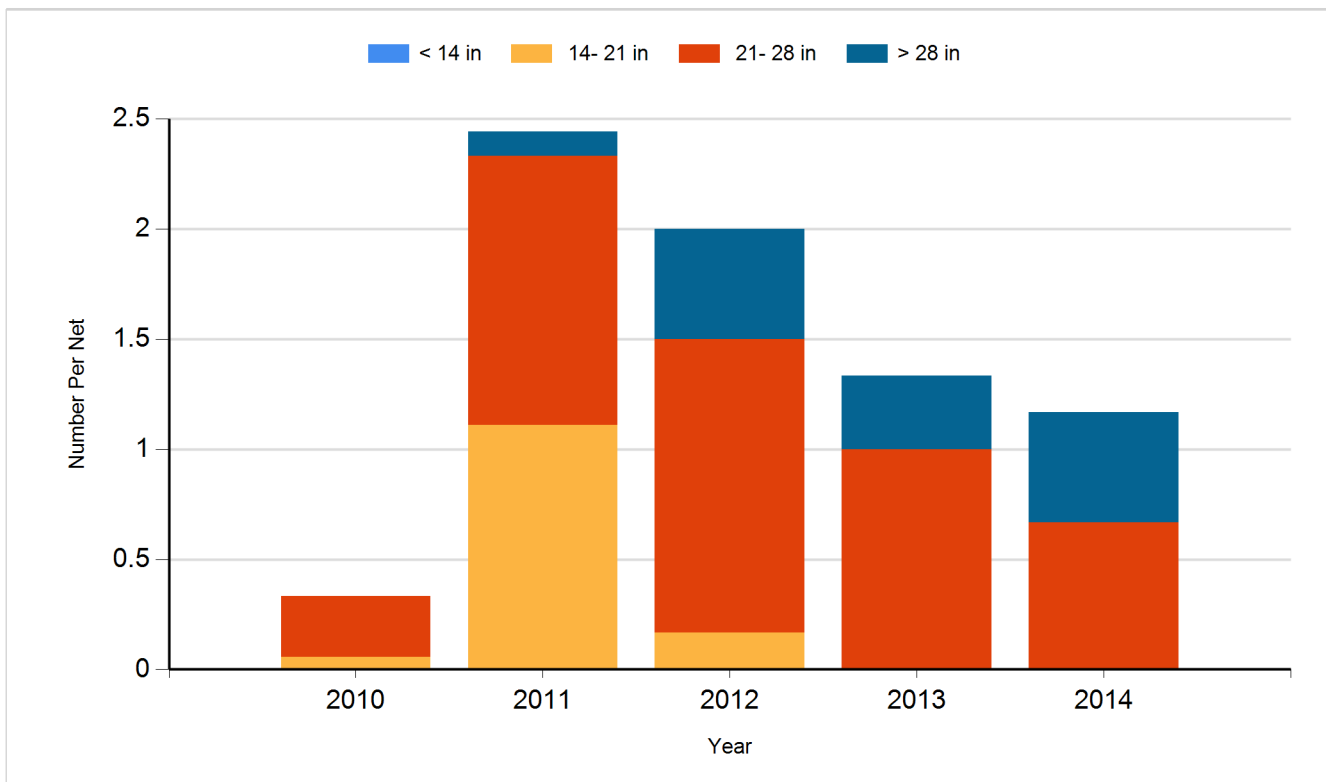
Species: Northern Pike

Gear: AFS std gill net



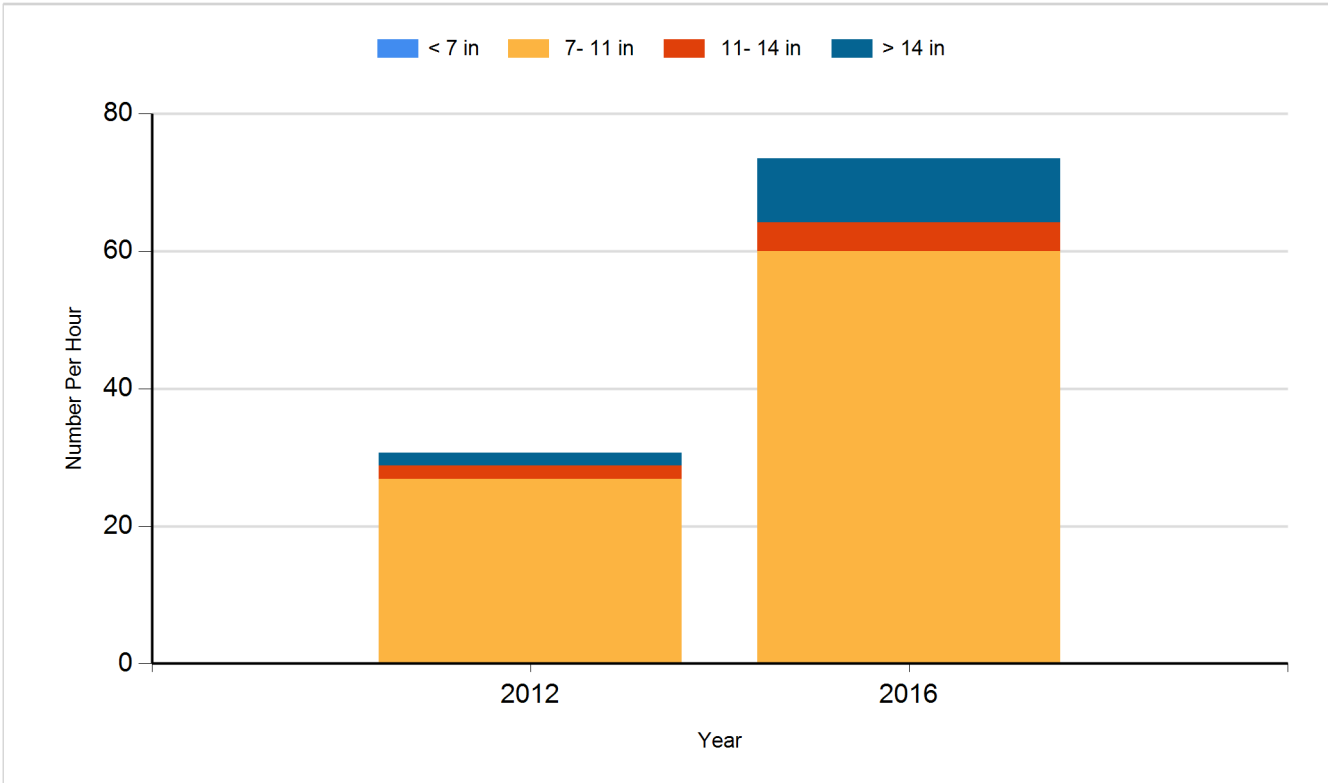
Species: Northern Pike

Gear: std exp gill net

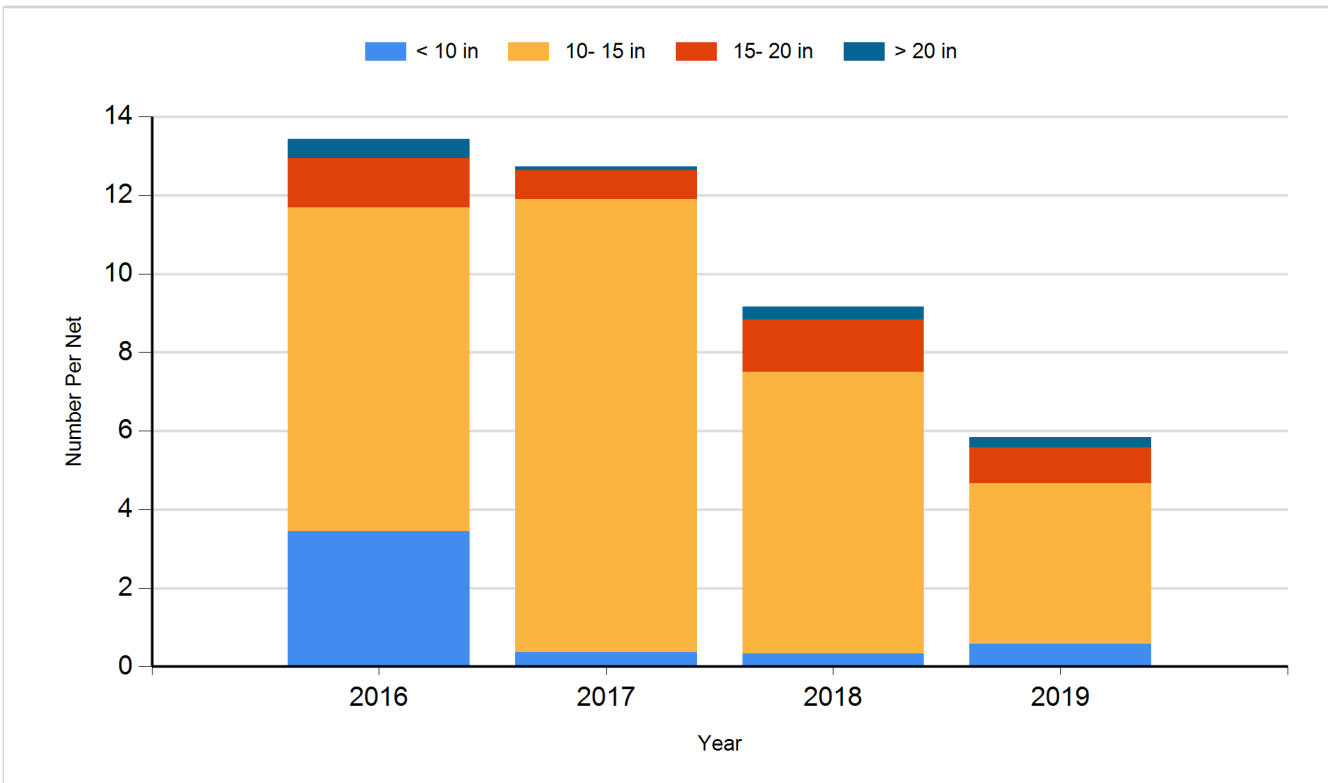




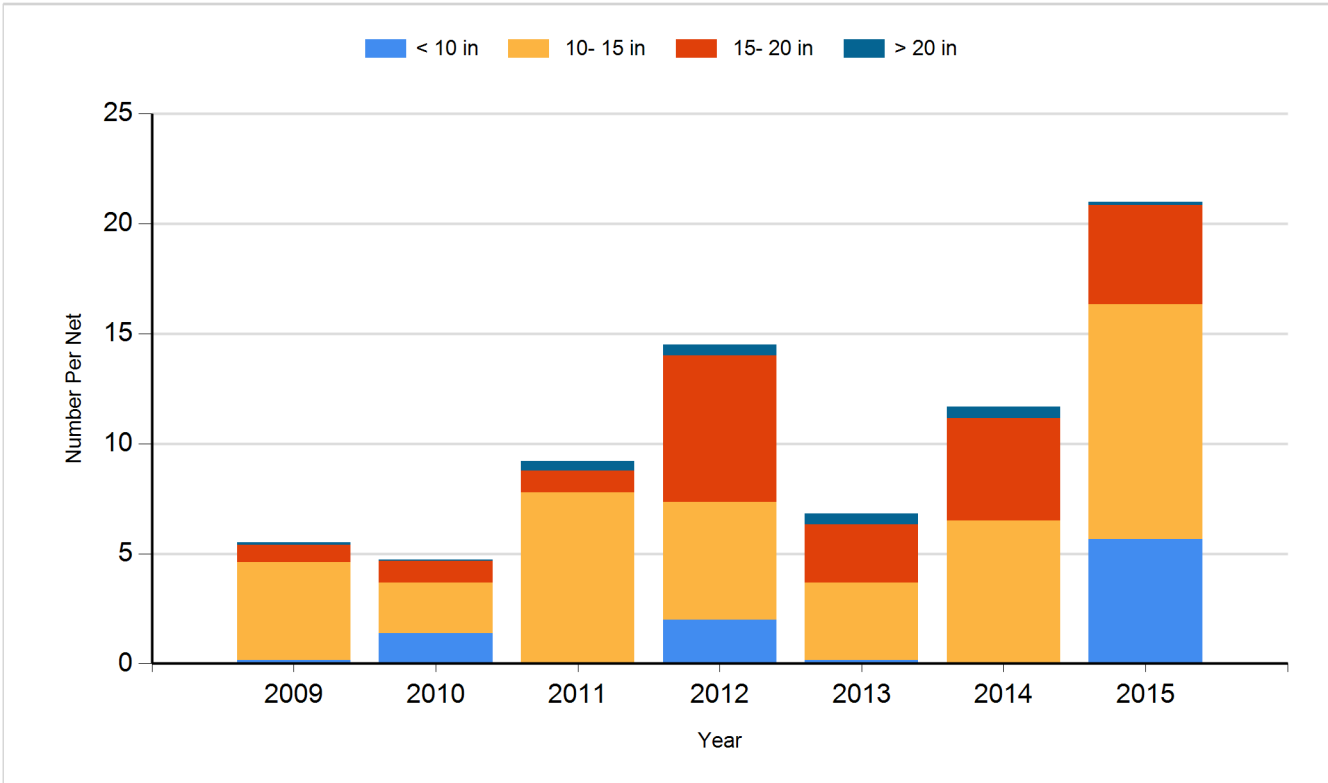
Species: Smallmouth Bass  
Gear: boat shocker (night, DC)



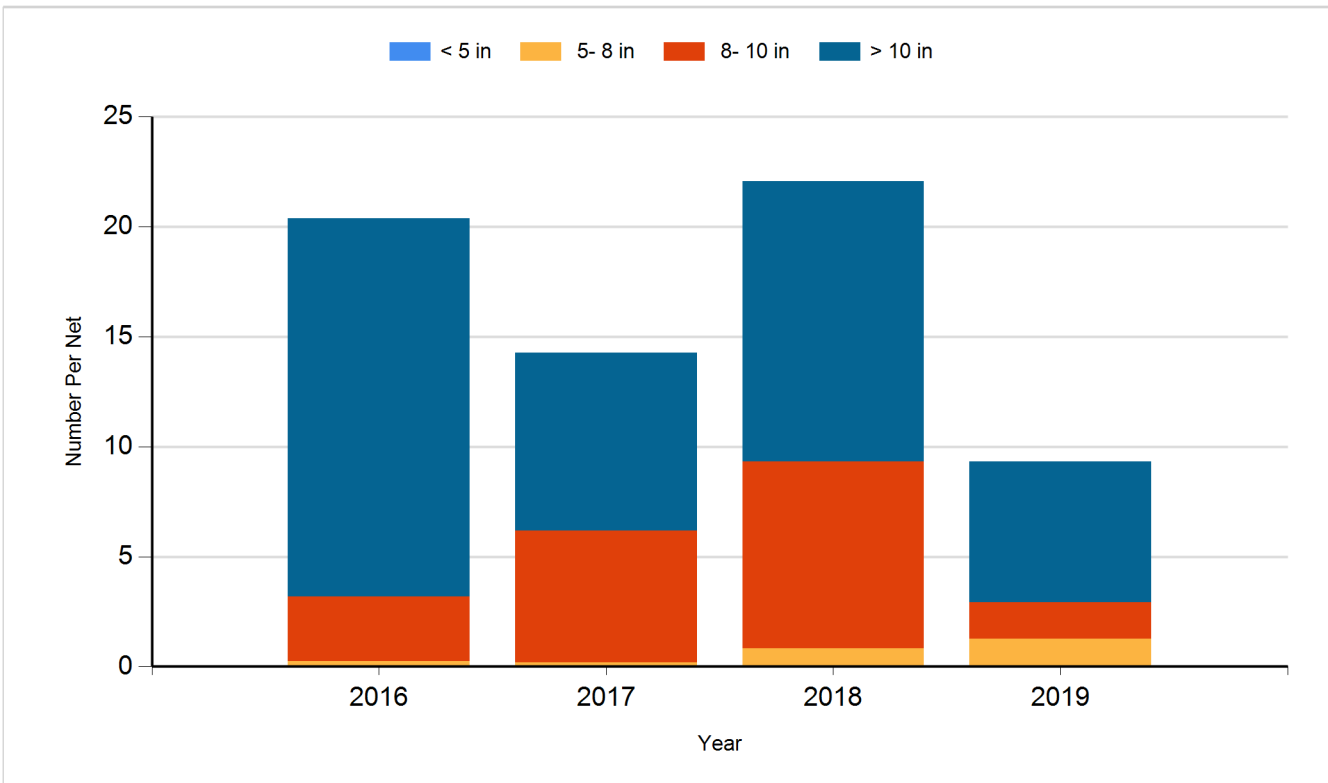
Species: Walleye  
Gear: AFS std gill net



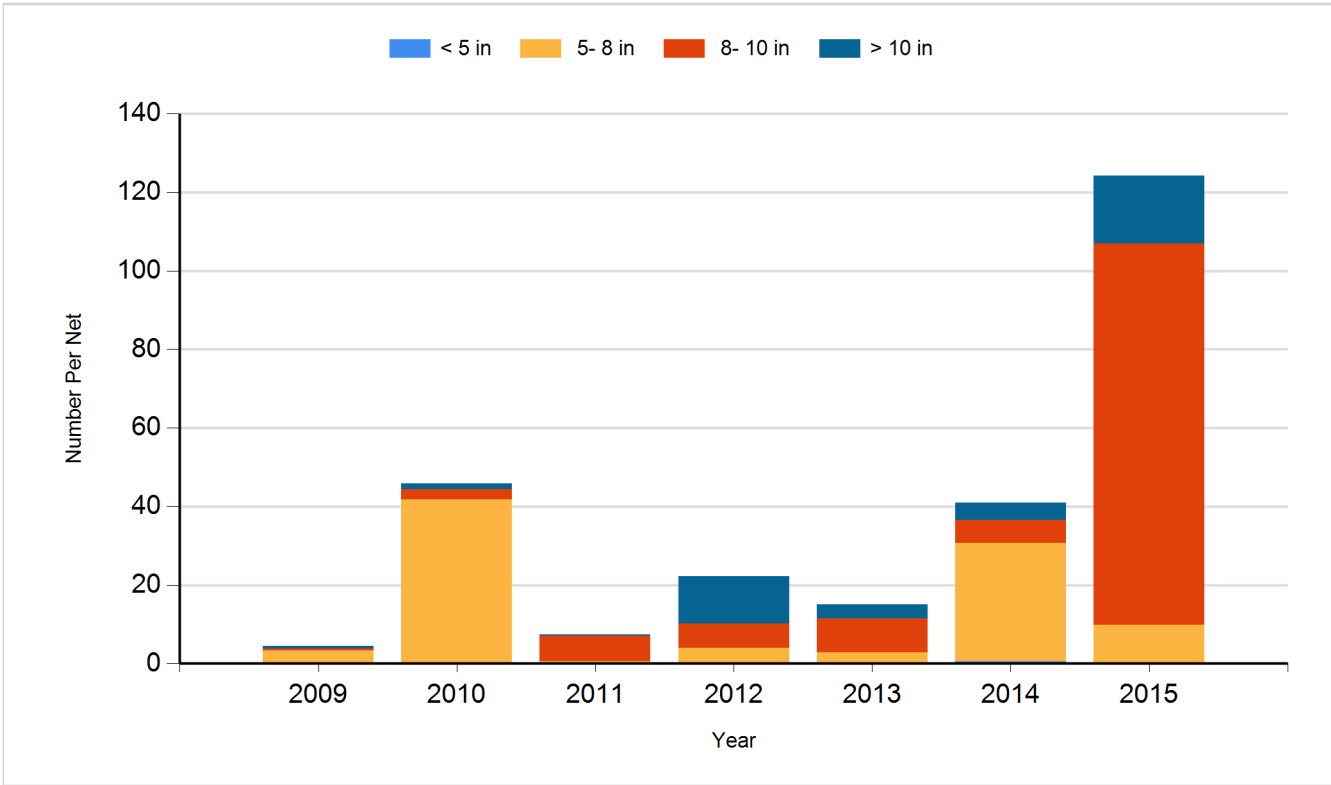
Species: Walleye  
Gear: std exp gill net



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
2009	Walleye	Fry	4,000,000
2011	Walleye	Fry	3,000,000
2012	Walleye	Fry	4,000,000
2014	Walleye	Fry	4,000,000
2019	Walleye	Fry	2,000,000