

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Pocasse, Campbell County

ULO-Lake-302-000

2019

## Lake Information

**Name:** Pocasse **Maximum Depth:** 17 Feet  
**County:** Campbell **Mean Depth:** 6 Feet  
**Legal Description:** T128-R78-S9  
**Surface Area:** 1,485 Acres

## Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jul 09, 2019	3 net-nights
AFS std gill net	Jul 10, 2019	3 net-nights
frame net (std 3/4 in)	Jul 09, 2019	6 net-nights
frame net (std 3/4 in)	Jul 10, 2019	6 net-nights

## **Common Fish Species Present**

Walleye

Northern Pike

Black Crappie

Yellow Perch

Channel Catfish

Common Carp

White Sucker

Freshwater Drum

Smallmouth Bass

Black Bullhead

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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

## 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	CI-80
AFS std gill net	Channel Catfish	58	9.7	1.9	98		7	85	2	
	Common Carp	8	1.3	0.9	100		50	87	3	
	Crappie	4	0.0	0.0						
	Freshwater Drum	7	1.2	0.6	100		100	105	6	
	Northern Pike	1	0.2	0.2	100		0	65		
	Walleye	22	3.7	1.2	100		14	92	2	
	White Sucker	2	0.3	0.3	100		100	90	0	
	Yellow Perch	3	0.5	0.3	67		33	109	9	
frame net (std 3/4 in)	Bigmouth Buffalo	2	0.2	0.2	100		100	106	17	
	Black Bullhead	7	0.4	0.3	80		60	83	8	
	Channel Catfish	68	5.7	2.9	99		9	5	85	1
	Common Carp	79	6.6	3.3	100		100	89	2	
	Crappie	17	0.0	0.0						
	Freshwater Drum	7	0.6	0.3	100		86	94	5	
	Northern Pike	28	2.3	0.7	96		36	14	79	3
	Shortnose Gar	9	0.0	0.0						
	Smallmouth Bass	8	0.7	0.4	100		100	95	3	
	Walleye	2	0.2	0.2	100		0	95	6	
	White Sucker	43	3.6	2.0	100		100	95	2	
	Yellow Perch	1	0.1	0.1	0		0	123		

## 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								2.3			2.30
	Black Crappie								3.6			3.60
	Bluegill								3.3			3.30
	Channel Catfish								0.2			0.20
	Common Carp								1.5			1.50
	Freshwater Drum								0.2			0.20
	Northern Pike								0.8			0.80
	River Carpsucker								0.1			0.10
	Shortnose Gar								0.0			0.00
	Smallmouth Bass								0.5			0.50
	Smallmouth Buffalo								0.1			0.10
	Walleye								2.3			2.30
	White Bass								2.1			2.10
	White Sucker								0.3			0.30
Yellow Perch								0.1			0.10	
AFS std gill net	Black Bullhead								0.3		0.0	0.15
	Black Crappie								0.7		0.0	0.35
	Channel Catfish								5.5		9.7	7.60
	Common Carp								1.0		1.3	1.15
	Crappie								0.0		0.0	0.00
	Freshwater Drum								0.7		1.2	0.95
	Northern Pike								0.8		0.2	0.50
	Walleye								6.5		3.7	5.10
	White Bass								0.8		0.0	0.40
	White Sucker								0.3		0.3	0.30
Yellow Perch								1.5		0.5	1.00	
frame net (std 3/4 in)	Bigmouth Buffalo	0.1	0.1			0.0					0.2	0.10
	Black Bullhead	1.3	8.3			8.3					0.4	4.58
	Channel Catfish	2.8	8.3			3.1					5.7	4.98
	Common Carp	5.8	1.8			2.5					6.6	4.18
	Crappie	0.0	0.0			0.0					0.0	0.00
	Freshwater Drum	0.1	1.5			0.0					0.6	0.55
	Northern Pike	1.3	0.2			0.3					2.3	1.03
	Orangespotted Sunfish	0.0	0.0			0.0					0.0	0.00

		CPUE										
Gear	Species	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg
frame net (std 3/4 in)	Shortnose Gar	0.0	0.0			0.0					0.0	0.00
	Smallmouth Bass	0.0	0.0			0.3					0.7	0.25
	Walleye	1.4	0.3			0.2					0.2	0.53
	White Bass	0.0	0.2			0.8					0.0	0.25
	White Sucker	0.0	0.0			0.0					3.6	0.90
	Yellow Perch	0.1	0.0			0.0					0.1	0.05
std exp gill net	Black Bullhead	1.0	27.5			0.5						9.67
	Channel Catfish	6.0	2.0			0.0						2.67
	Common Carp	2.0	2.5			13.0						5.83
	Freshwater Drum	1.0	1.5			0.8						1.10
	Northern Pike	5.5	0.5			4.0						3.33
	Orangespotted Sunfish	0.0	0.0			0.0						0.00
	Smallmouth Bass	0.0	0.5			0.0						0.17
	Walleye	6.0	1.5			2.8						3.43
	White Bass	0.0	0.5			0.0						0.17
	Yellow Perch	4.0	4.0			0.3						2.77

## 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										85
		PSD-P										78
		Wr										89
	Black Crappie	PSD										84
		PSD-P										44
		Wr										107
	Channel Catfish	PSD										0
		PSD-P										0
		Wr										94
	Common Carp	PSD										100
		PSD-P										100
		Wr										97
	Northern Pike	PSD										100
		PSD-P										70
		Wr										88
	Smallmouth Bass	PSD										83
		PSD-P										50
		Wr										92
	Walleye	PSD										63
		PSD-P										11
		Wr										87
White Sucker	PSD										100	
	PSD-P										100	
	Wr										95	
Yellow Perch	PSD										0	
	PSD-P										0	
	Wr										105	
AFS std gill net	Black Bullhead	PSD										100
		PSD-P										100
		Wr										92
	Black Crappie	PSD										100
		PSD-P										50
		Wr										109



Gear	Species	Index	Year											
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
AFS std gill net	Channel Catfish	PSD									100		98	
		PSD-P									33		7	
		Wr									100		85	
	Common Carp	PSD										100		100
		PSD-P										83		50
		Wr										93		87
	Northern Pike	PSD										100		100
		PSD-P										80		0
		Wr										86		65
	Walleye	PSD										74		100
		PSD-P										5		14
		Wr										86		92
	White Sucker	PSD										100		100
		PSD-P										100		100
		Wr										104		90
	Yellow Perch	PSD										100		67
		PSD-P										100		33
		Wr										93		109
frame net (std 3/4 in)	Black Bullhead	PSD	44	1				96					80	
		PSD-P	0	0				10					60	
		Wr	102	90				95					83	
	Channel Catfish	PSD	100	93				100					99	
		PSD-P	0	5				11					9	
		Wr	87	87				89					85	
	Common Carp	PSD	96	81				100					100	
		PSD-P	53	33				97					100	
		Wr	103	92				95					89	
	Northern Pike	PSD	0	100				100					96	
		PSD-P	0	0				67					36	
		Wr	97	76				86					79	
	Smallmouth Bass	PSD						50					100	
		PSD-P						25					100	
		Wr						106					95	
	Walleye	PSD	18	75				100					100	
		PSD-P	0	0				0					0	
		Wr	94	83				88					95	
	White Sucker	PSD											100	

Gear	Species	Index	Year										
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
frame net (std 3/4 in)	White Sucker	PSD-P											100
		Wr											95
	Yellow Perch	PSD	0										0
		PSD-P	0										0
		Wr	103									123	
std exp gill net	Black Bullhead	PSD	50	0				100					
		PSD-P	0	0				0					
		Wr	109	107				96					
	Channel Catfish	PSD	100	100									
		PSD-P	0	0									
		Wr	94	96									
	Common Carp	PSD	50	40					98				
		PSD-P	25	40					37				
		Wr	110	97					67				
	Northern Pike	PSD	55	100					100				
		PSD-P	0	0					75				
		Wr	100	83					92				
	Smallmouth Bass	PSD		100									
		PSD-P		100									
		Wr		99									
	Walleye	PSD	42	100					100				
		PSD-P	0	0					18				
		Wr	93	91					94				
	Yellow Perch	PSD	0	38					100				
		PSD-P	0	0					0				
		Wr	101	93					93				

## Back-Calculated Lengths

Mean species back-calculated total length (mm) at age, standard error (SE), and sample size (N).

Species: Walleye

Year Class	Age	N	Mean back-calculated length (SE) at age										
			1	2	3	4	5	6	7	8	9	10	
2014	5	2	132 (19.7)	187 (27.9)	264 (22.1)	321 (26.5)	370 (18.8)						
2014	5	3	147 (4.6)	208 (11.6)	275 (2.5)	334 (5.3)	381 (2.3)						
2013	6	8	153 (5.6)	190 (6)	270 (5.9)	321 (5.6)	379 (5.2)	421 (3.5)					
2012	7	2	145 (6.6)	177 (6.4)	275 (1.4)	326 (7.5)	365 (10.1)	399 (1.6)	427 (4.3)				
2011	8	4	150 (5)	188 (5.6)	274 (10.7)	324 (14.6)	364 (11.6)	396 (9.6)	424 (9)	453 (8)			
2010	9	2	191 (9.3)	231 (13)	306 (9.6)	350 (11.1)	390 (15.4)	423 (17.7)	457 (14.3)	478 (11.3)	498 (11.5)		
2009	10	1	177	230	315	349	397	423	449	472	498	525	
Weighted Mean		22	154	196	277	328	376	413	435	463	498	525	
Year Class	Age	N	11	12	13	14	15	16	17	18	19	20	
2014	5	2											
2014	5	3											
2013	6	8											
2012	7	2											
2011	8	4											
2010	9	2											
2009	10	1											
Weighted Mean		22											

## Length at Capture

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

Species: Black Crappie

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	56	116 (16)	198 (8)	248 (18)	287 (11)		324 (3)				

Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	21					420 (4)	446 (8)	454 (2)	471 (4)	504 (2)	540 (1)
2017	40	196 (1)	321 (8)	400 (27)	475 (1)		537 (2)	501 (1)			
2014	24	247 (2)		423 (10)	488 (4)	512 (6)		497 (2)			
2010	24		320 (14)	407 (10)							

Species: Yellow Perch

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	9			266 (7)			311 (2)				
2011	16		196 (16)								
2010	20	138 (20)									

## **Fish Condition**

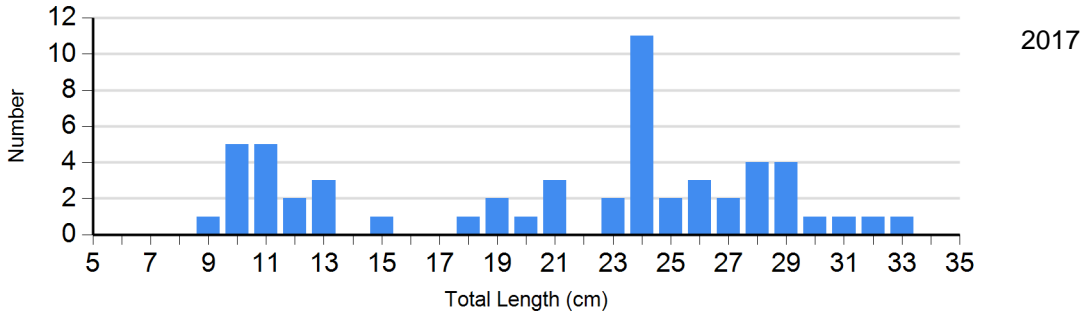
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2017	0		0		2	92 (0.4)	0	
Black Crappie Frame Net	2017	7	126 (13.1)	17	106 (1.3)	15	102 (1.8)	4	101 (5.8)
Channel Catfish Gill Net	2017	0		22	101 (2.7)	11	98 (2.1)	0	
	2019	1	92	53	85 (1.2)	4	91 (2.6)	0	
Common Carp Gill Net	2017	0		1	104	1	92	4	90 (2.5)
	2019	0		4	85 (0.2)	4	90 (5.8)	0	
Northern Pike Gill Net	2017	0		1	77	3	87 (3.0)	1	90
	2019	0		1	65	0		0	
Walleye Gill Net	2017	10	84 (1.0)	27	87 (0.9)	2	91 (1.2)	0	
	2019	0		19	92 (1.2)	2	92 (8.2)	1	81
White Sucker Gill Net	2017	0		0		0		2	104 (5.6)
	2019	0		0		0		2	90 (0.3)
Yellow Perch Gill Net	2017	0		0		7	95 (4.4)	2	85 (5.1)
	2019	1	95	1	112	1	119	0	

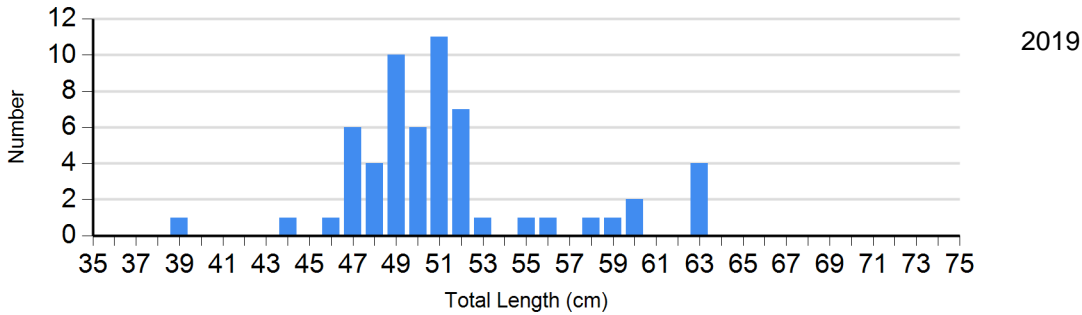
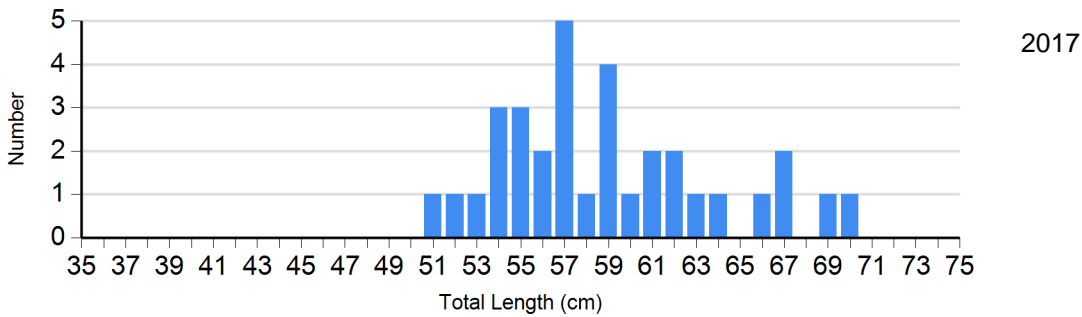
## Length Frequency Distribution

Length frequency histogram of species sampled by year.

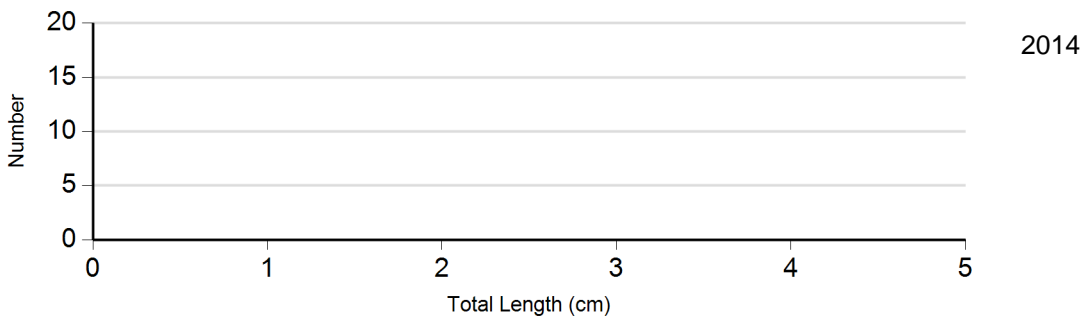
Species: Black Crappie  
Gear: AFS std frame net



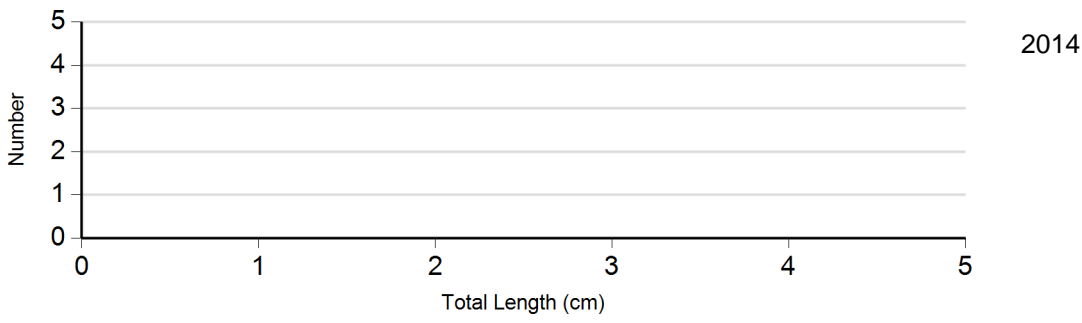
Species: Channel Catfish  
Gear: AFS std gill net



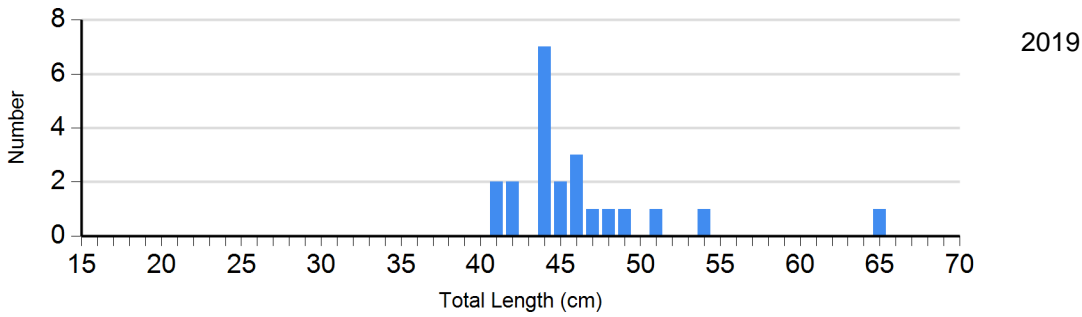
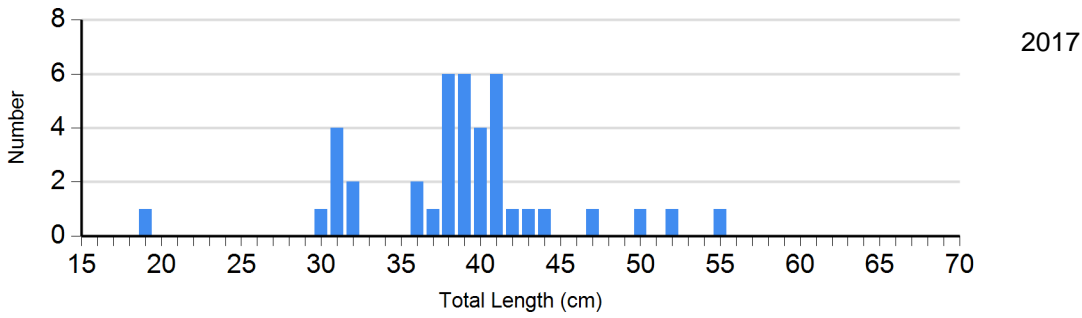
Species: Common Carp  
Gear: std exp gill net



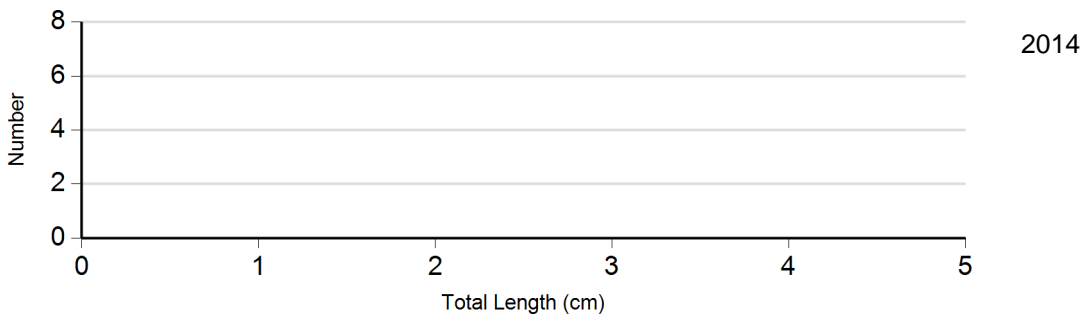
Species: Northern Pike  
Gear: std exp gill net



Species: Walleye  
Gear: AFS std gill net



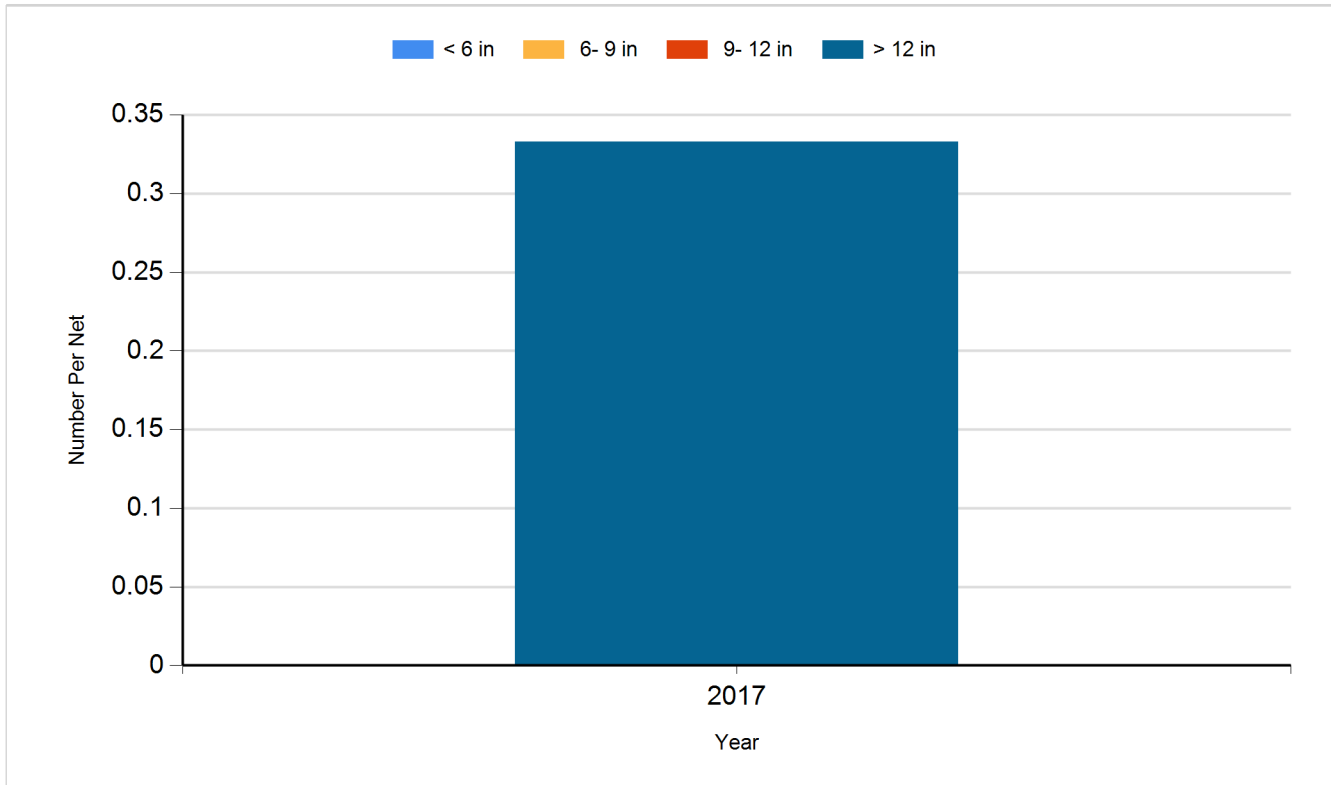
Species: Walleye  
Gear: std exp gill net



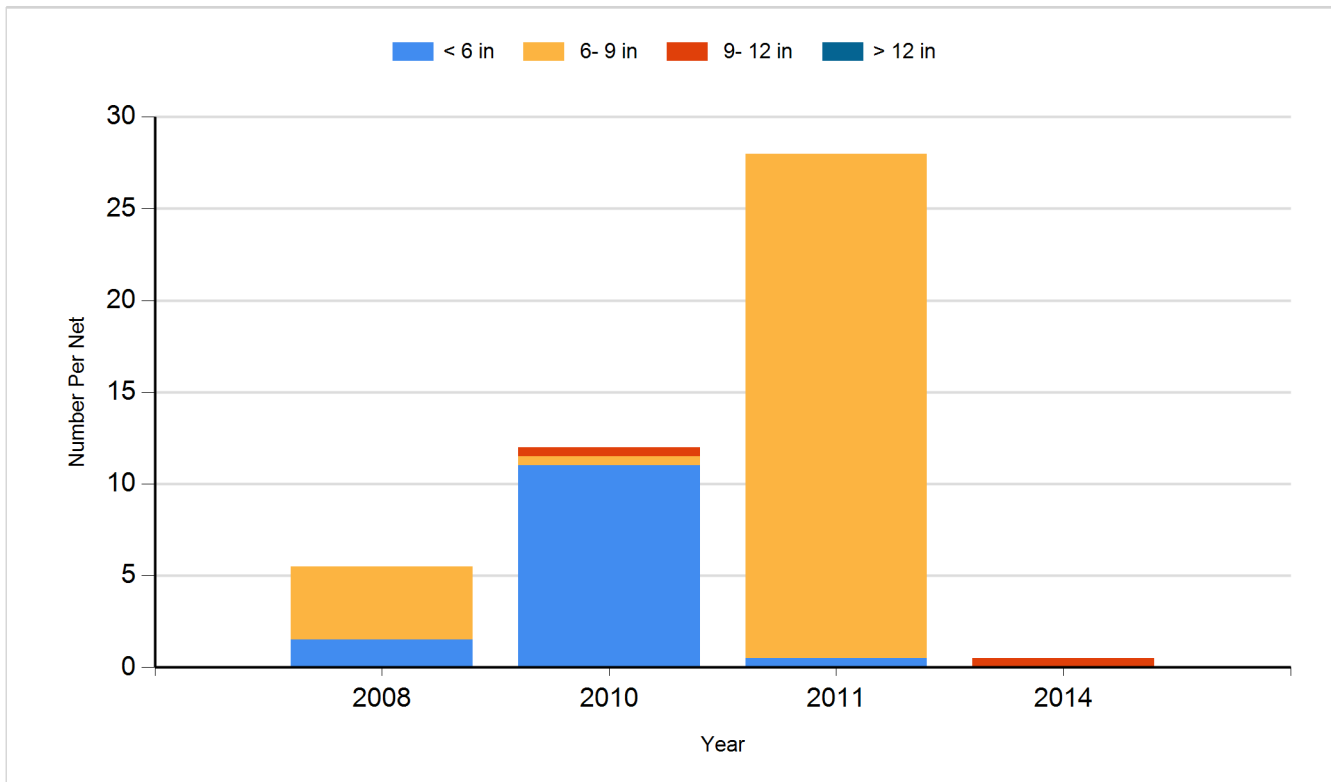
## Historic Fish Sizes and Relative Abundance

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

Species: Black Bullhead  
Gear: AFS std gill net

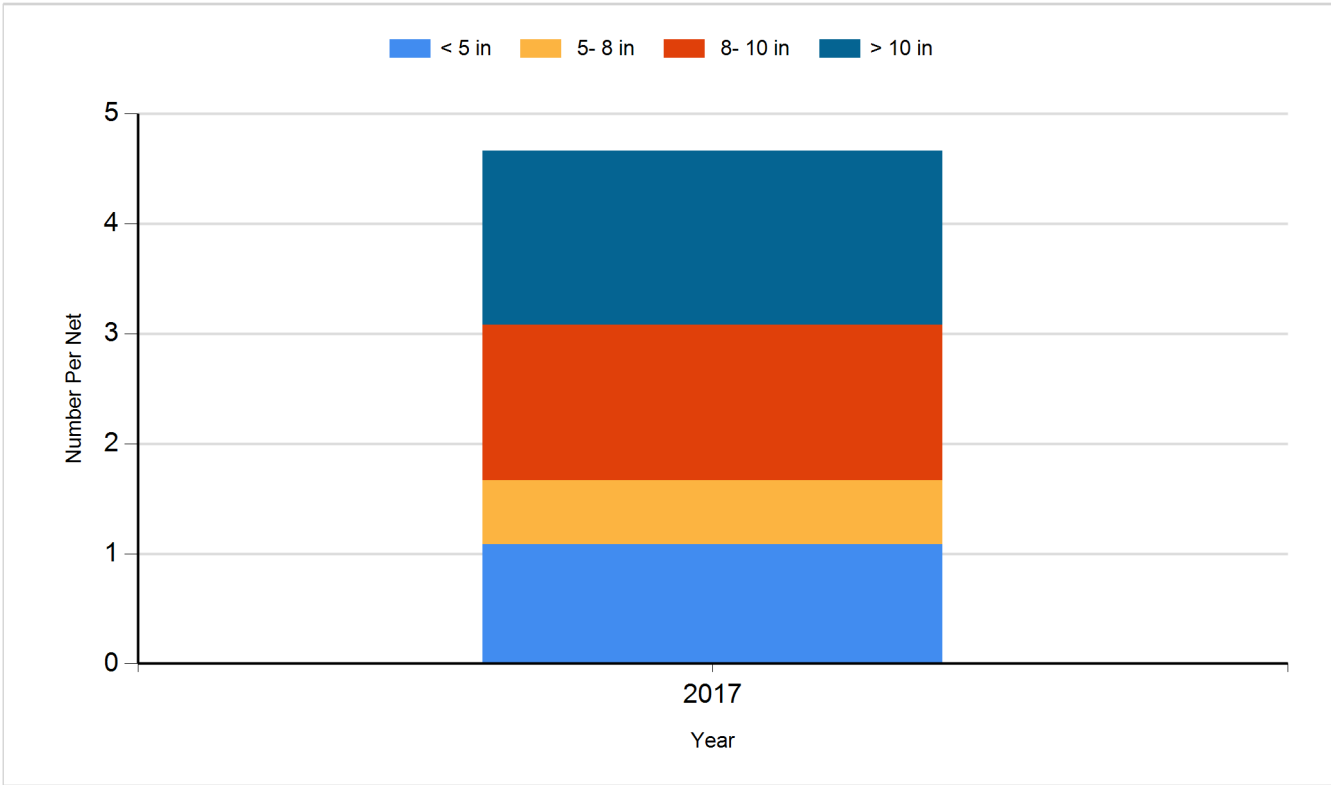


Species: Black Bullhead  
Gear: std exp gill net

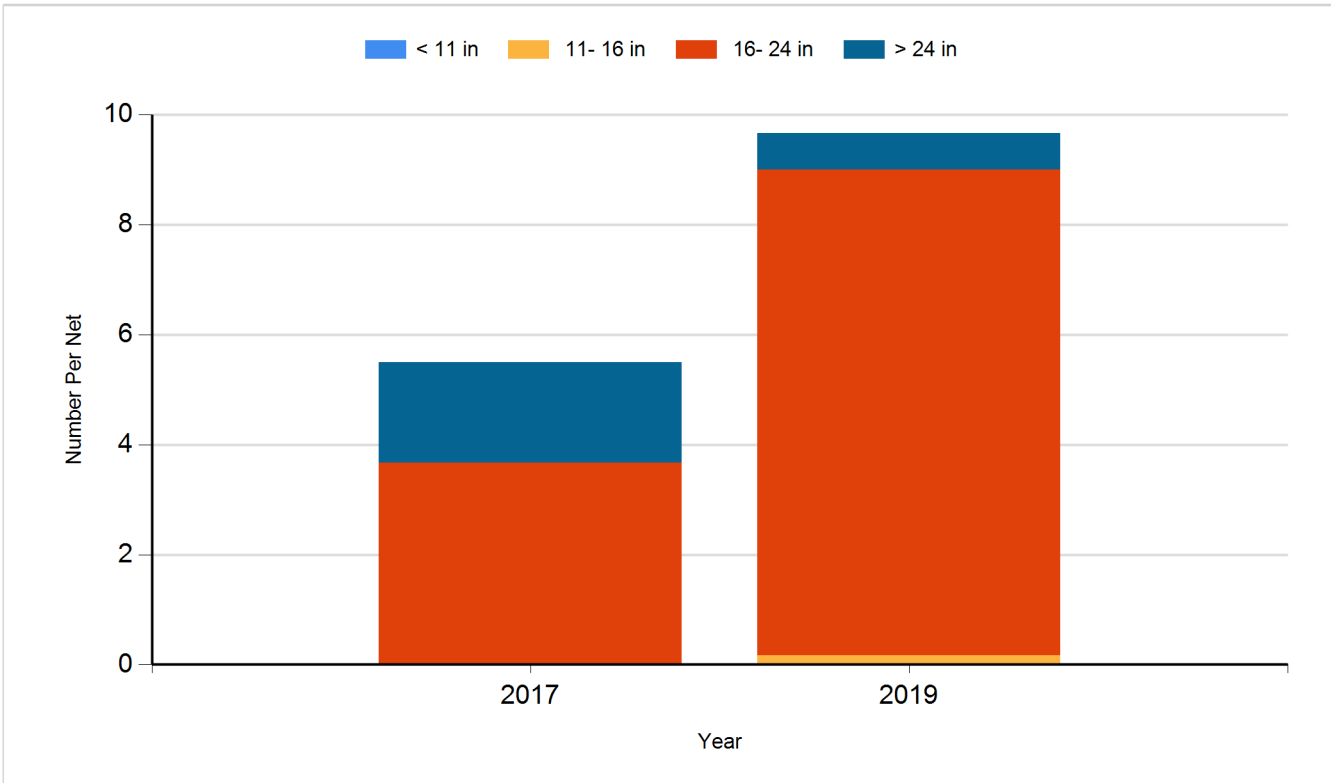




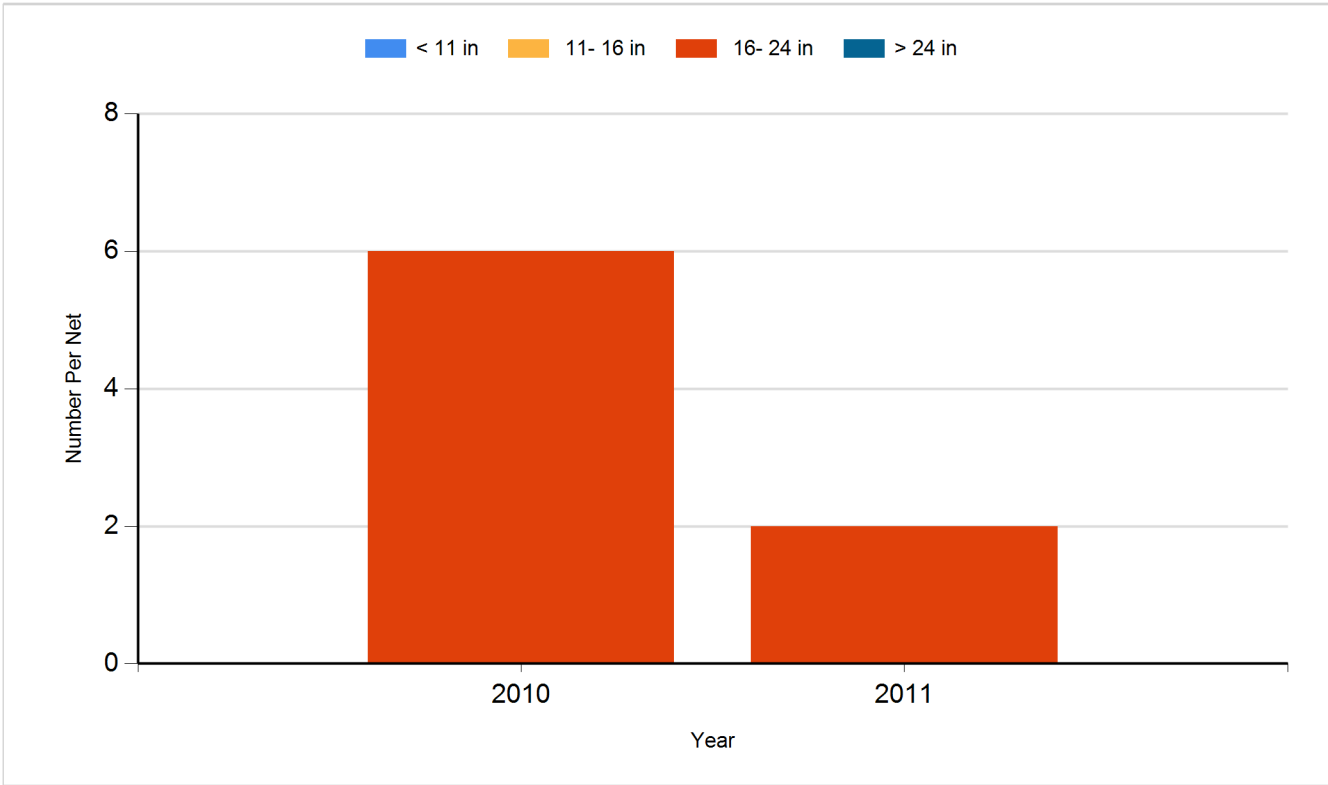
Species: Black Crappie  
Gear: AFS std frame net



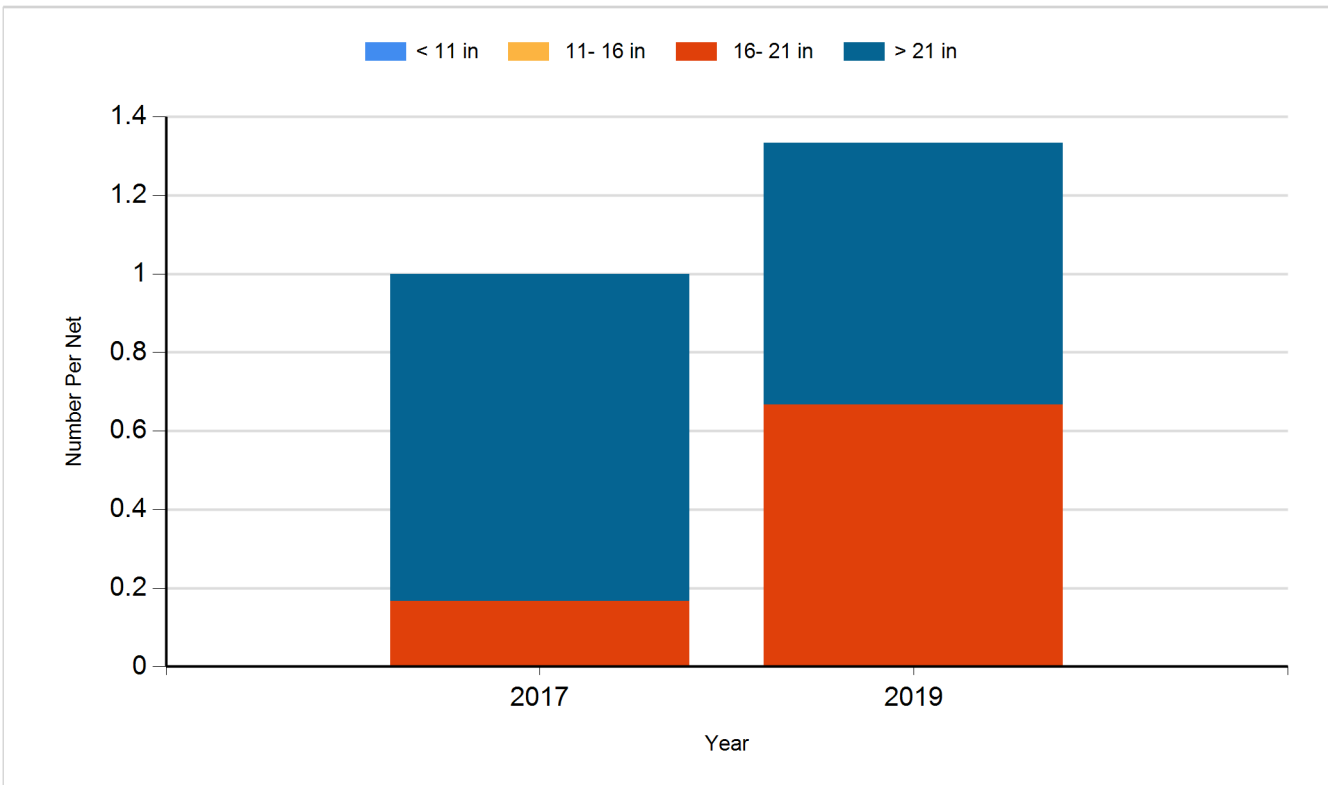
Species: Channel Catfish  
Gear: AFS std gill net



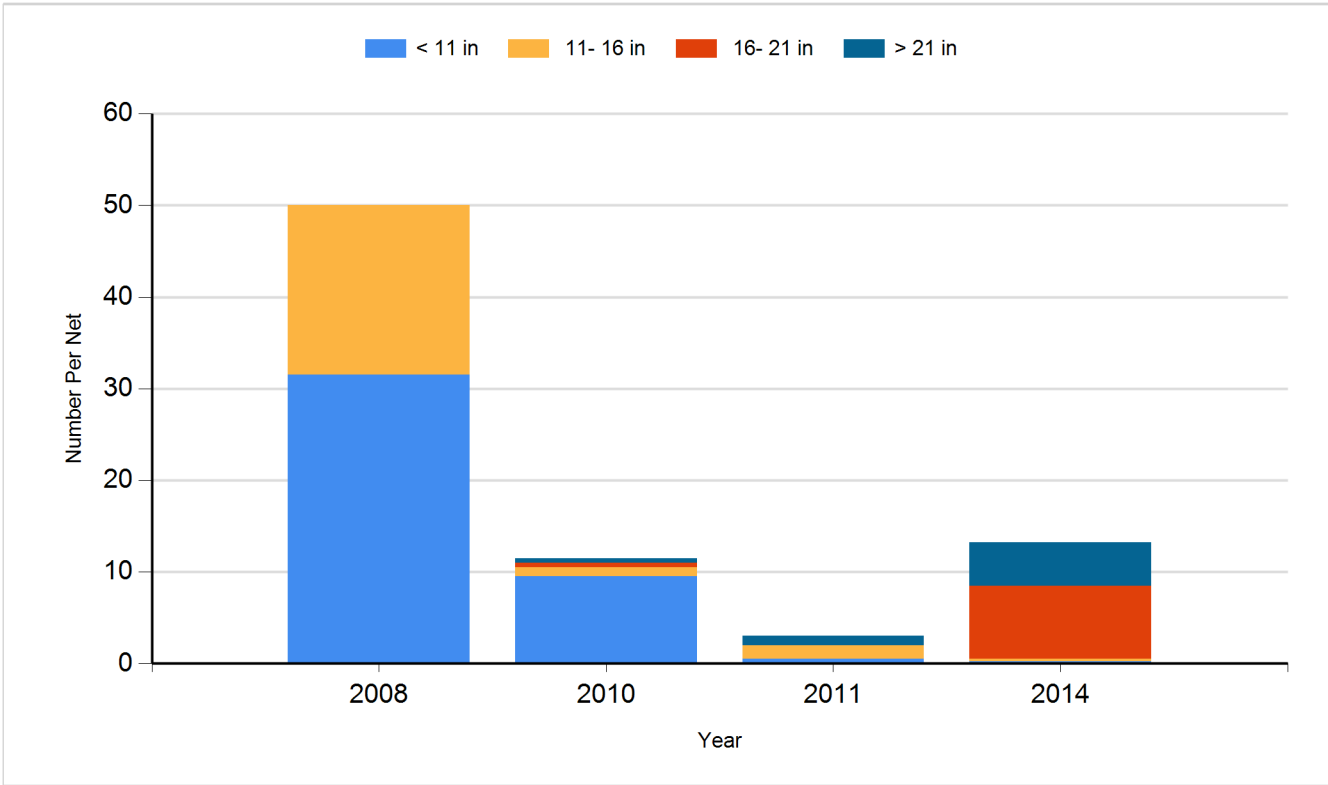
Species: Channel Catfish  
Gear: std exp gill net



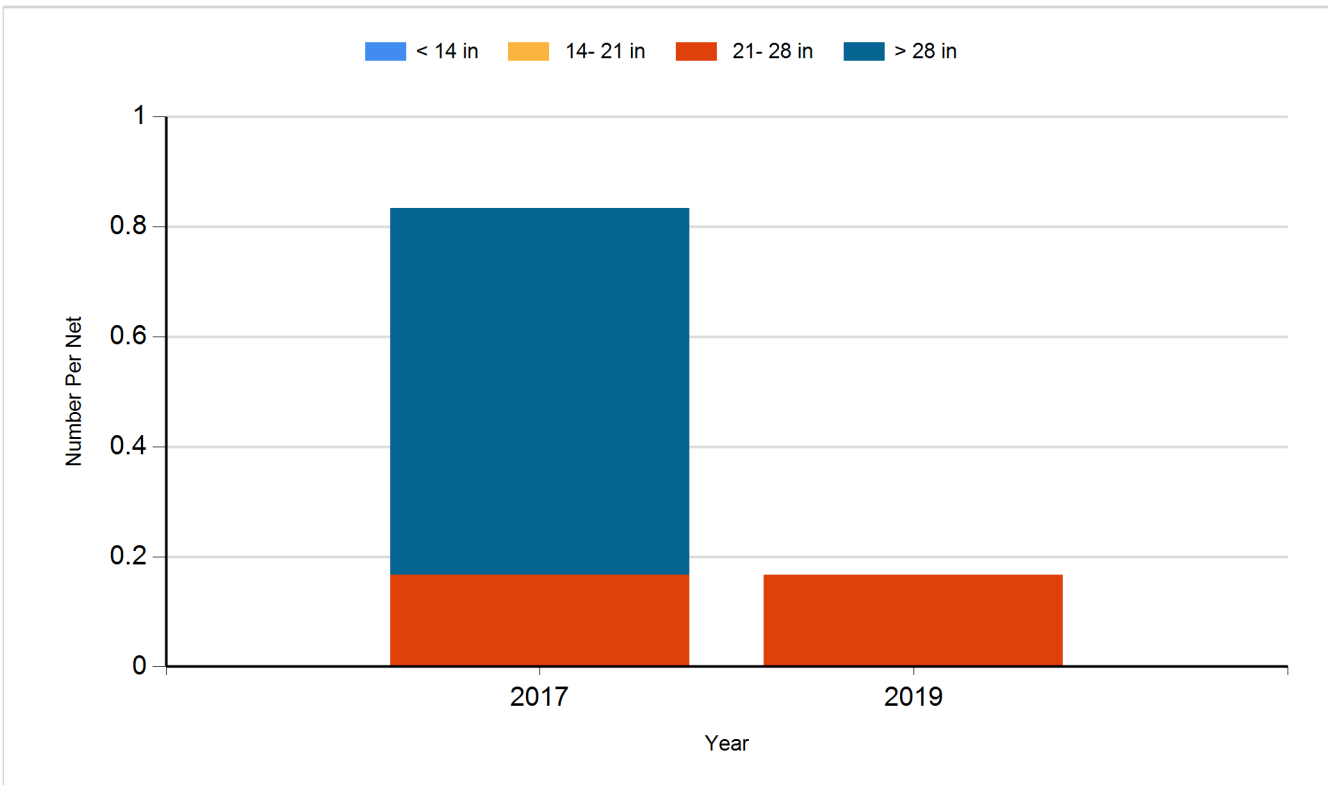
Species: Common Carp  
Gear: AFS std gill net



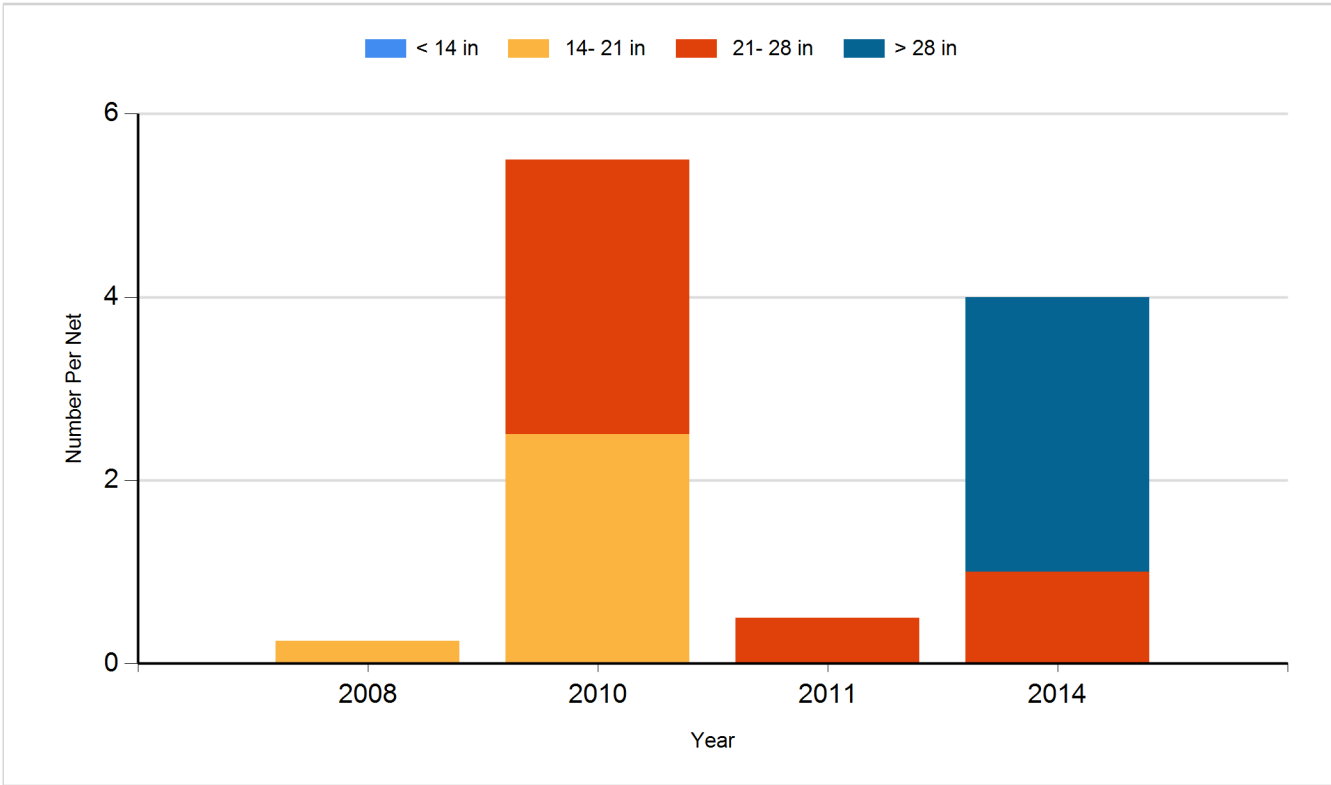
Species: Common Carp  
Gear: std exp gill net



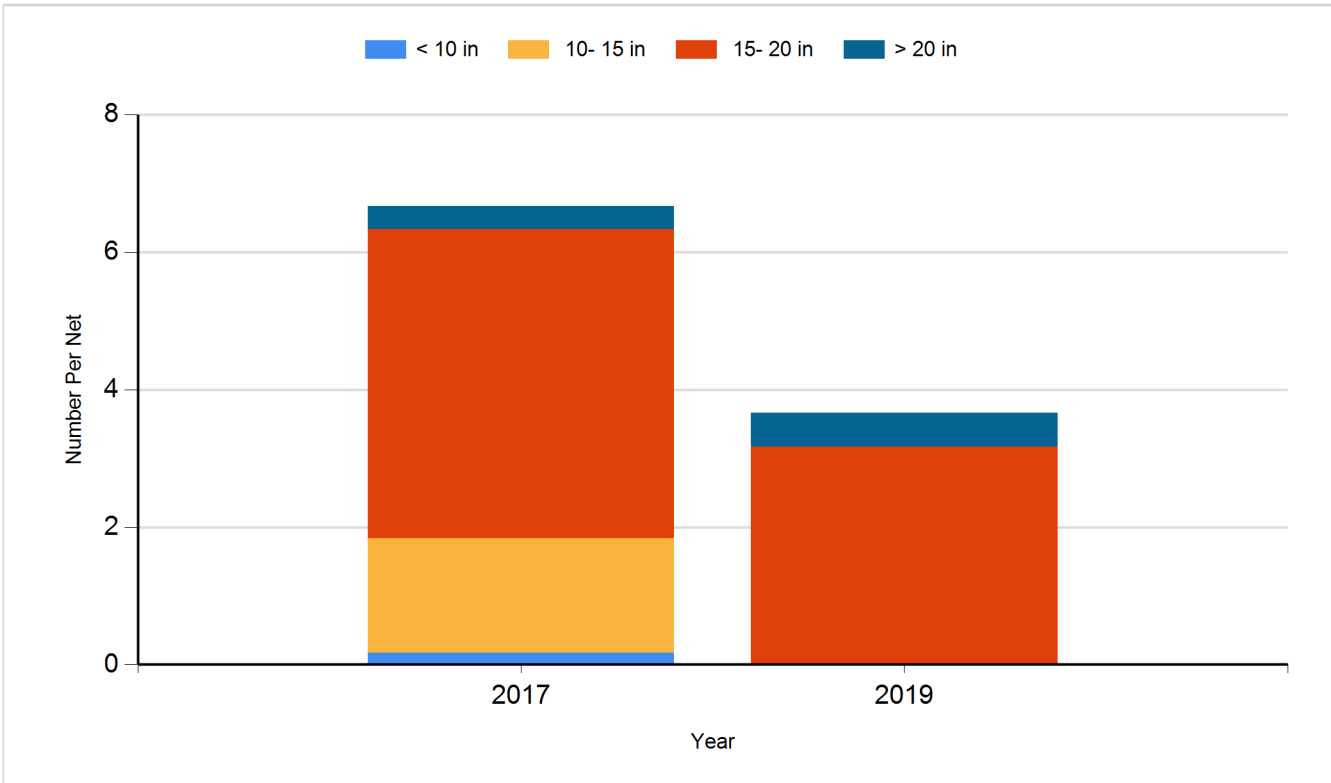
Species: Northern Pike  
Gear: AFS std gill net



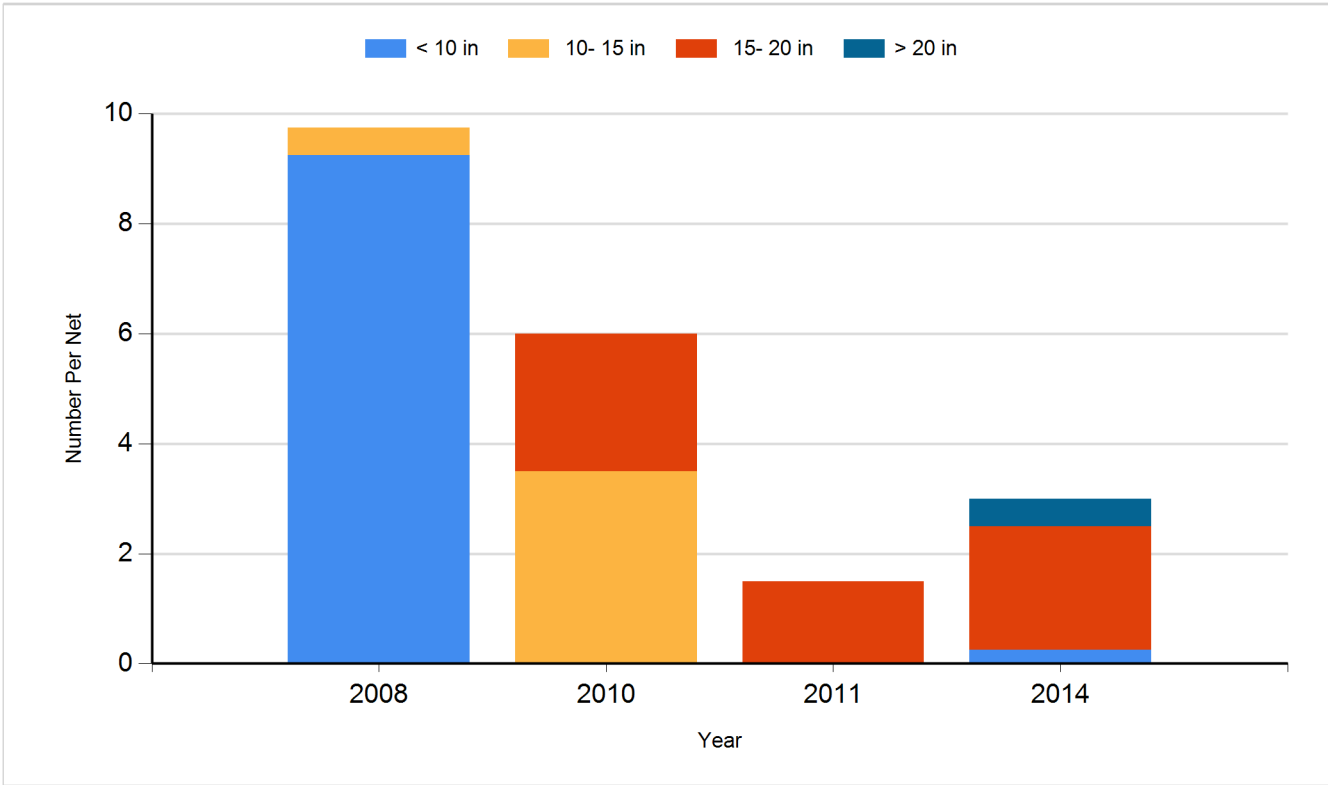
Species: Northern Pike  
Gear: std exp gill net



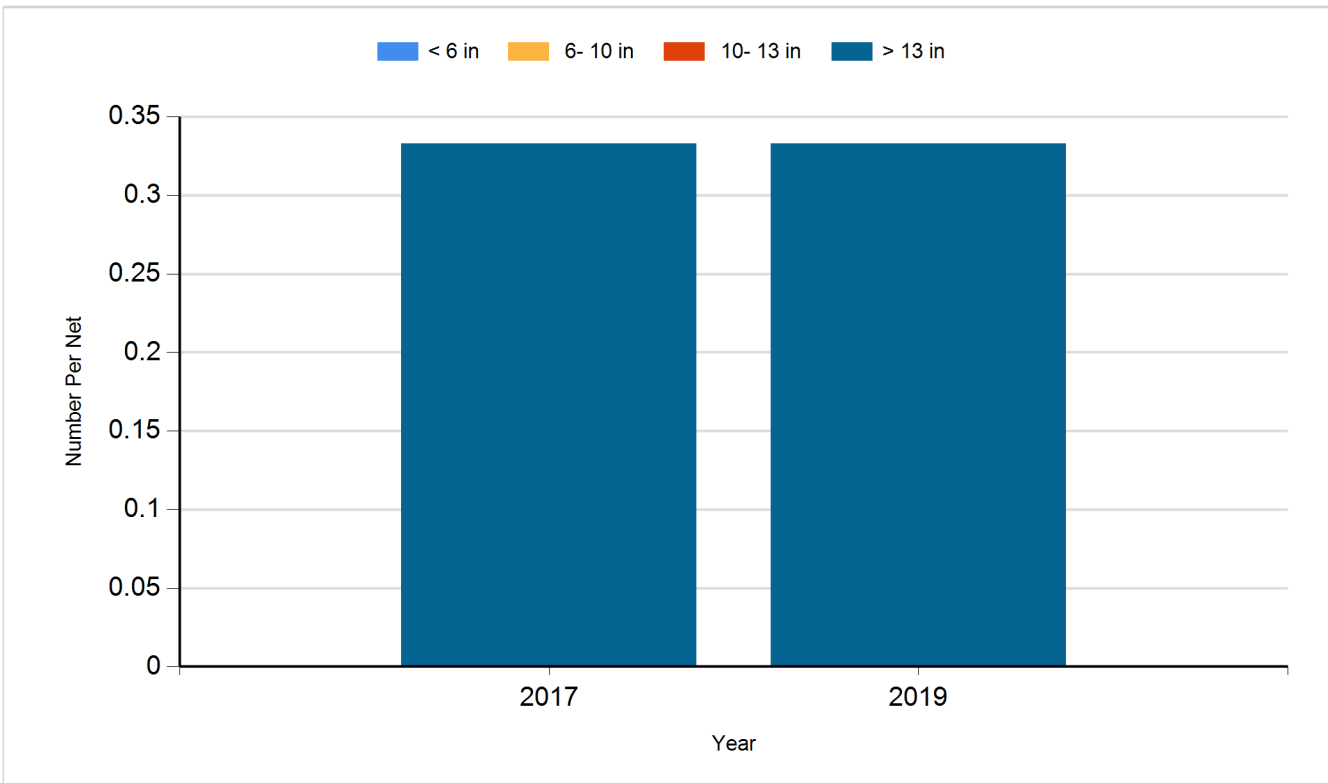
Species: Walleye  
Gear: AFS std gill net



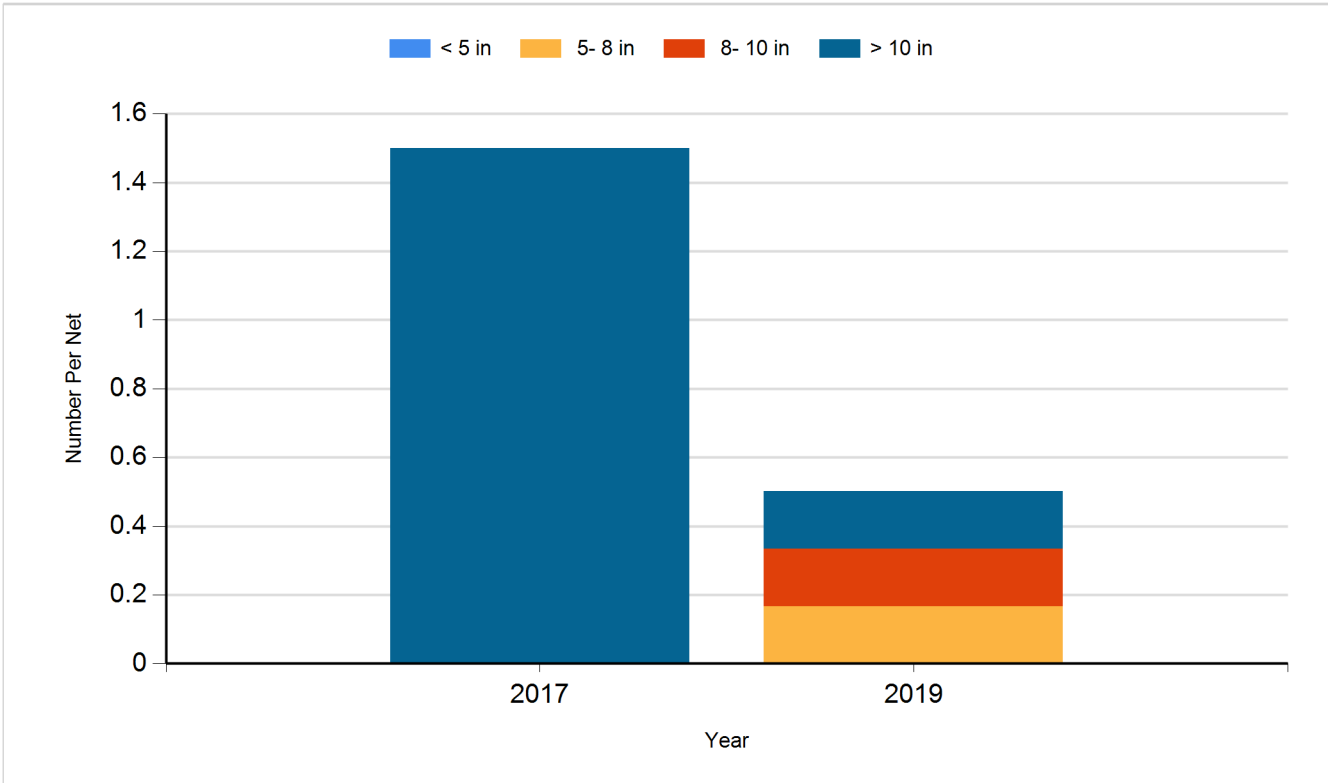
Species: Walleye  
Gear: std exp gill net



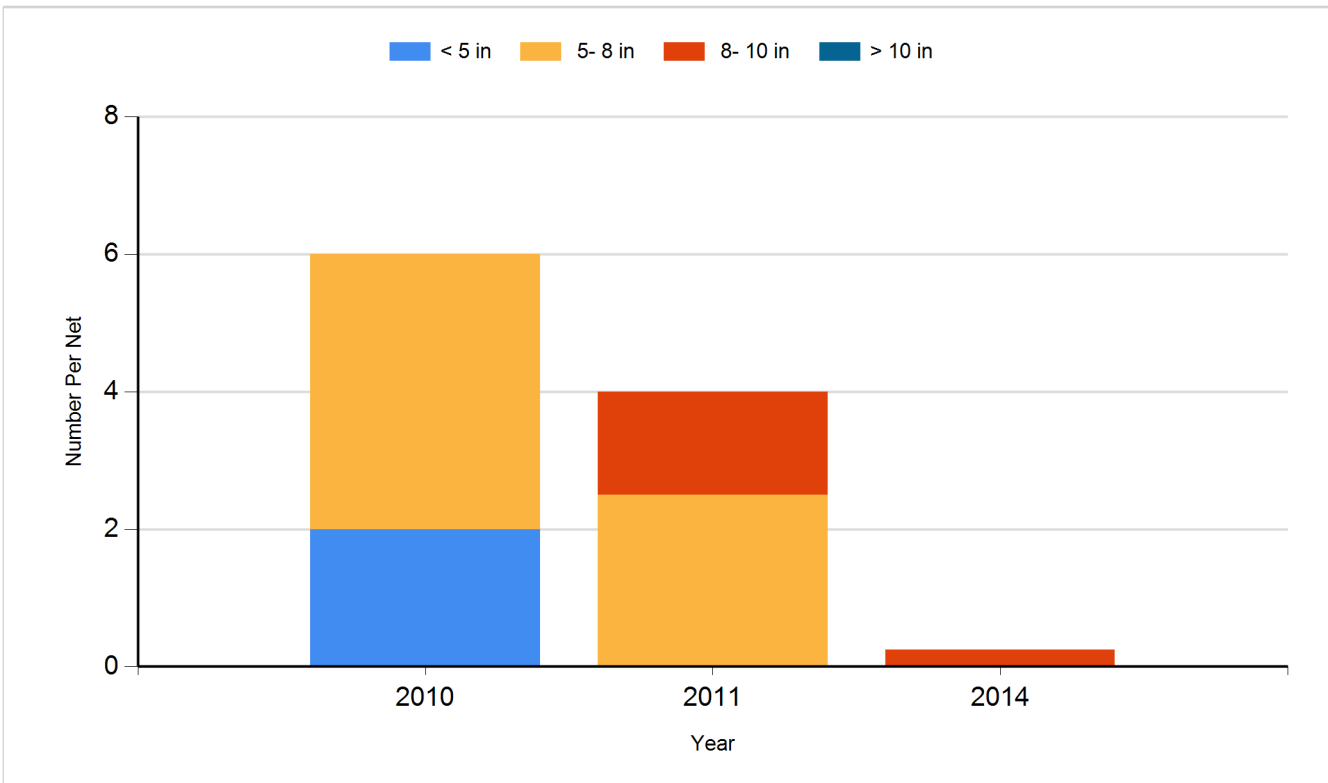
Species: White Sucker  
Gear: AFS std gill net



Species: 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	Fry	2,000,000
2015	Walleye	Small Fingerling	180,700
2015	White Crappie	Adult	70