SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Pocasse, Campbell County
ULO-Lake-302-000
2022

Lake Information

Name: Pocasse

County: Campbell

Legal Description: T128-R78-S9

Surface Area: 1,485 Acres

Maximum Depth: 17 Feet

Mean Depth: 6 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 22, 2022	3 net-nights
AFS std gill net	Jun 23, 2022	3 net-nights
frame net (std 3/4 in)	Jun 22, 2022	6 net-nights
frame net (std 3/4 in)	Jun 23, 2022	6 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Northern Pike

Black Crappie

Channel Catfish

Freshwater Drum

Common Carp

Bluegill

White Sucker

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.
- s**td 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.

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

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.

$$PSD = \left(\frac{number\ of\ fish \geq quality\ length}{number\ of\ fish \geq stock\ length}\right) \text{x } 100$$

$$PSD - P = \left(\frac{number\ of\ fish \geq preferred\ length}{number\ of\ fish \geq stock\ length}\right) \text{x } 100$$

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.

$$Wr = \left(\frac{W}{Ws}\right) \text{x } 100$$

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).

	Stock		Quality		Preferred		Memorable		Trophy	
Species Name	(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**

			Abundance		Stock Density Indices				Condition	
Gear	Species	Sample Size (n)	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
AFS std gill net	Bigmouth Buffalo	2	0.0	0.0	0		0			
	Channel Catfish	32	5.3	1.4	100		13		94	3
	Common Carp	6	1.0	1.2	100		83		87	2
	Freshwater Drum	6	1.0	0.8	100		100		112	6
	Northern Pike	3	0.5	0.3	100		33		85	3
	Walleye	11	1.8	0.8	100		27		93	3
	White Sucker	1	0.2	0.2	100		100		95	
	Yellow Perch	1	0.2	0.2	100		100		89	
frame net (std 3/4 in)	Bigmouth Buffalo	3	0.2	0.2	50		50		79	6
	Black Crappie	55	2.4	1.5	86		72	13	101	2
	Bluegill	6	0.5	0.5	33		0		117	9
	Channel Catfish	11	0.9	0.5	100		18		93	4
	Common Carp	4	0.3	0.3	100		100		83	8
	Freshwater Drum	4	0.3	0.5	100		100		109	6
	Northern Pike	10	0.8	0.6	90		50	28	89	3
	Shortnose Gar	2	0.0	0.0						
	Walleye	6	0.5	0.3	100		67		91	3
	White Sucker	1	0.1	0.1	100		100		92	
	Yellow Perch	1	0.1	0.1	100		0		96	

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**

		CPUE										
Gear	Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
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	Bigmouth Buffalo					0.0		0.0			0.0	0.00
	Black Bullhead					0.3		0.0			0.0	0.10
	Black Crappie					0.7		0.0			0.0	0.23
	Channel Catfish					5.5		9.7			5.3	6.83
	Common Carp					1.0		1.3			1.0	1.10
	Crappie					0.0		0.0			0.0	0.00
	Freshwater Drum					0.7		1.2			1.0	0.97
	Northern Pike					0.8		0.2			0.5	0.50
	Walleye					6.5		3.7			1.8	4.00
	White Bass					0.8		0.0			0.0	0.27
	White Sucker					0.3		0.3			0.2	0.27
	Yellow Perch					1.5		0.5			0.2	0.73
frame net (std 3/4 in)	Bigmouth Buffalo		0.0					0.2			0.2	0.13
	Black Bullhead		8.3					0.4			0.0	2.90
	Black Crappie		0.0					0.0			2.4	0.80
	Bluegill		0.0					0.0			0.5	0.17
	Channel Catfish		3.1					5.7			0.9	3.23
	Common Carp		2.5					6.6			0.3	3.13
	Crappie		0.0					0.0			0.0	0.00

		CPUE										
Gear	Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
frame net (std 3/4 in)	Freshwater Drum		0.0					0.6			0.3	0.30
	Northern Pike		0.3					2.3			0.8	1.13
	Shortnose Gar		0.0					0.0			0.0	0.00
	Smallmouth Bass		0.3					0.7			0.0	0.33
	Walleye		0.2					0.2			0.5	0.30
	White Bass		0.8					0.0			0.0	0.27
	White Sucker		0.0					3.6			0.1	1.23
	Yellow Perch		0.0					0.1			0.1	0.07
std exp gill net	Black Bullhead		0.5									0.50
	Channel Catfish		0.0									0.00
	Common Carp		13.0									13.00
	Freshwater Drum		0.8									0.80
	Northern Pike		4.0									4.00
	Orangespotted Sunfish		0.0									0.00
	Smallmouth Bass		0.0									0.00
	Walleye		2.8									2.80
	White Bass		0.0									0.00
	Yellow Perch		0.3									0.30

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.

			Year									
Gear	Species	Index	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AFS std frame net	Black Crappie	PSD					84					
		PSD-P					44					
		Wr					107					
	Bluegill	PSD					46					
		PSD-P					15					
		Wr					122					
	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					
	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	Bigmouth Buffalo	PSD										0
		PSD-P										0
	Black Crappie	PSD					100					
		PSD-P					50					
		Wr					109					
	Channel Catfish	PSD					100		98			100
		PSD-P					33		7			13
		Wr					100		85			94
	Common Carp	PSD					100		100			100

			Year									
Gear	Species	Index	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AFS std gill net	Common Carp	PSD-P					83		50			83
		Wr					93		87			87
	Northern Pike	PSD					100		100			100
		PSD-P					80		0			33
		Wr					86		65			85
	Walleye	PSD					74		100			100
		PSD-P					5		14			27
		Wr					86		92			93
	White Sucker	PSD					100		100			100
		PSD-P					100		100			100
		Wr					104		90			95
	Yellow Perch	PSD					100		67			100
		PSD-P					100		33			100
		Wr					93		109			89
frame net (std 3/4 in)	Bigmouth Buffalo	PSD							100			50
		PSD-P							100			50
		Wr							106			79
	Black Crappie	PSD										86
		PSD-P										72
		Wr										101
	Bluegill	PSD										33
		PSD-P										0
		Wr										117
	Channel Catfish	PSD		100					99			100
		PSD-P		11					9			18
		Wr		89					85			93
	Common Carp	PSD		100					100			100
		PSD-P		97					100			100
		Wr		95					89			83
	Northern Pike	PSD		100					96			90
		PSD-P		67					36			50
		Wr		86					79			89
	Walleye	PSD		100					100			100
		PSD-P		0					0			67
		Wr		88					95			91
	White Sucker	PSD							100			100
		PSD-P							100			100

			Year									
Gear	Species	Index	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
frame net (std 3/4 in)	White Sucker	Wr							95			92
	Yellow Perch	PSD							0			100
		PSD-P							0			0
		Wr							123			96
std exp gill net	Common Carp	PSD		98								
		PSD-P		37								
		Wr		67								
	Northern Pike	PSD		100								
		PSD-P		75								
		Wr		92								
	Walleye	PSD		100								
		PSD-P		18								
		Wr		94								
	Yellow Perch	PSD		100								
		PSD-P		0								
		Wr		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
2016	6	2	207 (13.3)	266 (18.3)	299 (19.8)	342 (9.8)	388 (4.7)	429 (5.4)				
2016	6	5	224 (11.6)	285 (20.3)	327 (19.4)	379 (22.9)	425 (18.6)	463 (21.9)				
2015	7	2	232 (29.9)	286 (36.8)	343 (36.8)	390 (29.7)	428 (15.1)	461 (8)	505 (.5)			
2015	7	2	243 (5.5)	293 (15.9)	341 (26.9)	381 (34.6)	411 (38.5)	449 (24.5)	480 (21.8)			
2014	8	1	219	307	389	462	490	524	544	581		
2014	8	1	237	294	348	397	430	464	491	512		
Weighted Mean		13	226	286	334	383	423	460	501	547		

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2016	6	2										
2016	6	5										
2015	7	2										
2015	7	2										
2014	8	1										
2014	8	1										
Weighted Mean		13										

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: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	43	80 (10)	141 (26)	197 (2)	216 (3)	243 (2)					

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2022	9						487 (6)	501 (2)	525 (1)		
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)			

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)				

Fish Condition

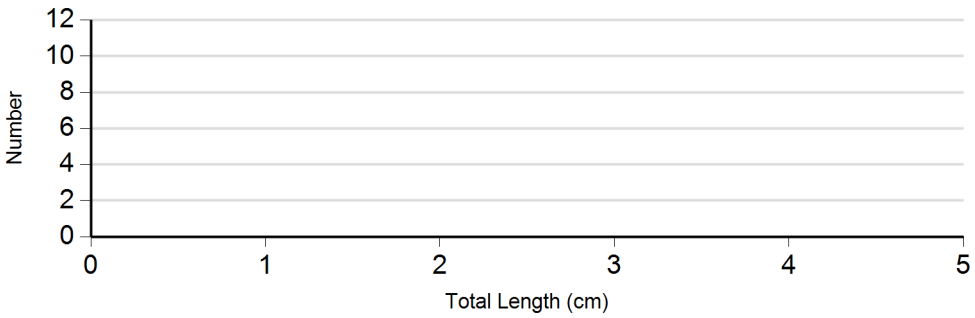
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2022	4	118 (3.7)	4	105 (0.2)	2	96	19	97 (1.7)
Bluegill Frame Net	2022	4	121 (7.7)	2	109 (15.7)	0		0	
Channel Catfish Gill Net	2019	1	92	53	85 (1.2)	4	91 (2.6)	0	
	2022	0		28	94 (2.1)	4	96 (6.0)	0	
Common Carp Gill Net	2019	0		4	85 (0.2)	4	90 (5.8)	0	
	2022	0		1	93	1	84	4	87 (2.2)
Northern Pike Gill Net	2019	0		1	65	0		0	
	2022	0		2	83 (1.5)	1	90	0	
Walleye Gill Net	2019	0		19	92 (1.2)	2	92 (8.2)	1	81
	2022	0		8	95 (3.3)	3	91 (2.9)	0	
White Sucker Gill Net	2019	0		0		0		2	90 (0.3)
	2022	0		0		0		1	95
Yellow Perch Gill Net	2019	1	95	1	112	1	119	0	
	2022	0		0		0		1	89

Length Frequency Distribution

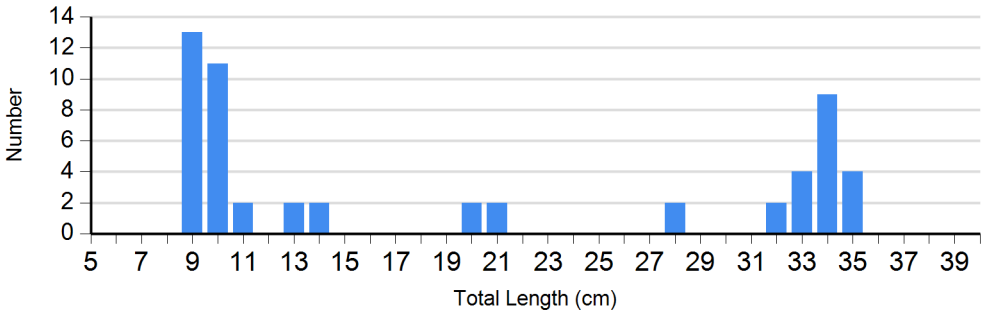
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: AFS std frame net



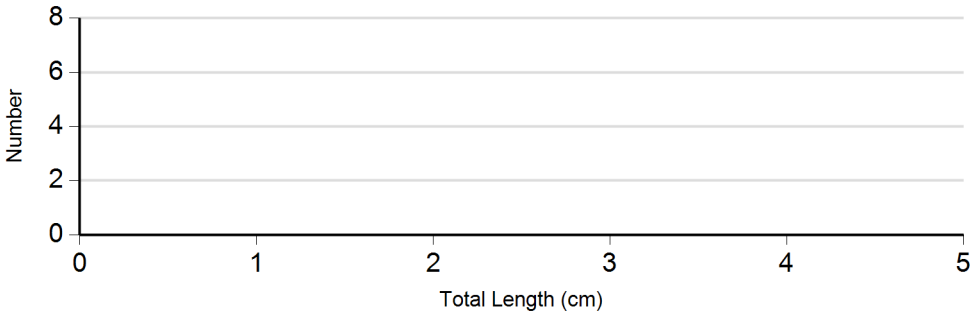
2017

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



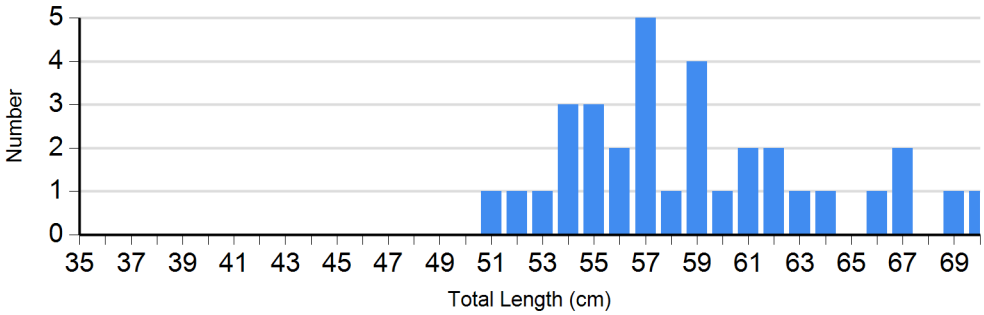
2022

Species: Bluegill
Gear: AFS std frame net

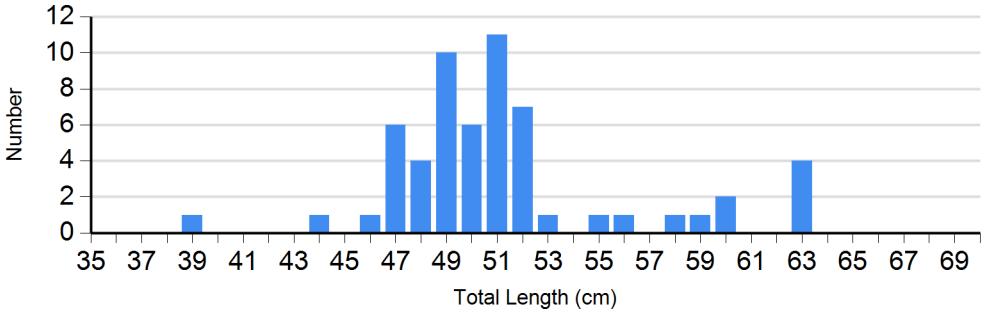


2017

Species: Channel Catfish
Gear: AFS std gill net



2017



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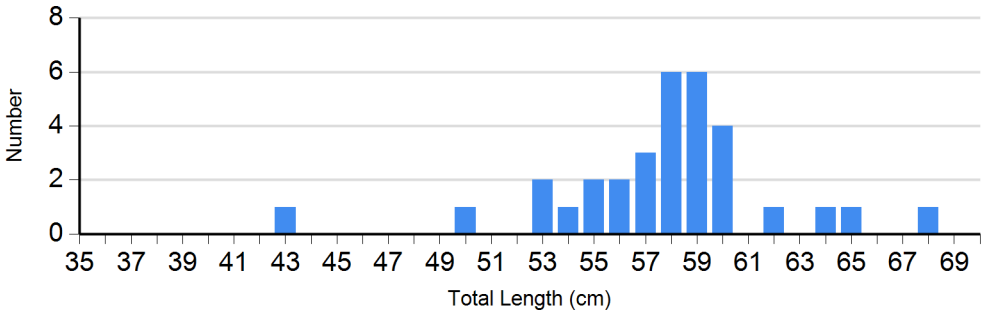
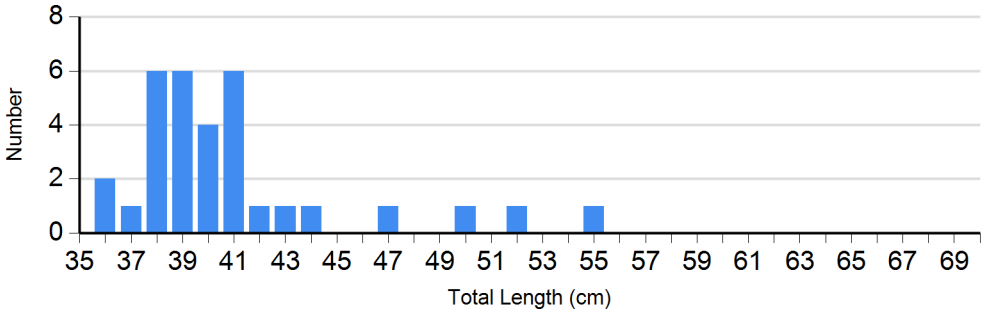
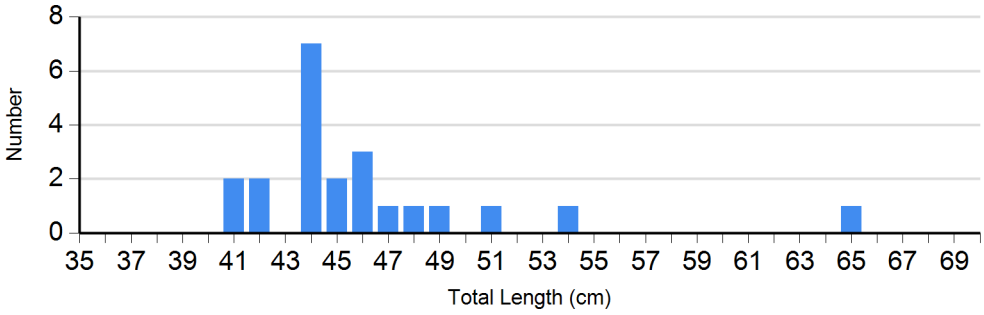


2022

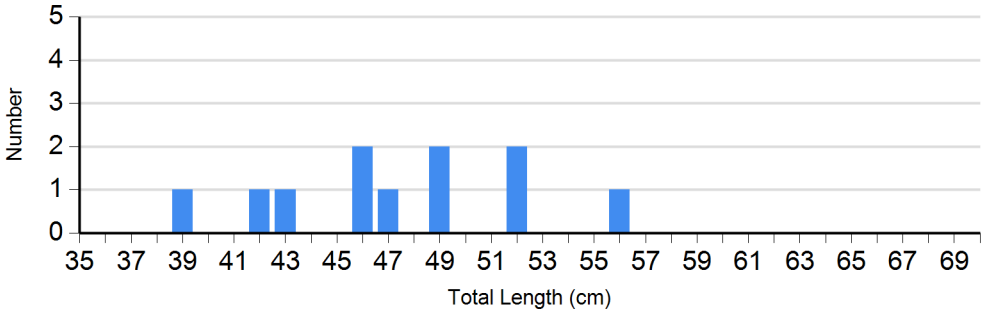
Species: Walleye
Gear: AFS std gill net



2017



2019

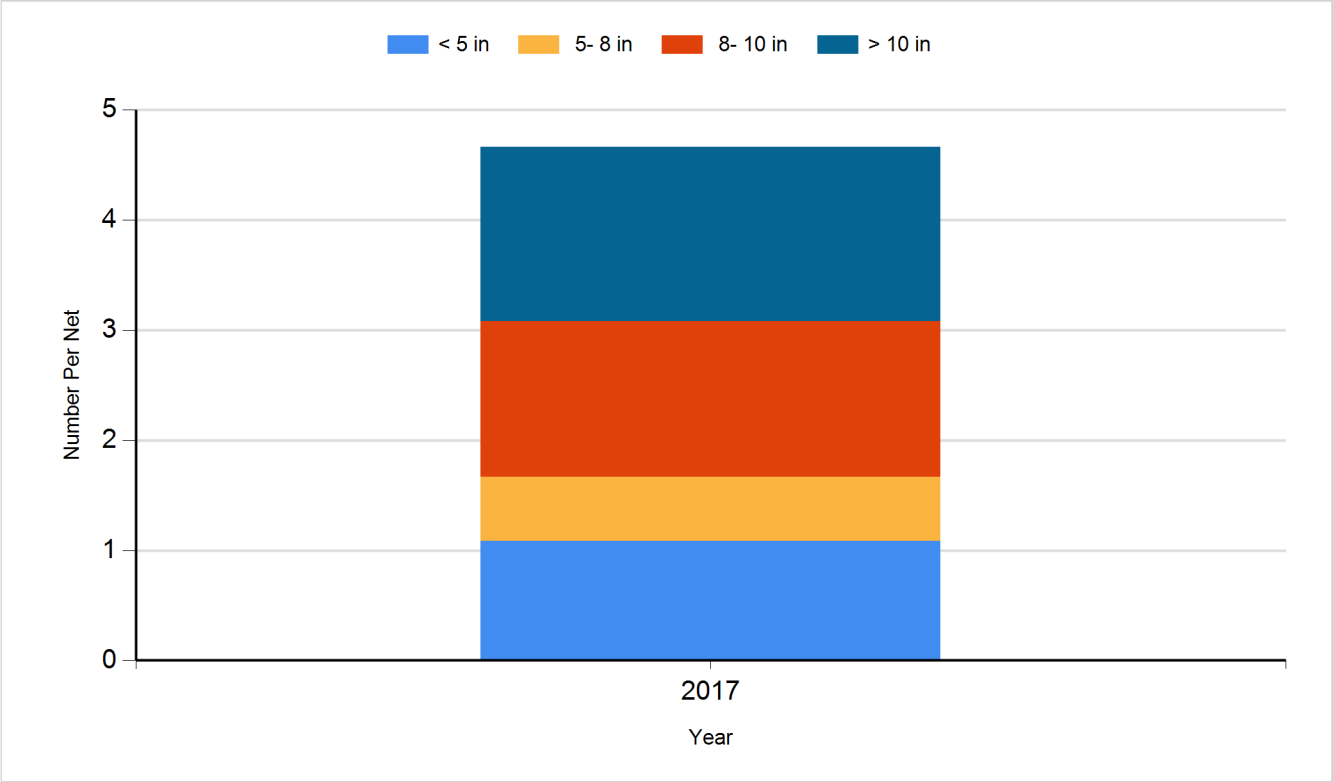


2022

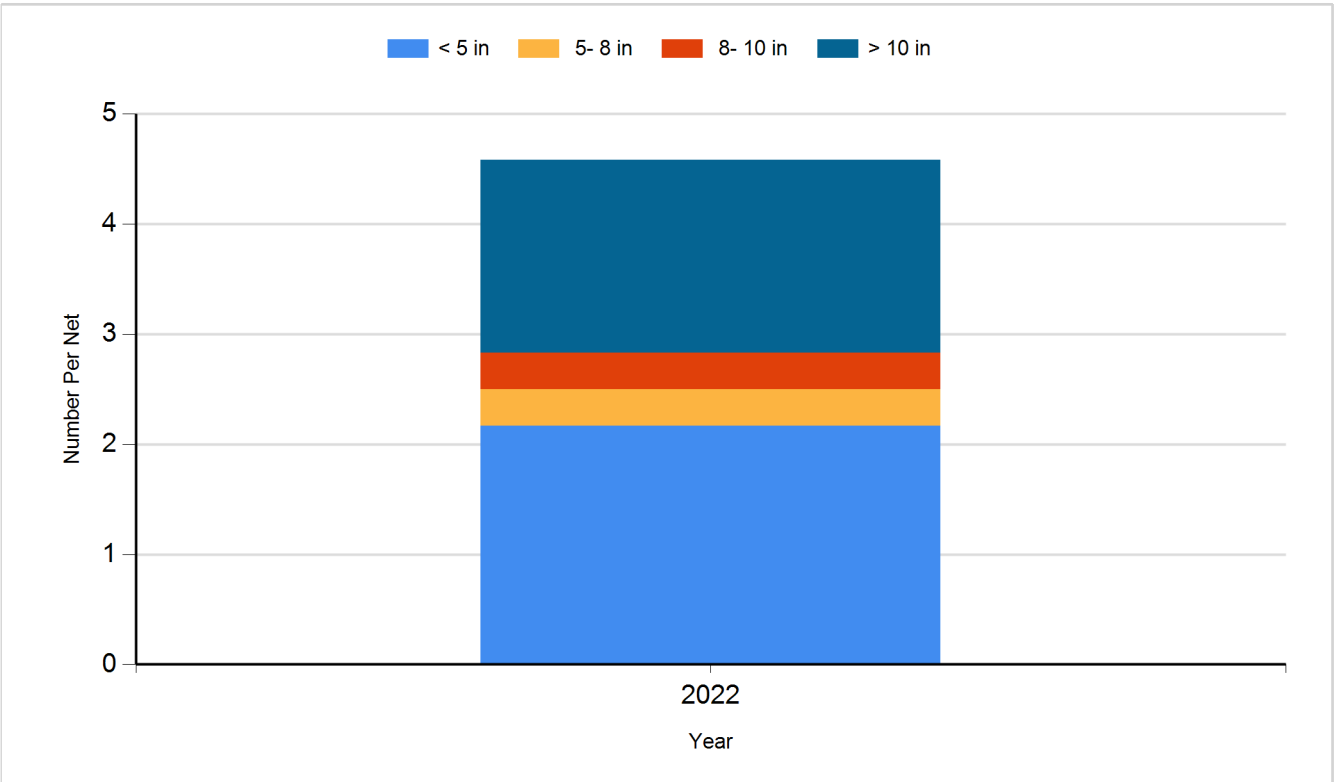
Historic Fish Sizes and Relative Abundance

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

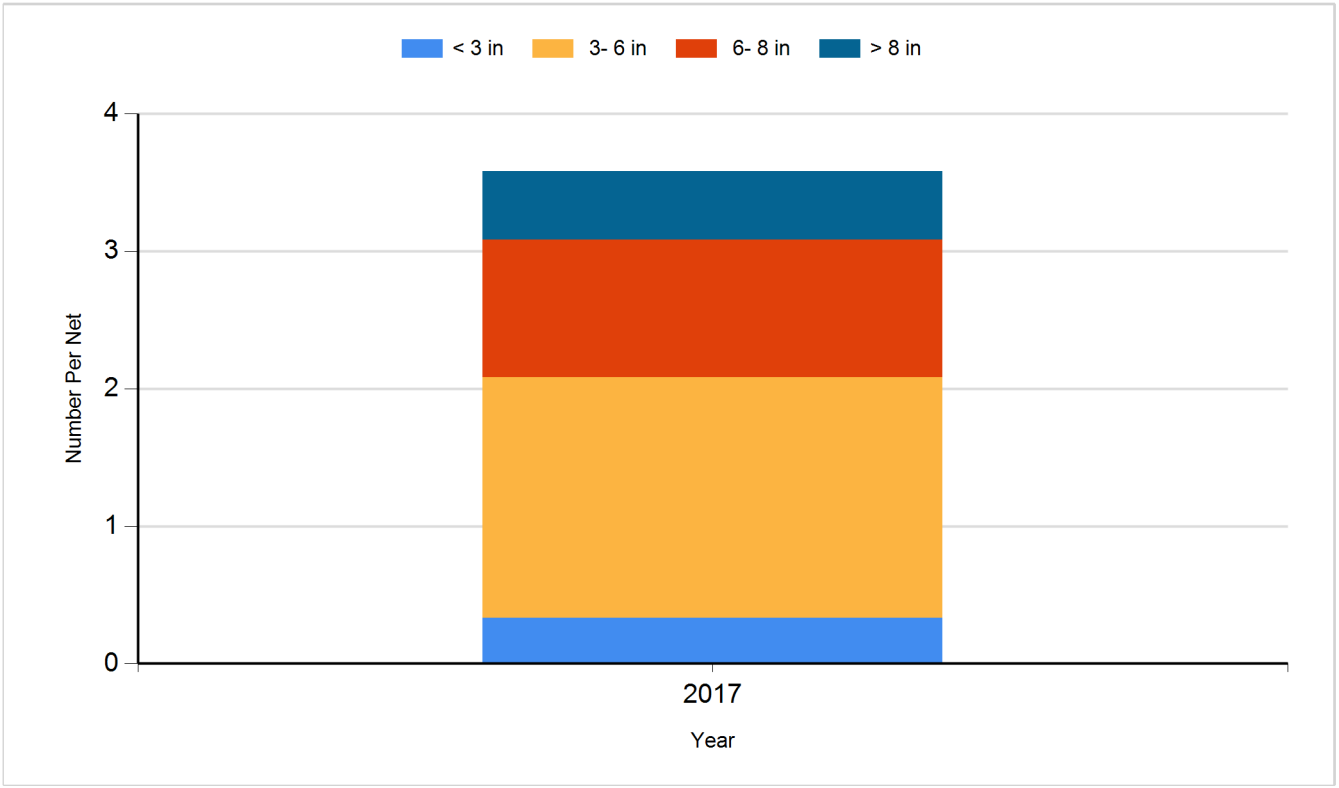
Species: Black Crappie
Gear: AFS std frame net



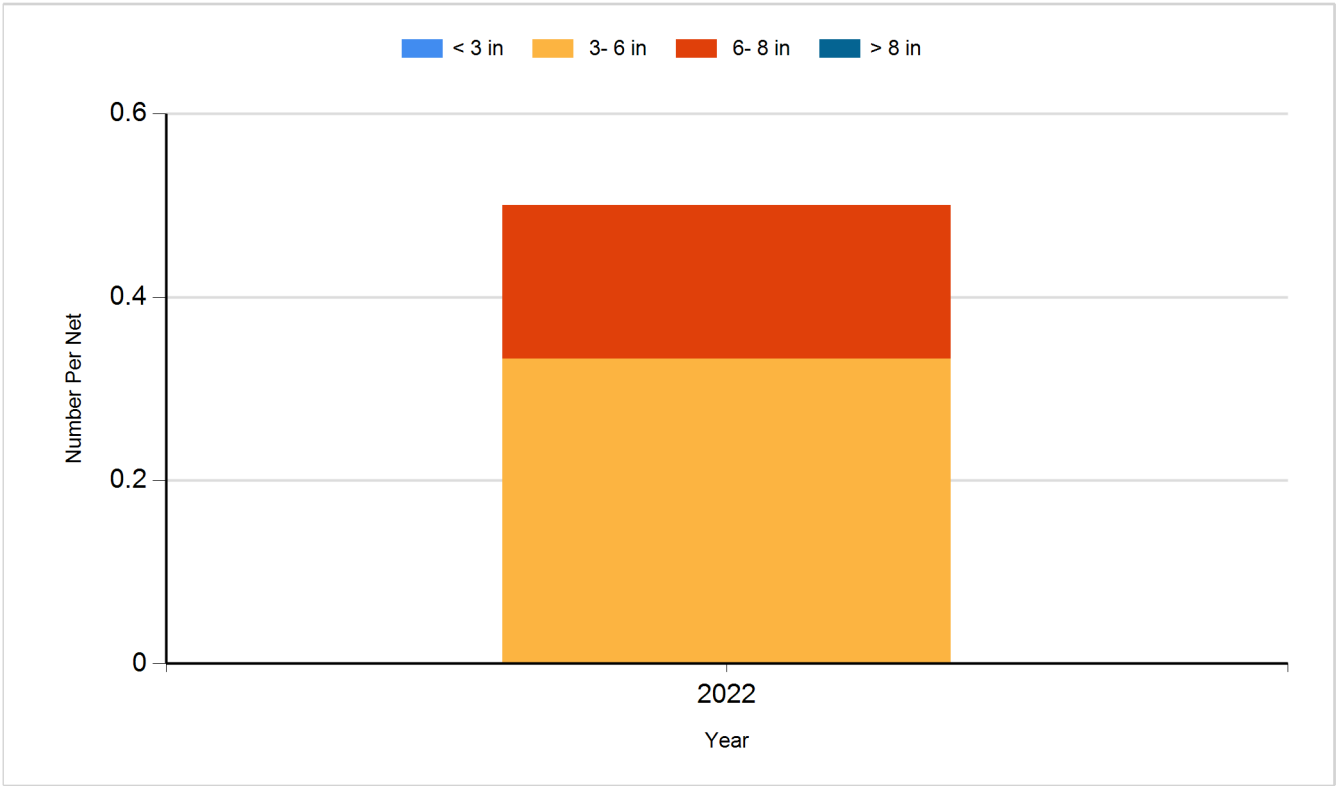
Species: Black Crappie
Gear: frame net (std 3/4 in)



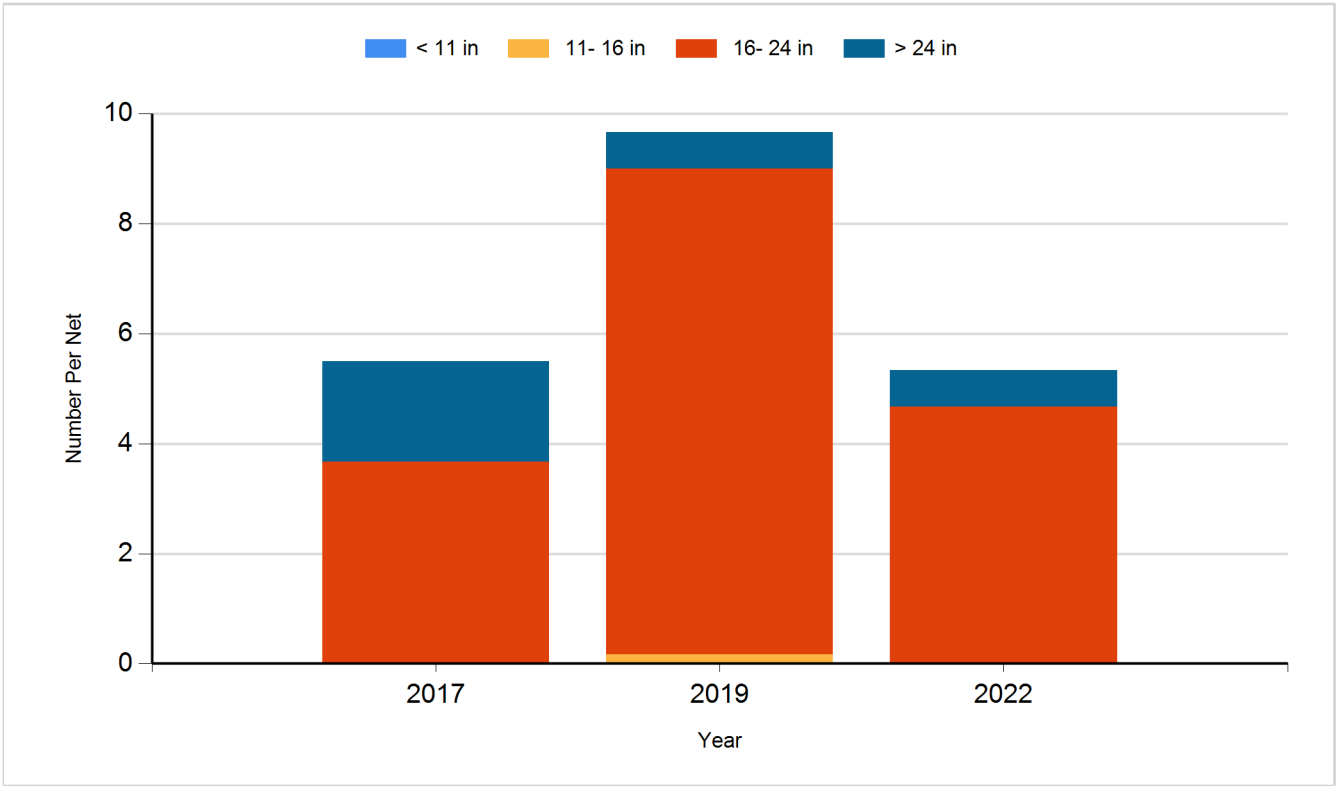
Species: Bluegill
Gear: AFS std frame net



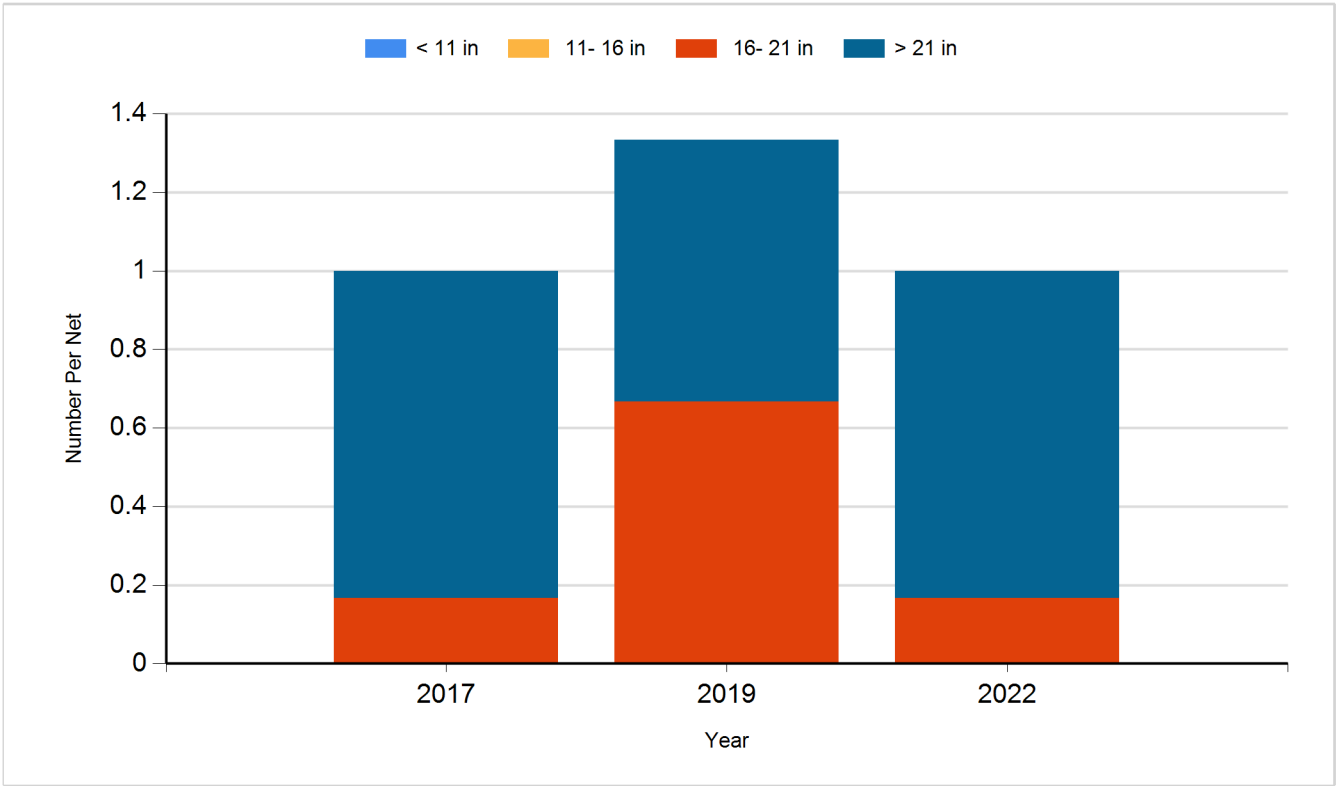
Species: Bluegill
Gear: frame net (std 3/4 in)



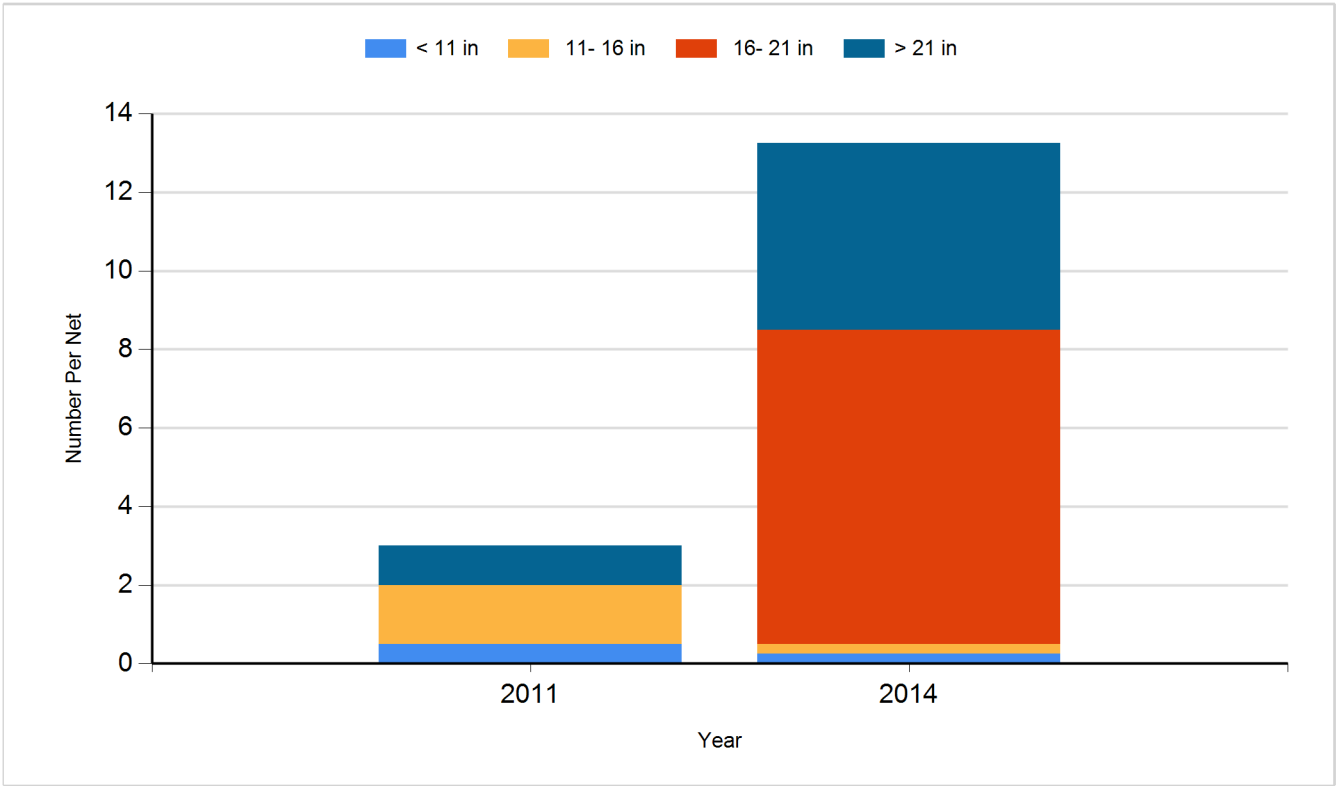
Species: Channel Catfish
Gear: AFS std gill net



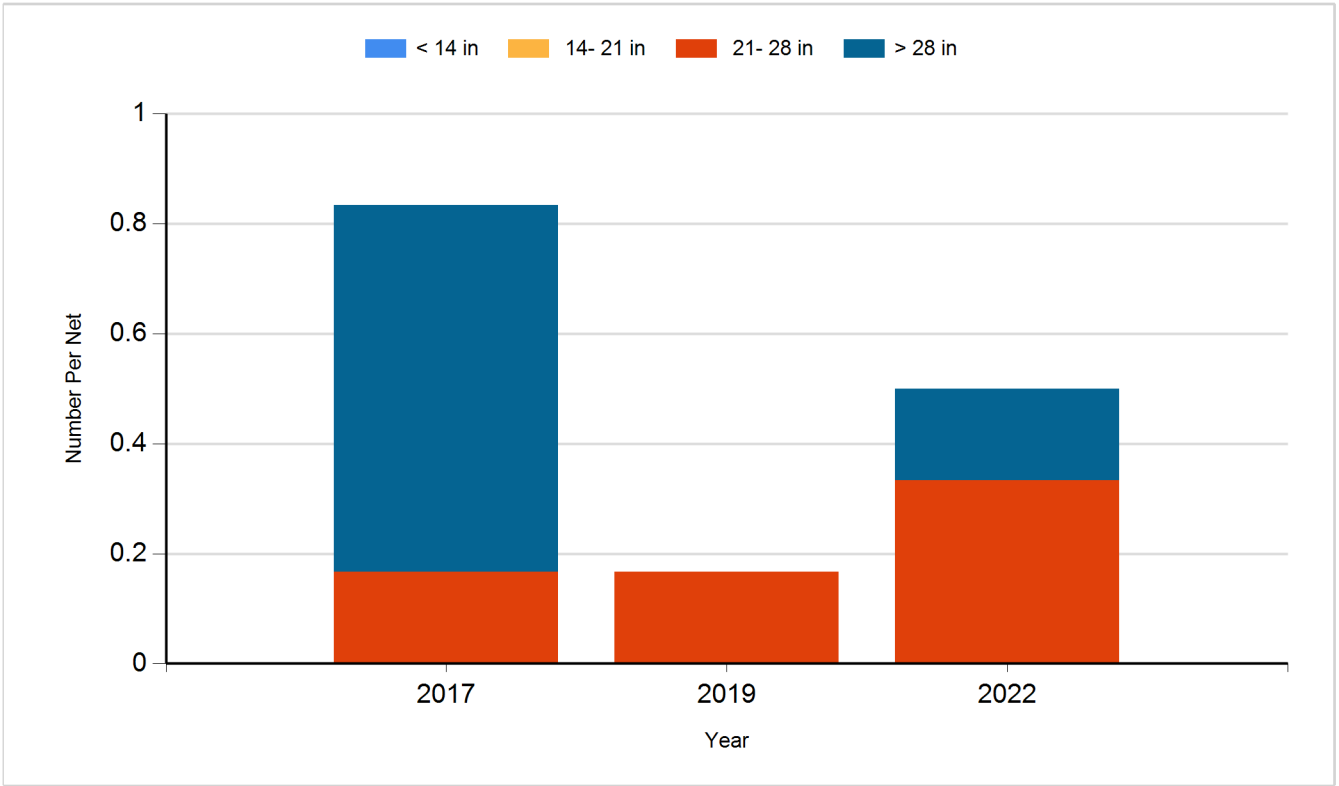
Species: Common Carp
Gear: AFS std gill net



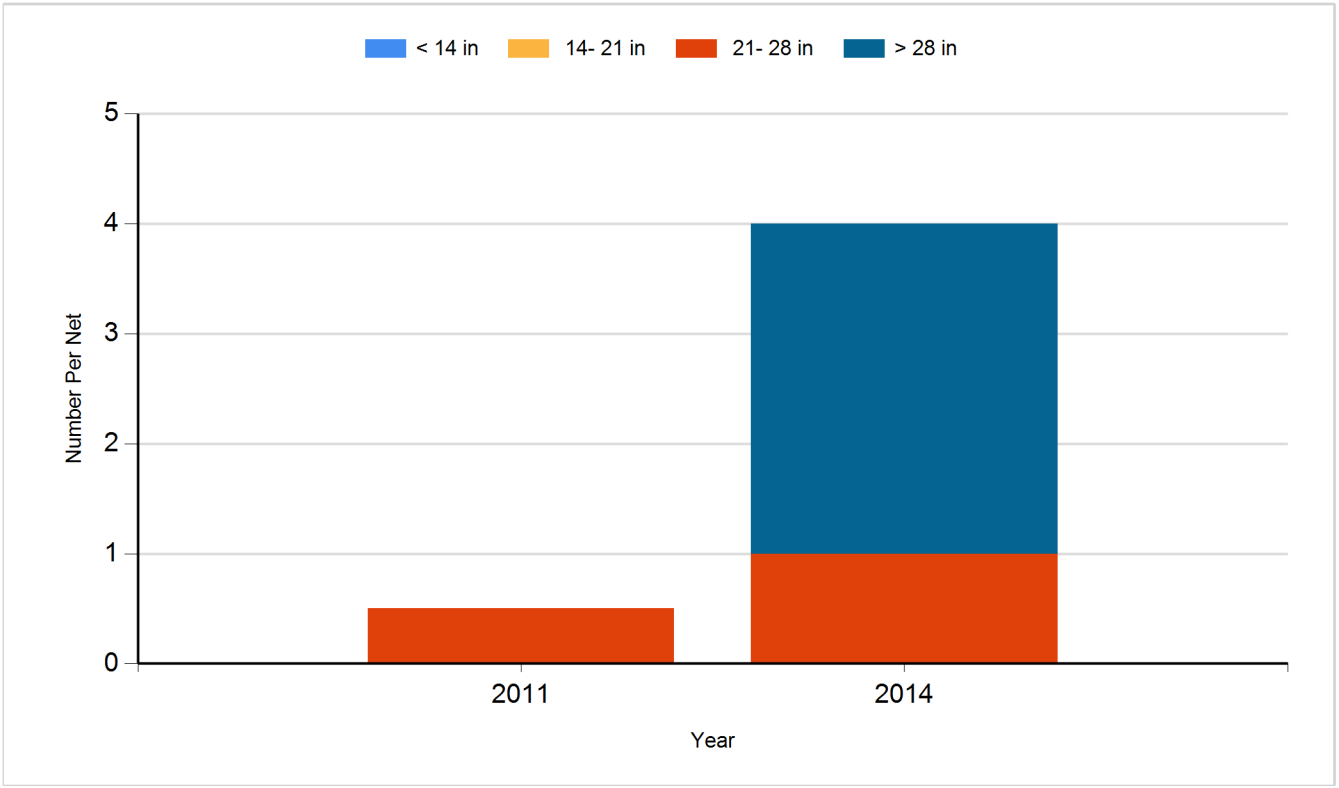
Species: Common Carp
Gear: std exp gill net



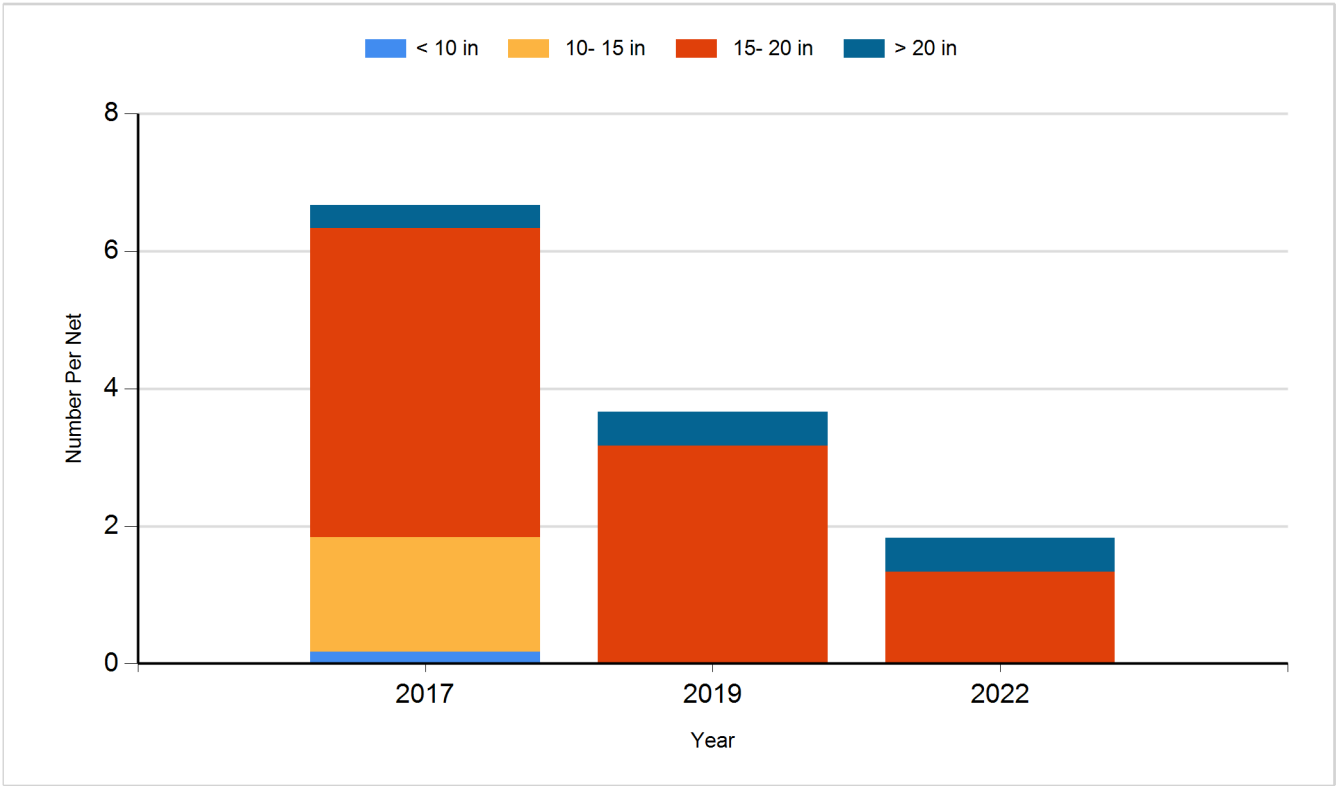
Species: Northern Pike
Gear: AFS std gill net



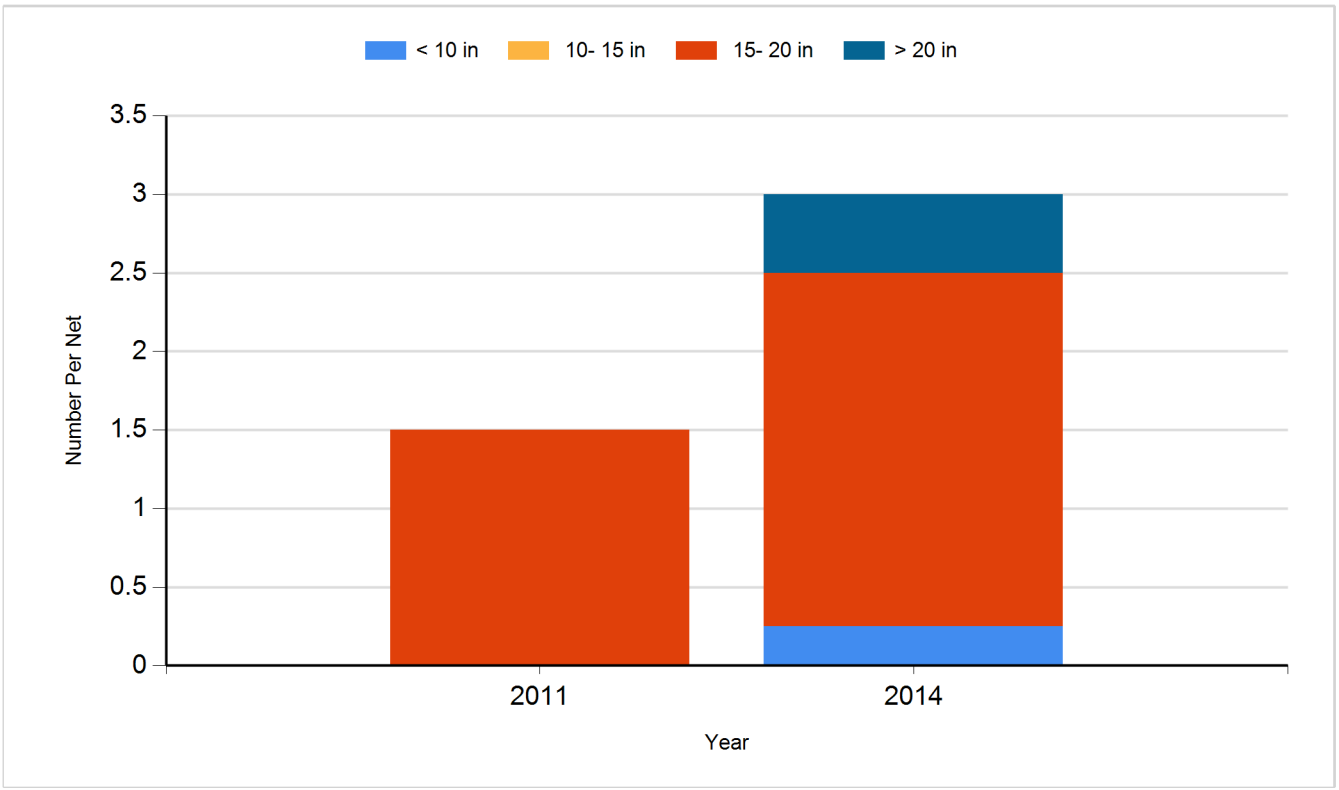
Species: Northern Pike
Gear: std exp gill net



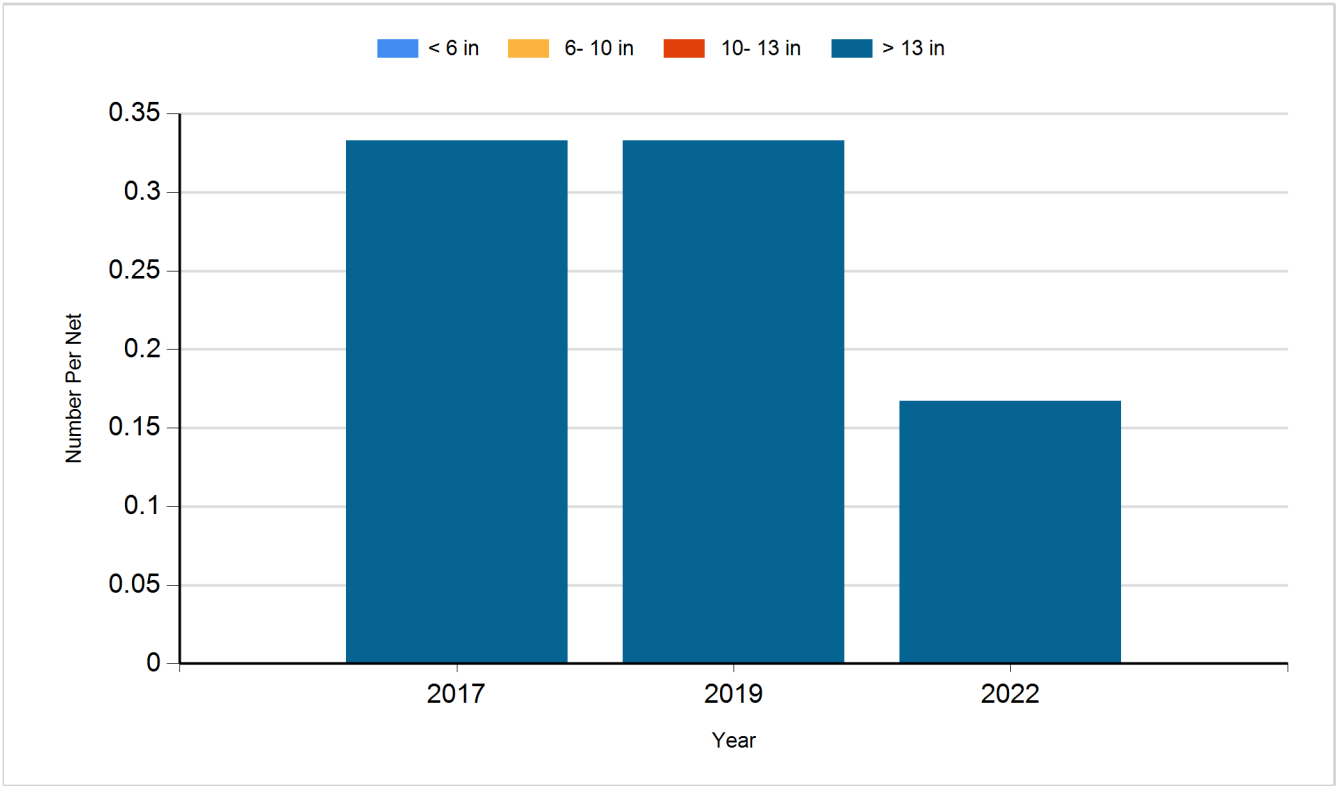
Species: Walleye
Gear: AFS std gill net



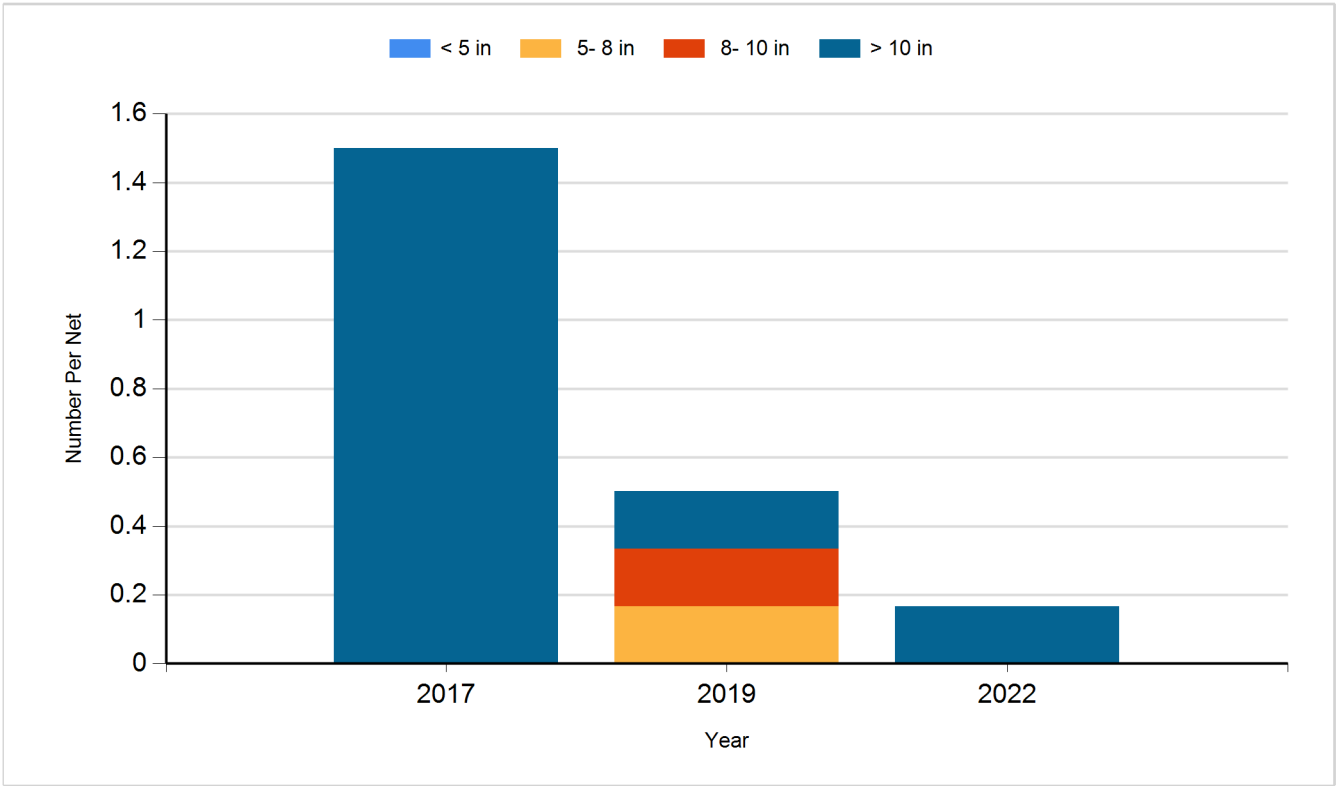
Species: Walleye
Gear: std exp gill net



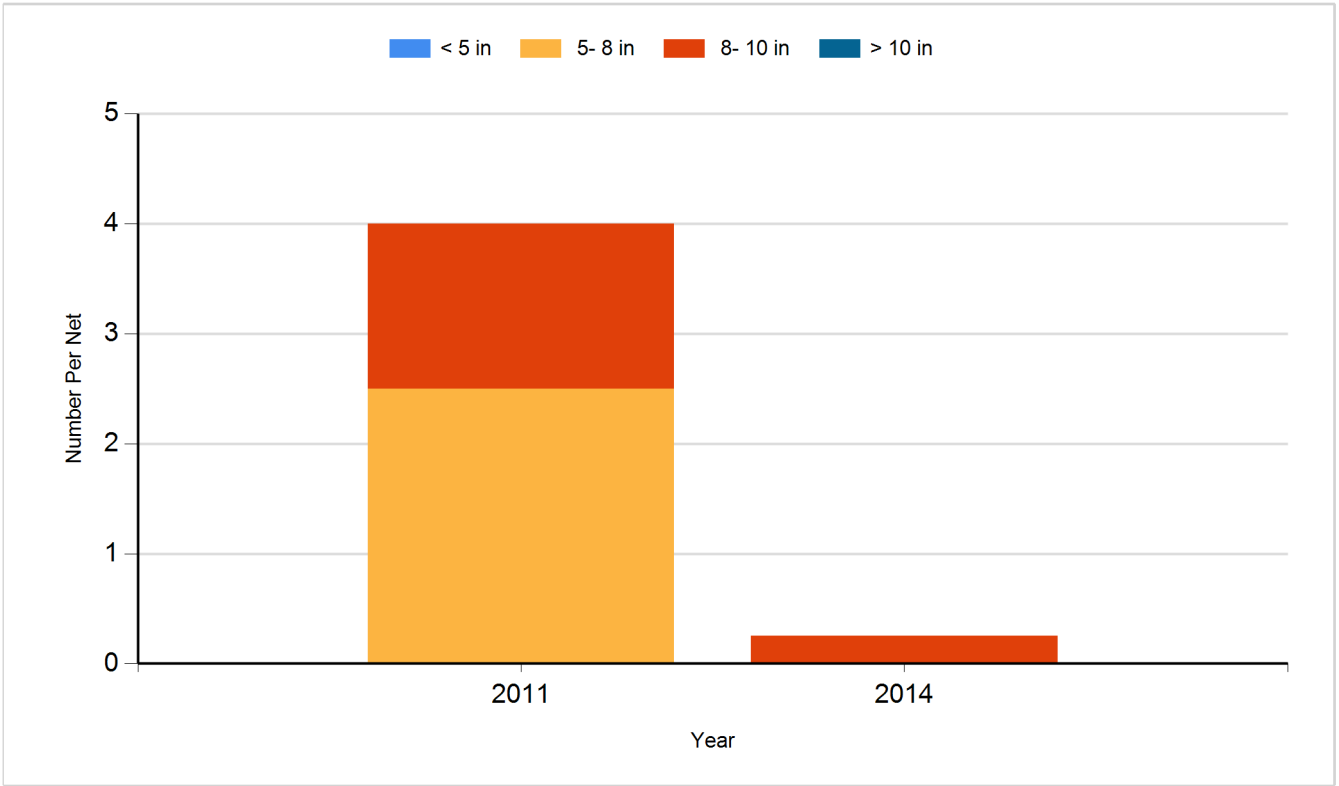
Species: White Sucker
Gear: AFS std gill net



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
2015	Walleye	Small Fingerling	180,700
2015	White Crappie	Adult	70