

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Kampeska, Codington County
UBS-Lake-171-000
2022

Lake Information

Name:	Kampeska	Maximum Depth:	16 Feet
County:	Codington	Mean Depth:	7 Feet
		OHWM Elevation:	1,718
Surface Area:	4,987 Acres	Outlet Elevation:	1,718

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jul 19, 2022	4 net-nights
AFS std gill net	Jul 20, 2022	4 net-nights
AFS std gill net	Jul 21, 2022	4 net-nights
fall night EF-WAE	Sep 19, 2022	3600 seconds

Common Fish Species Present

Walleye

Smallmouth Bass

White Crappie

Black Crappie

Yellow Perch

Bigmouth Buffalo

Channel Catfish

White Bass

Northern Pike

White Sucker

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	43	3.6	1.2	77	10	2	87	1
	Bluegill	1	0.1	0.1	100		0	117	
	Channel Catfish	38	3.1	1.3	92		0	107	3
	Northern Pike	7	0.6	0.3	100		14	86	6
	Rock Bass	1	0.1	0.1	100		0	113	
	Smallmouth Bass	23	1.9	0.9	74	15	9	86	2
	Walleye	26	2.1	0.9	40	15	0	81	1
	White Bass	22	1.8	0.6	100		81	81	2
	White Crappie	7	0.6	0.4	100		14	94	5
	White Sucker	5	0.4	0.3	100		100	102	3
	Yellow Bullhead	4	0.3	0.2	100		100	98	3
	Yellow Perch	56	4.7	1.3	68	9	14	7	106

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	
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
AFS std frame net	Bigmouth Buffalo					0.6							0.60
	Black Bullhead					0.7							0.70
	Black Crappie					1.2							1.20
	Bluegill					0.5							0.50
	Channel Catfish					0.1							0.10
	Common Carp					0.1							0.10
	Northern Pike					0.2							0.20
	Smallmouth Bass					0.4							0.40
	Walleye					0.1							0.10
	White Bass					3.1							3.10
	White Crappie					0.1							0.10
	Yellow Bullhead					1.6							1.60
	Yellow Perch					0.1							0.10
AFS std gill net	Bigmouth Buffalo				0.0	0.0	8.3	5.6		6.1	3.6	3.93	
	Black Bullhead				0.4	0.4	0.3	0.0		0.8	0.0	0.32	
	Black Crappie				0.0	0.1	0.0	0.0		0.1	0.0	0.03	
	Bluegill				0.0	0.1	0.0	0.0		0.0	0.1	0.03	
	Channel Catfish				1.0	0.9	0.3	0.4		1.8	3.1	1.25	
	Common Carp				0.1	0.0	0.3	0.6		0.1	0.0	0.18	
	Northern Pike				0.5	0.2	0.7	0.8		0.9	0.6	0.62	
	Rock Bass				0.0	0.0	0.0	0.0		0.0	0.1	0.02	
	Shorthead Redhorse				0.2	0.0	0.1	0.2		0.0	0.0	0.08	
	Smallmouth Bass				0.8	1.3	0.6	0.0		1.2	1.9	0.97	
	Walleye				4.6	2.7	2.6	4.0		3.3	2.1	3.22	
	White Bass				1.8	1.5	1.4	2.0		1.7	1.8	1.70	
	White Crappie				1.1	0.5	0.2	2.6		0.9	0.6	0.98	
	White Sucker				0.6	0.6	0.8	0.3		0.0	0.4	0.45	
Yellow Bullhead				1.1	0.7	0.6	0.3		6.6	0.3	1.60		
Yellow Perch				5.3	5.3	3.3	4.3		2.3	4.7	4.20		
boat shocker (day)	Smallmouth Bass								97.0			97.00	
boat shocker (night)	Walleye*	110.0	179.0	7.0	7.0	41.0						68.80	
boat shocker (night, DC)	Smallmouth Bass		171.0		159.8							165.40	

		CPUE											
Gear	Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg	
fall night EF-WAE*	Walleye						75.0	54.2		36.6		55.27	
frame net (std 3/4 in)	Bigmouth Buffalo	0.2	0.4									0.30	
	Black Bullhead	22.7	15.5									19.10	
	Black Crappie	0.6	0.5									0.55	
	Bluegill	1.6	1.4									1.50	
	Channel Catfish	0.2	0.0									0.10	
	Common Carp	0.1	0.1									0.10	
	Northern Pike	0.4	0.2									0.30	
	Rock Bass	0.0	0.0										0.00
	Shorthead Redhorse	0.0	0.0										0.00
	Smallmouth Bass	1.1	0.5										0.80
	Walleye	1.0	0.6										0.80
	White Bass	7.2	3.0										5.10
	White Crappie	0.2	0.7										0.45
	White Sucker	0.5	0.5										0.50
Yellow Bullhead	15.4	3.9										9.65	
Yellow Perch	0.0	0.1										0.05	
std exp gill net	Black Bullhead	8.0	1.8	2.3								4.03	
	Channel Catfish	0.2	0.7	0.2								0.37	
	Common Carp	0.2	0.3	0.0								0.17	
	Northern Pike	2.5	0.2	1.0								1.23	
	Shorthead Redhorse	0.0	0.0	0.3								0.10	
	Smallmouth Bass	0.5	0.0	1.2								0.57	
	Walleye	7.5	9.3	11.5								9.43	
	White Bass	4.3	3.8	4.7								4.27	
	White Crappie	2.5	1.3	0.3								1.37	
	White Sucker	1.5	1.8	2.2								1.83	
Yellow Bullhead	2.2	1.5	0.8								1.50		
Yellow Perch	5.7	2.7	13.0								7.13		

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													
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022				
AFS std frame net	Bigmouth Buffalo	PSD						100								
		PSD-P						100								
		Wr						104								
	Black Crappie	PSD							65							
		PSD-P							17							
		Wr							104							
	Channel Catfish	PSD							100							
		PSD-P							100							
		Wr							100							
	Northern Pike	PSD							100							
		PSD-P							100							
		Wr							100							
	Smallmouth Bass	PSD							57							
		PSD-P							0							
		Wr							93							
	Walleye	PSD							0							
		PSD-P							0							
		Wr							76							
	White Bass	PSD							100							
		PSD-P							87							
		Wr							79							
	White Crappie	PSD							100							
		PSD-P							100							
		Wr							82							
	Yellow Perch	PSD							100							
		PSD-P							0							
		Wr							86							
	AFS std gill net	Bigmouth Buffalo	PSD								3	27		81	77	
			PSD-P									1	0		5	2
			Wr									89	90		89	87
Black Crappie		PSD							100					100		
		PSD-P							100					100		
		Wr							73					99		
Channel Catfish		PSD					100	100	100	100				33	92	
		PSD-P					42	70	67	80				0	0	
		Wr					101	100	112	114				95	107	

Gear	Species	Index	Year									
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AFS std gill net	Northern Pike	PSD				83	50	100	70		82	100
		PSD-P				17	0	38	20		0	14
		Wr				86	68	73	86		76	86
	Smallmouth Bass	PSD				33	57	100			71	74
		PSD-P				0	21	14			14	9
		Wr				88	90	88			85	86
	Walleye	PSD				18	7	3	69		51	40
		PSD-P				2	3	0	2		3	0
		Wr				79	75	85	88		84	81
	White Bass	PSD				48	94	100	92		90	100
		PSD-P				48	50	88	92		80	81
		Wr				86	80	88	85		87	81
	White Crappie	PSD				100	100	100	6		100	100
		PSD-P				100	100	100	6		18	14
		Wr				90	91	97	112		93	94
	White Sucker	PSD				100	100	100	100			100
		PSD-P				100	100	89	100			100
		Wr				102	105	95	104			102
	Yellow Perch	PSD				90	97	92	81		96	68
		PSD-P				40	48	67	73		26	14
		Wr				108	109	105	100		99	106
boat shocker (day)	Smallmouth Bass	PSD								66		
		PSD-P								13		
		Wr								90		
boat shocker (night)	Walleye	PSD	0	0	0	0	0					
		PSD-P	0	0	0	0	0					
		Wr	93	89	91	92	90					
boat shocker (night, DC)	Smallmouth Bass	PSD		87		61						
		PSD-P		15		18						
		Wr		98		96						
frame net (std 3/4 in)	Bigmouth Buffalo	PSD	100	100								
		PSD-P	75	56								
		Wr	92									
	Black Crappie	PSD	83	91								
		PSD-P	17	55								
		Wr	104	100								

Gear	Species	Index	Year									
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
std exp gill net	White Bass	PSD-P	85	87	93							
		Wr	83	81	84							
	White Crappie	PSD	87	100	100							
		PSD-P	13	38	50							
		Wr	97	97	94							
	White Sucker	PSD	100	91	100							
		PSD-P	89	73	100							
		Wr	102	99	105							
	Yellow Perch	PSD	65	88	65							
		PSD-P	18	19	41							
		Wr	107	107	109							

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+
2019	91		196 (20)	248 (10)	284 (24)	333 (28)	339 (10)	384 (1)			
2016	160		196 (5)	256 (45)	278 (24)	310 (32)	337 (26)	341 (20)	386 (2)	414 (5)	
2014	171			279 (41)	315 (51)	322 (28)	318 (29)	363 (7)	361 (6)	414 (8)	

Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2022	26	222 (1)	296 (8)	376 (9)	418 (3)	446 (1)			462 (3)	466 (1)	
2021	40	217 (1)	326 (8)	384 (24)	490 (1)	474 (1)		503 (2)	466 (3)		
2019	67	211 (20)	348 (8)	396 (1)	367 (2)	410 (23)	426 (6)	446 (1)	463 (6)		
2018	38	232 (7)		324 (2)	319 (14)	325 (10)	354 (2)	367 (2)			
2017	30			276 (12)	313 (10)		359 (7)			659 (1)	
2016	58	205 (1)	260 (14)	305 (19)		365 (20)		480 (1)	608 (1)	404 (1)	432 (1)
2015	88	198 (17)	264 (35)		334 (29)	351 (2)	555 (1)	432 (2)	422 (1)	414 (1)	
2014	62	193 (5)	223 (1)	305 (39)	353 (4)	382 (2)	418 (7)	427 (3)		457 (1)	
2013	59		248 (24)	369 (11)	401 (13)	409 (4)	447 (4)		423 (1)		414 (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+
2022	56		184 (16)	203 (6)	241 (33)			316 (1)			
2021	27		191 (2)	219 (16)	242 (3)	282 (1)	291 (3)		299 (2)		
2019	53	120 (1)	187 (13)	234 (1)	278 (17)		294 (13)	293 (1)	304 (4)	313 (1)	304 (2)
2018	38	138 (2)	214 (2)	249 (14)	274 (4)	271 (13)	287 (3)				307 (1)
2017	58	138 (1)	215 (22)	237 (4)	264 (22)	303 (5)	289 (3)	256 (1)			
2016	63	142 (3)	187 (3)	234 (31)		274 (11)	277 (11)	279 (3)	255 (1)		
2015	78		191 (33)	242 (7)	253 (22)	261 (7)	270 (9)	296 (1)			

Mean Length (expanded sample number) at capture by age

Year	N	1	2	3	4	5	6	7	8	9	10+
2014	22	119 (5)	160 (2)	219 (7)	235 (1)	255 (6)	235 (1)				
2013	35	123 (1)	183 (13)	230 (12)	244 (9)		252 (1)				

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).

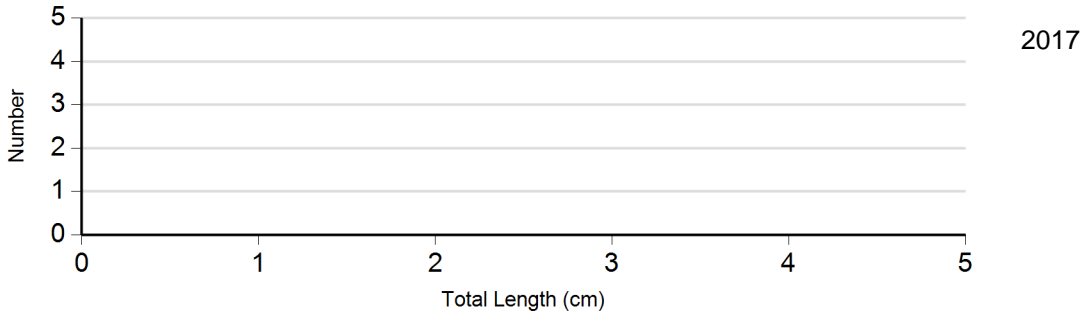
Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Channel Catfish Gill Net	2018	0		1	106	2	114 (8.2)	0	
	2019	0		1	132	4	110 (3.9)	0	
	2021	14	97 (2.1)	7	90 (3.0)	0		0	
	2022	3	103 (0.7)	34	107 (2.2)	0		0	
Northern Pike Gill Net	2018	0		5	72 (3.9)	3	75 (2.9)	0	
	2019	3	87 (2.6)	5	84 (3.5)	1	94	1	89
	2021	2	84 (9.4)	9	74 (4.0)	0		0	
	2022	0		6	84 (4.7)	1	96	0	
Smallmouth Bass Electro Fishing	2019	33	97 (1.1)	51	86 (0.9)	13	86 (2.1)	0	
Walleye Gill Net	2018	30	85 (1.0)	1	91	0		0	
	2019	15	88 (2.3)	32	89 (0.9)	1	86	0	
	2021	19	84 (1.1)	19	83 (0.7)	1	84	0	
	2022	15	82 (1.5)	10	79 (1.5)	0		0	
White Bass Gill Net	2018	0		2	93 (3.8)	15	87 (1.7)	0	
	2019	2	86 (4.0)	0		22	85 (1.2)	0	
	2021	2	96 (0.2)	2	89 (2.7)	15	85 (0.9)	1	84
	2022	0		4	90 (1.8)	17	79 (1.1)	0	
White Sucker Gill Net	2018	0		1	83	1	98	7	96 (3.7)
	2019	0		0		1	106	2	103 (1.1)
	2022	0		0		1	107	4	101 (2.4)
Yellow Perch Gill Net	2018	3	112 (8.1)	10	104 (2.8)	24	104 (1.1)	2	107 (5.4)
	2019	10	106 (2.5)	4	98 (3.1)	27	99 (1.5)	11	98 (1.5)

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Yellow Perch Gill Net	2021	1	115	19	101 (1.3)	5	93 (3.2)	2	87 (4.6)
	2022	18	106 (1.6)	30	108 (1.0)	7	100 (2.3)	1	90

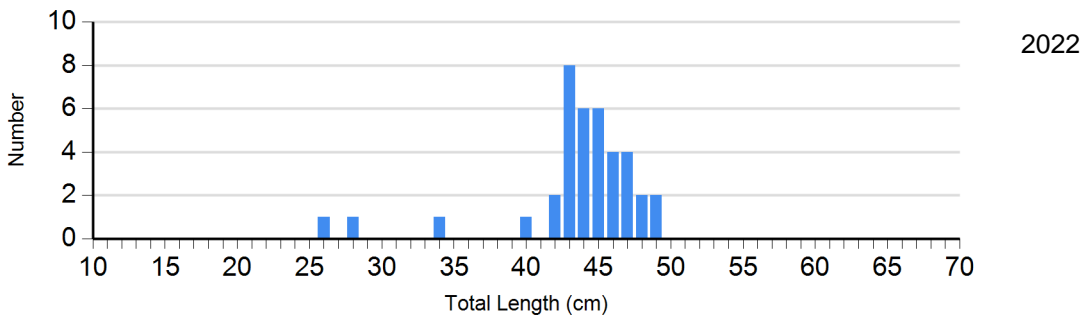
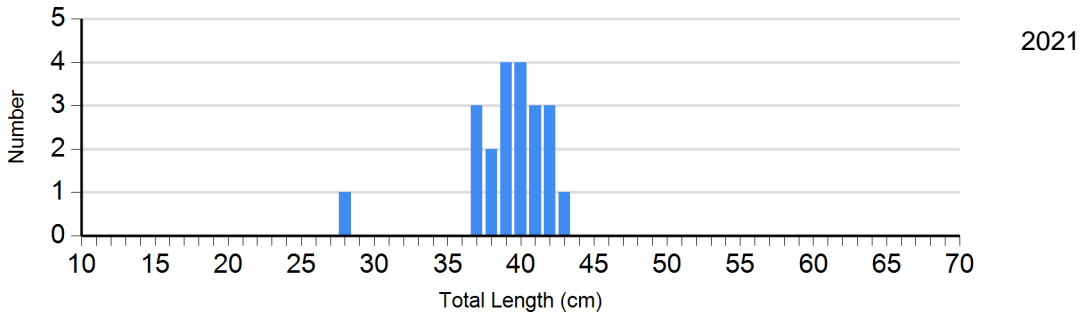
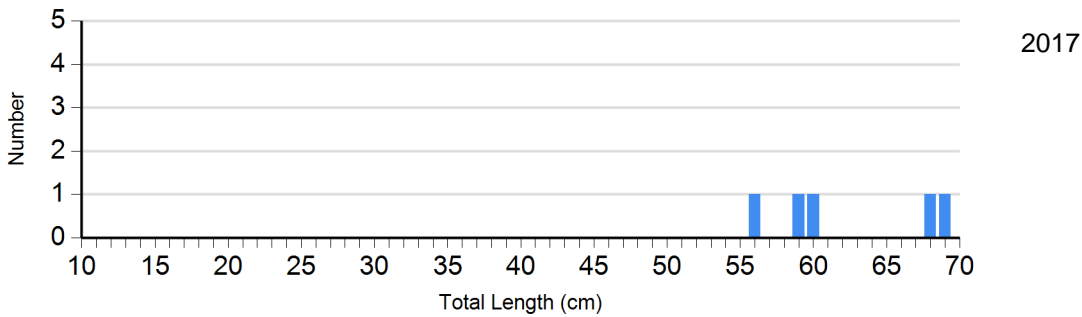
Length Frequency Distribution

Length frequency histogram of species sampled by year.

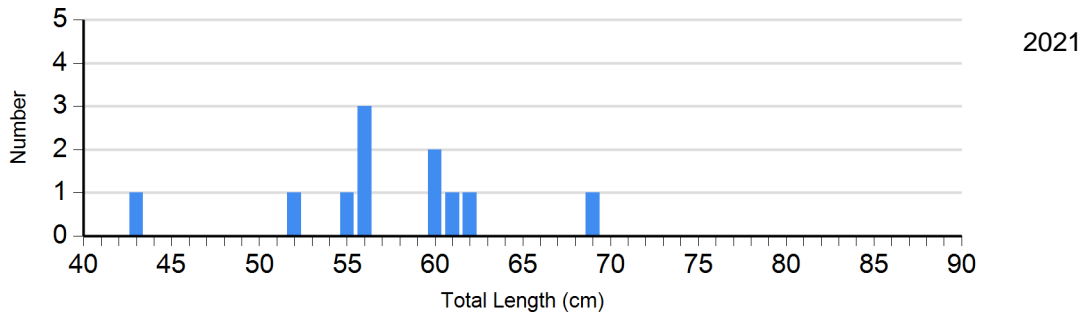
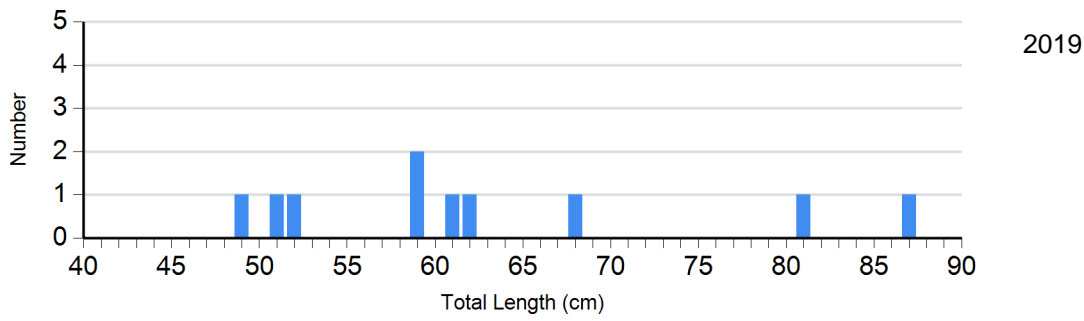
Species: Black Crappie
Gear: AFS std frame net



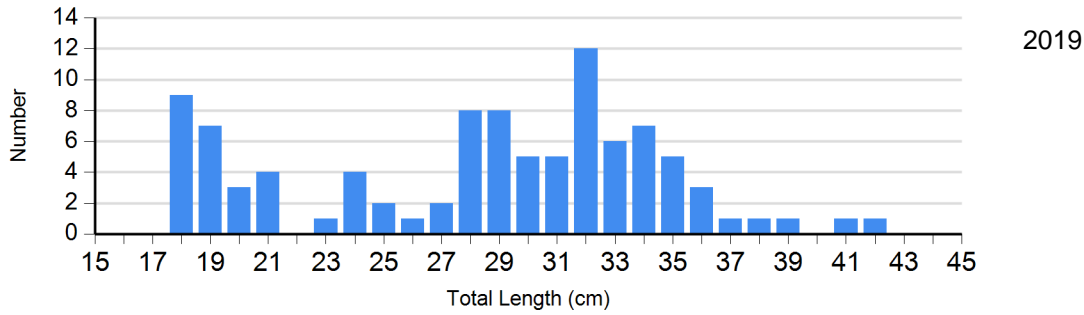
Species: Channel Catfish
Gear: AFS std gill net



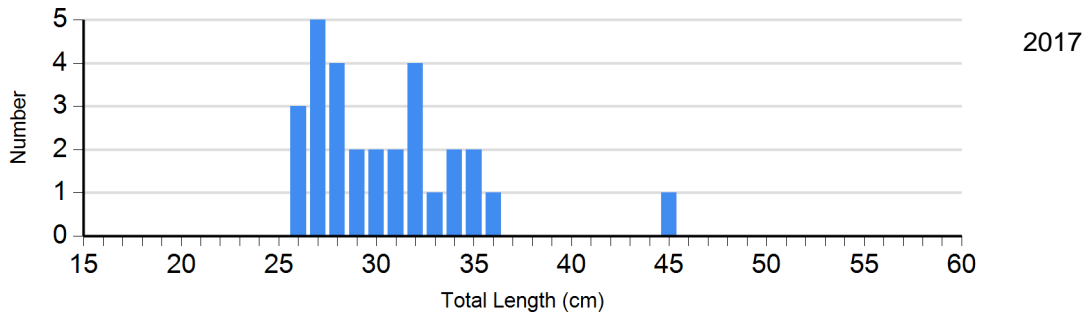
Species: Northern Pike
Gear: AFS std gill net

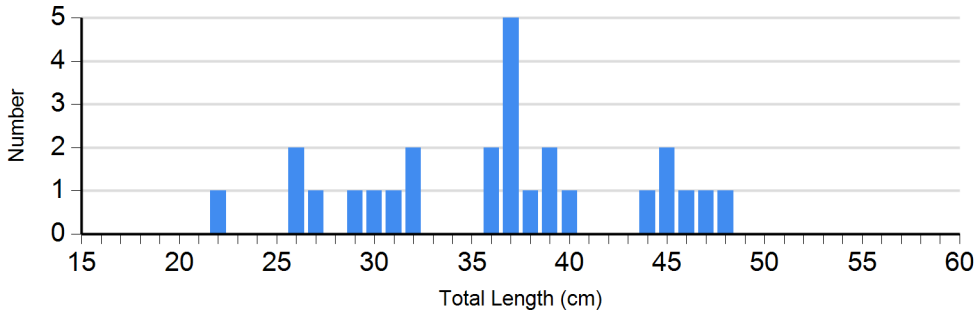
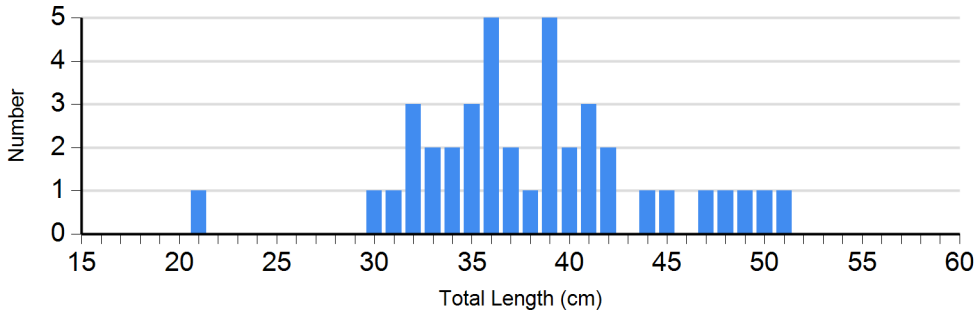
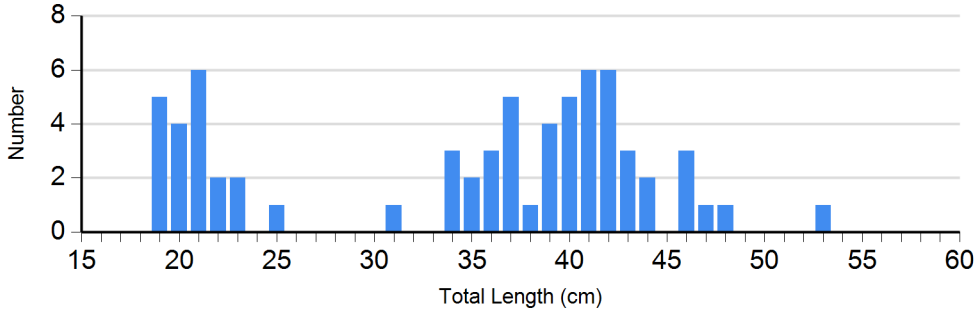
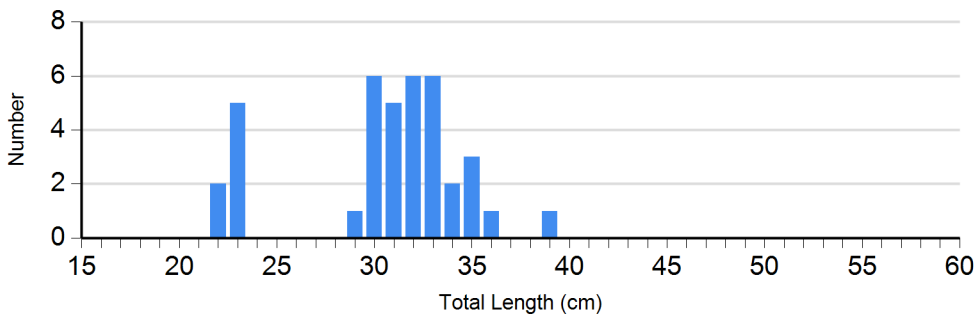


Species: Smallmouth Bass
Gear: boat shocker (day)

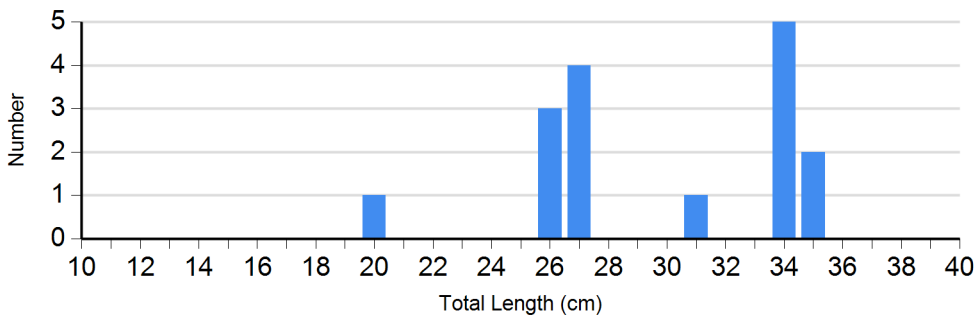


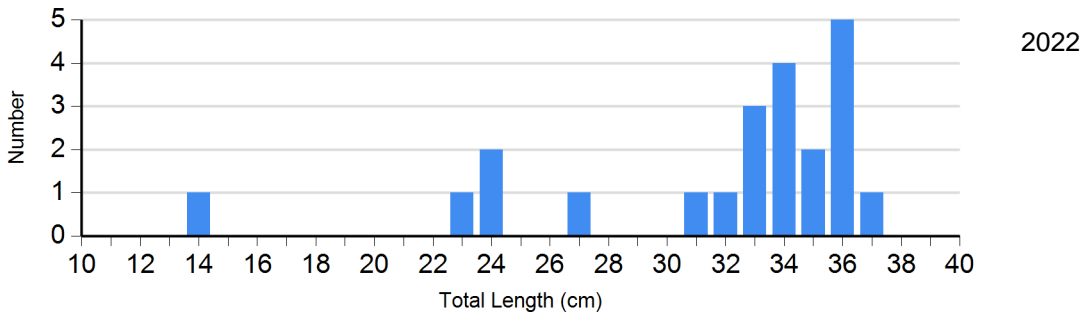
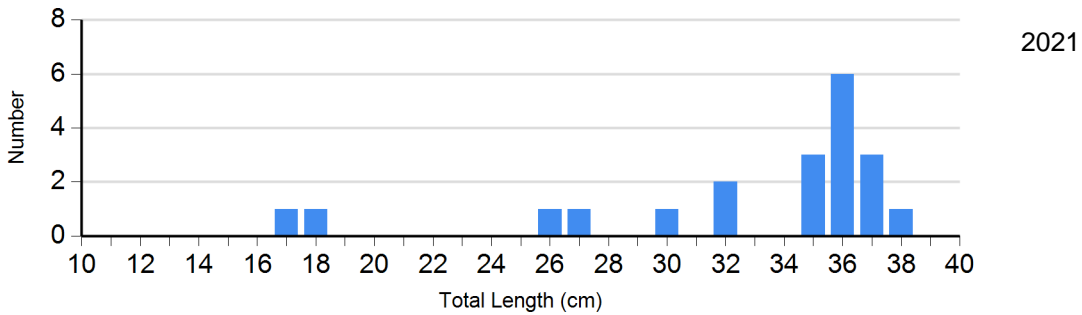
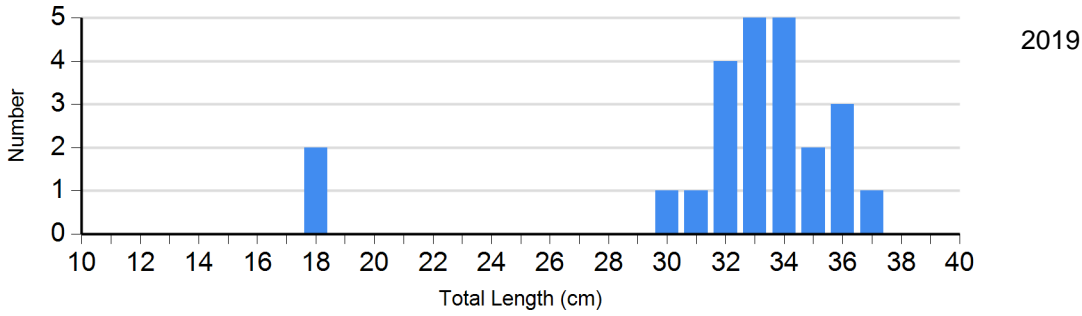
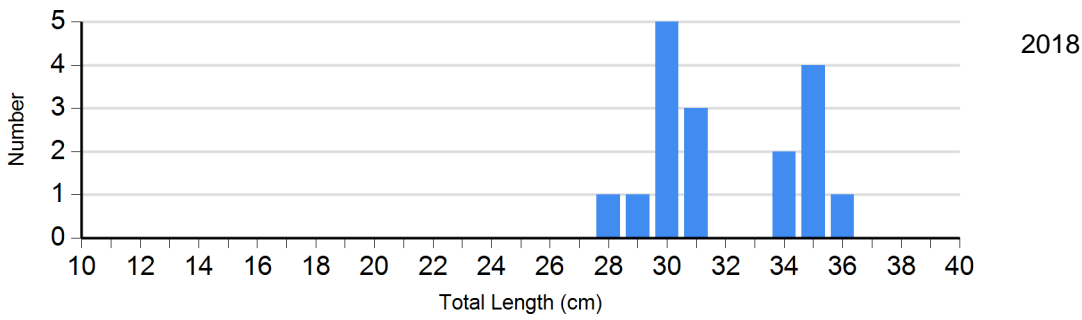
Species: Walleye
Gear: AFS std gill net



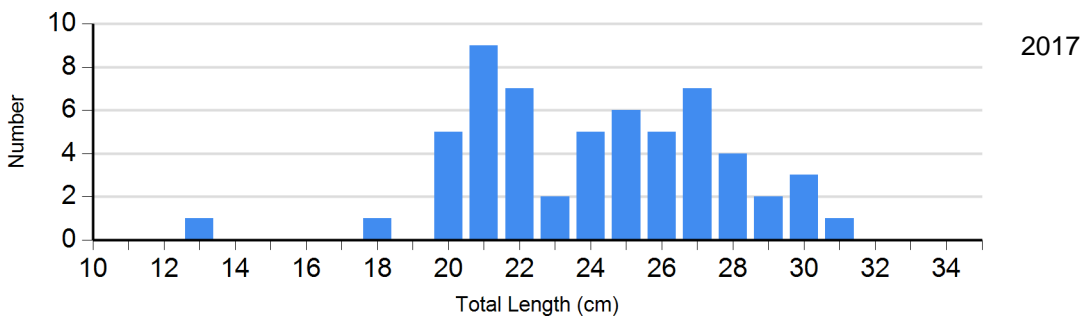


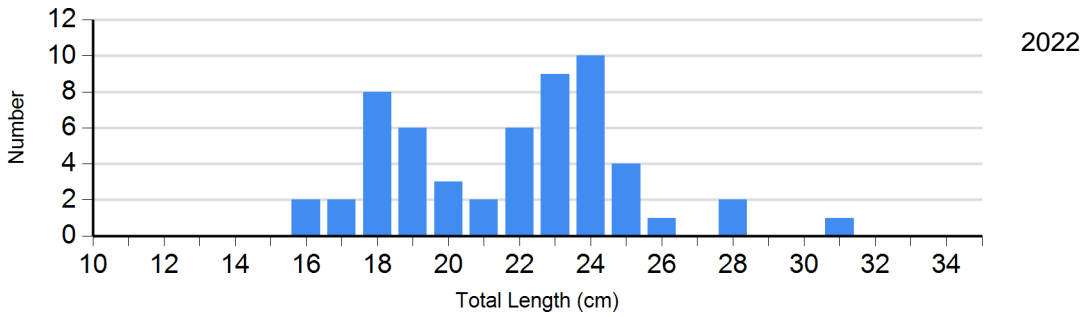
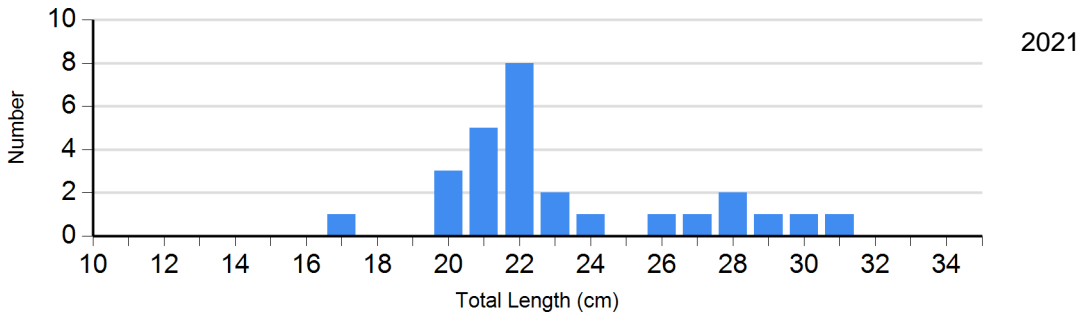
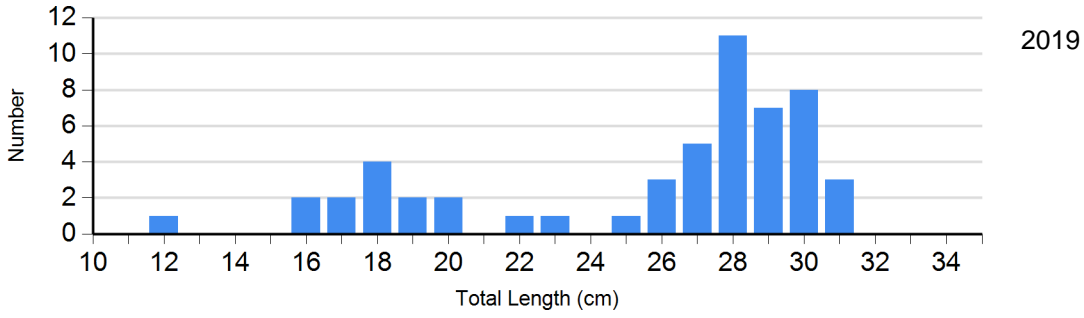
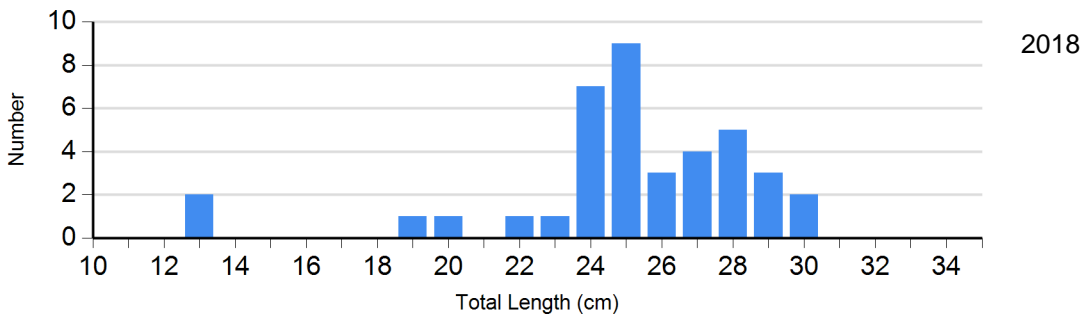
Species: White Bass
 Gear: AFS std gill net





Species: Yellow Perch
 Gear: AFS std gill net

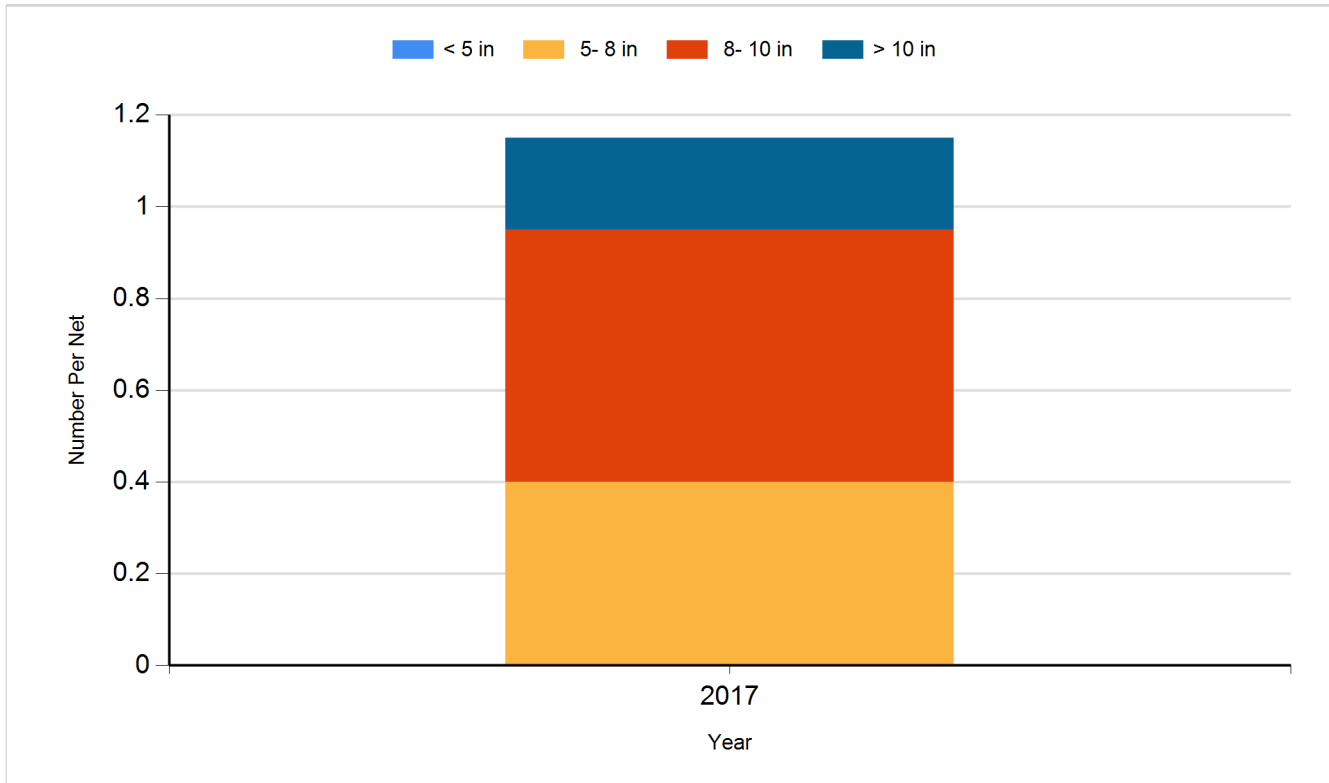




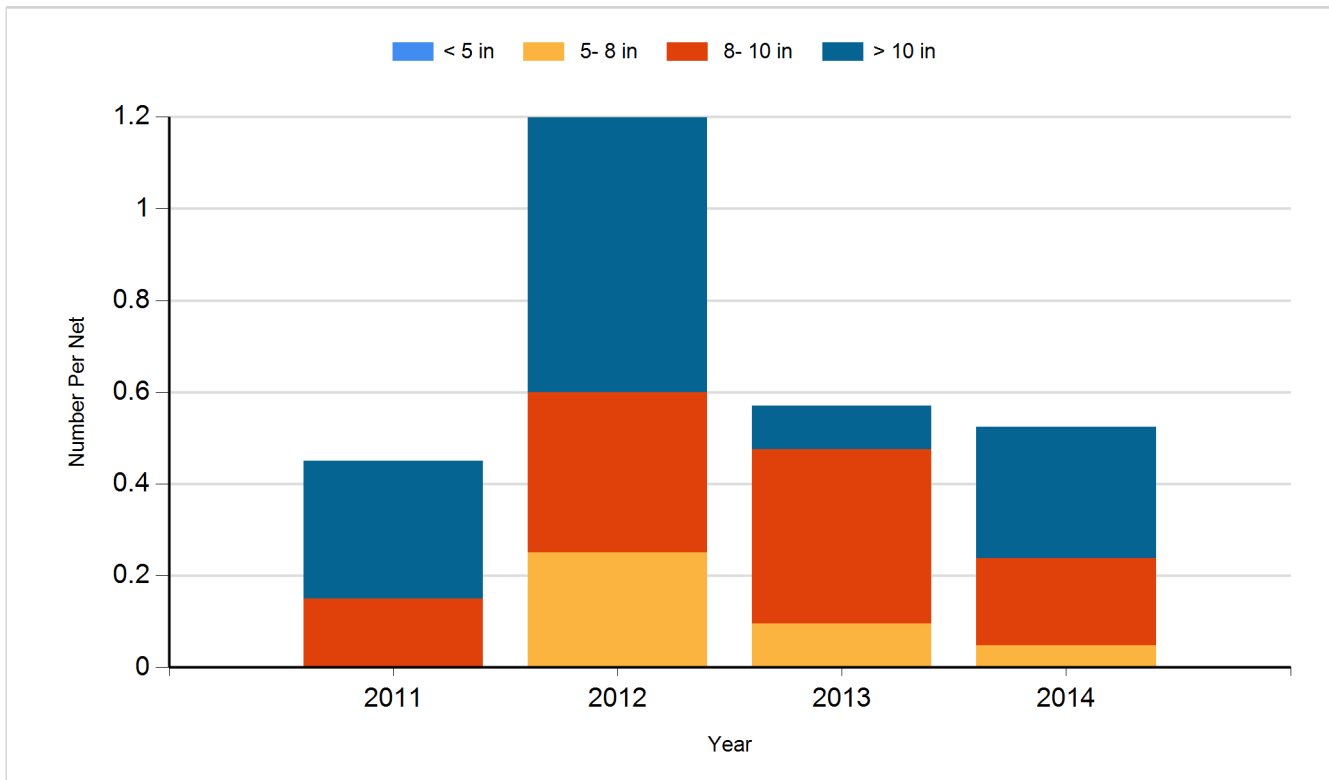
Historic Fish Sizes and Relative Abundance

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

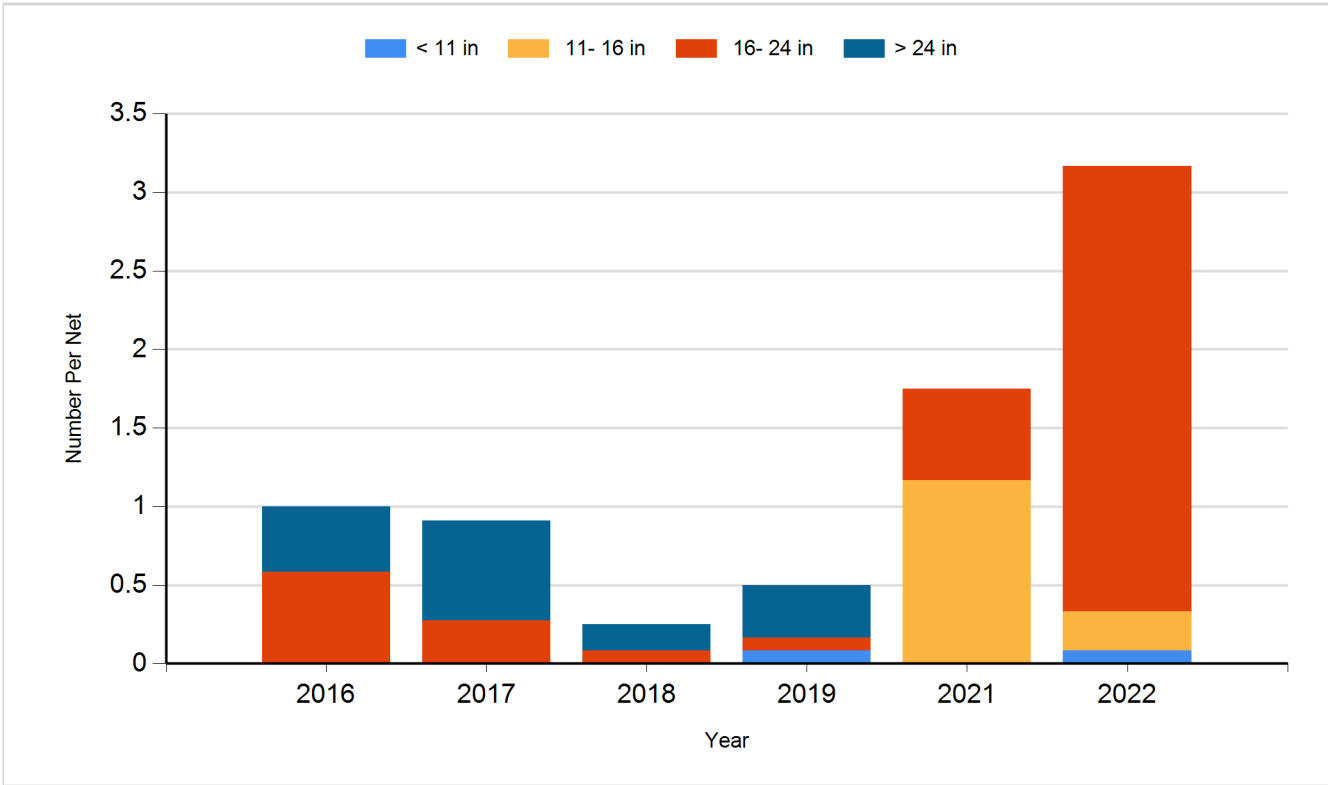
Species: Black Crappie
Gear: AFS std frame net



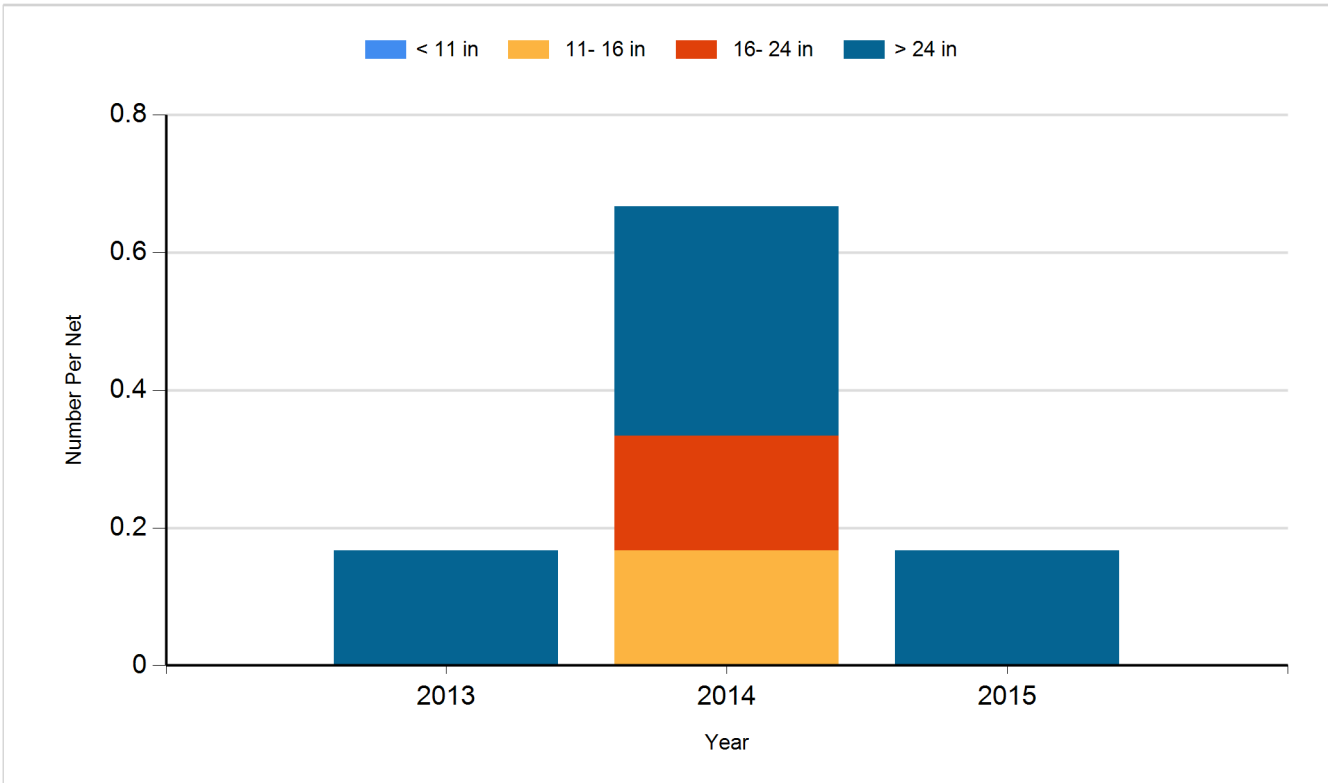
Species: Black Crappie
Gear: frame net (std 3/4 in)



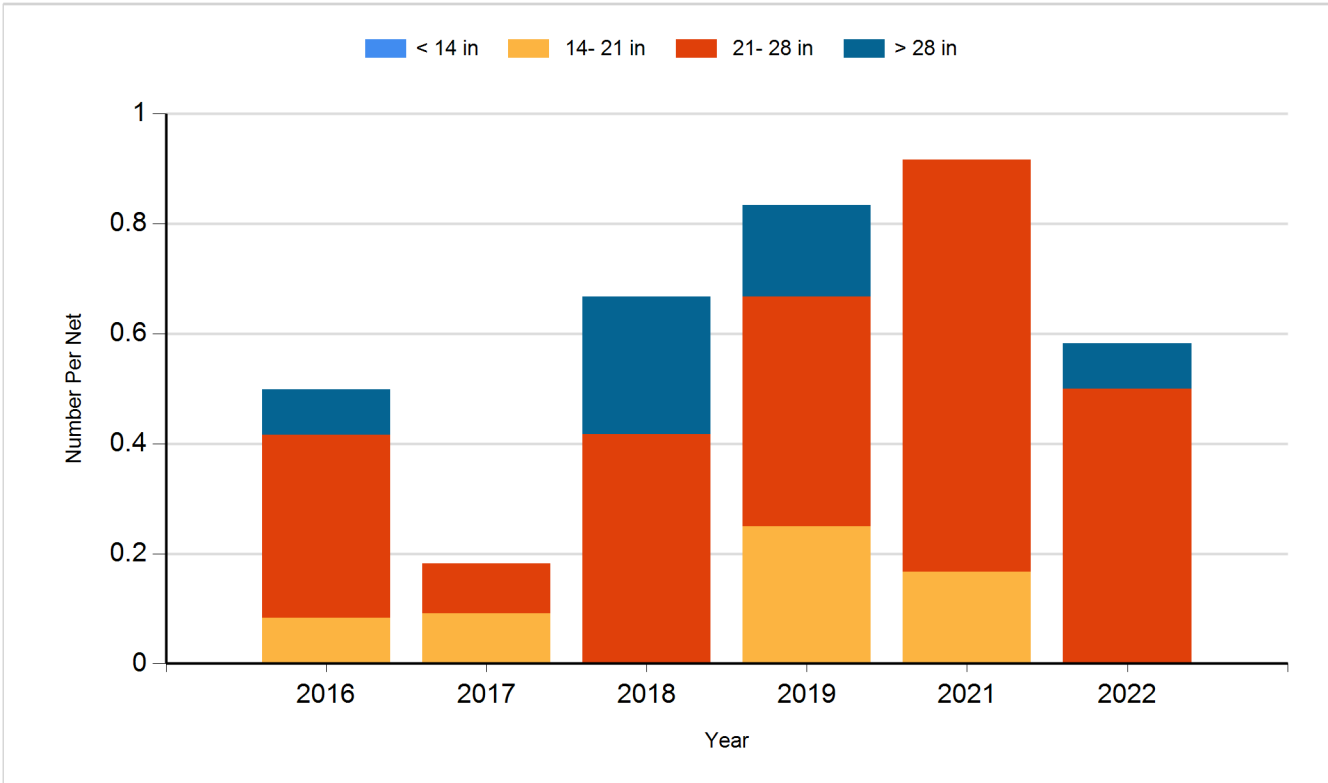
Species: Channel Catfish
Gear: AFS std gill net



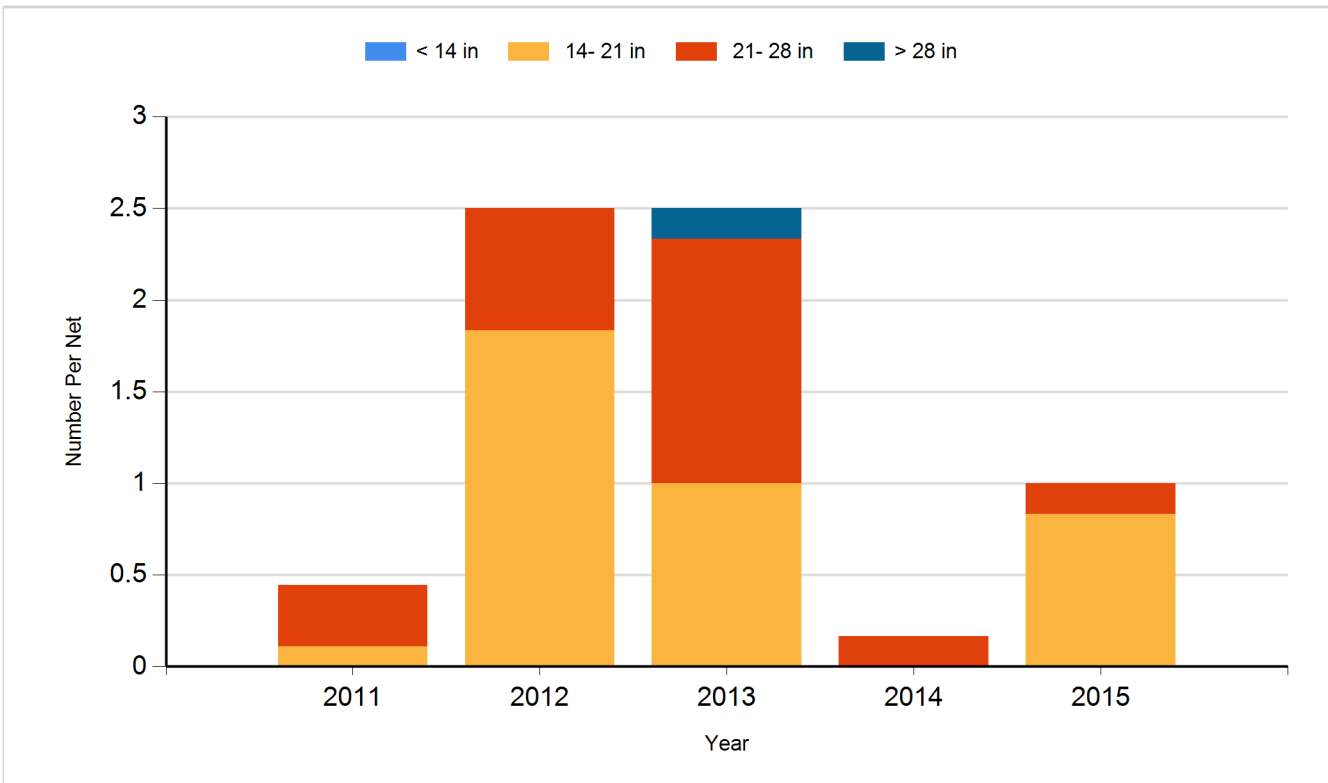
Species: Channel Catfish
Gear: std exp gill net



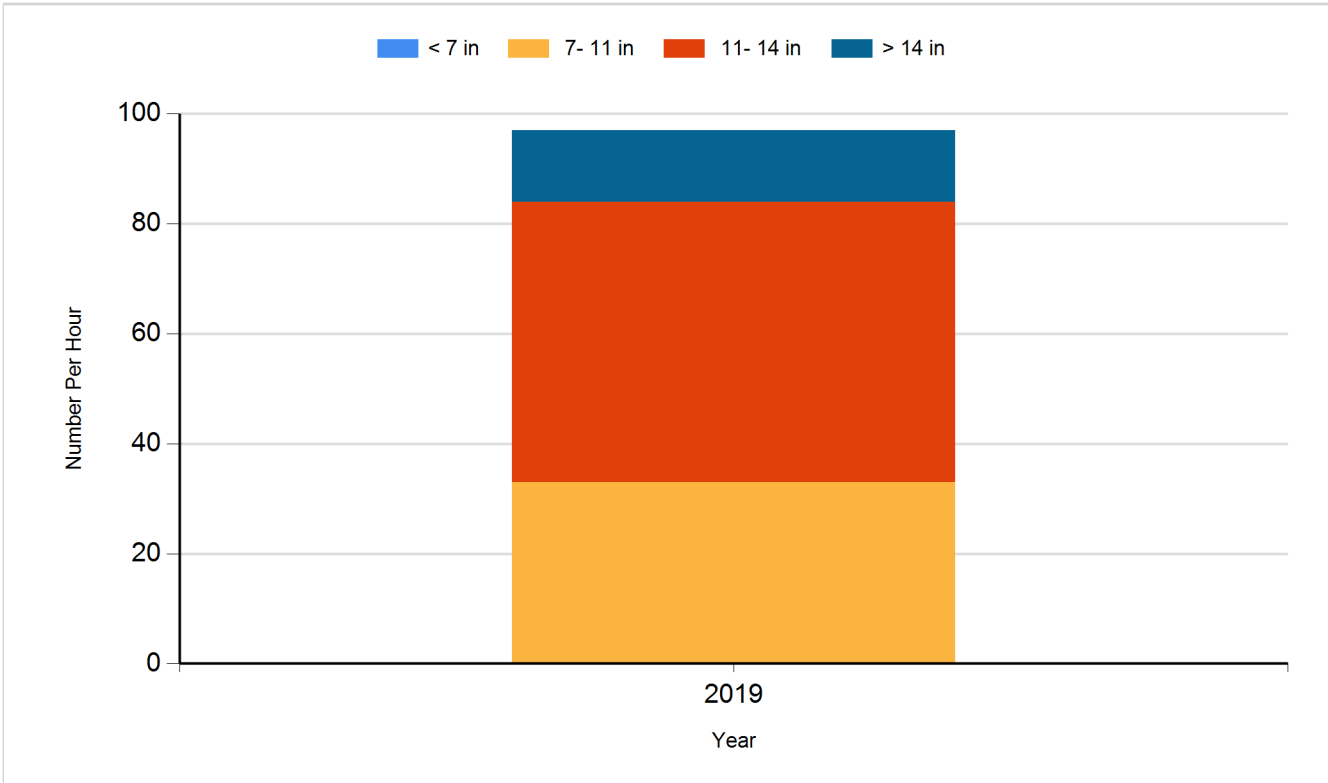
Species: Northern Pike
Gear: AFS std gill net



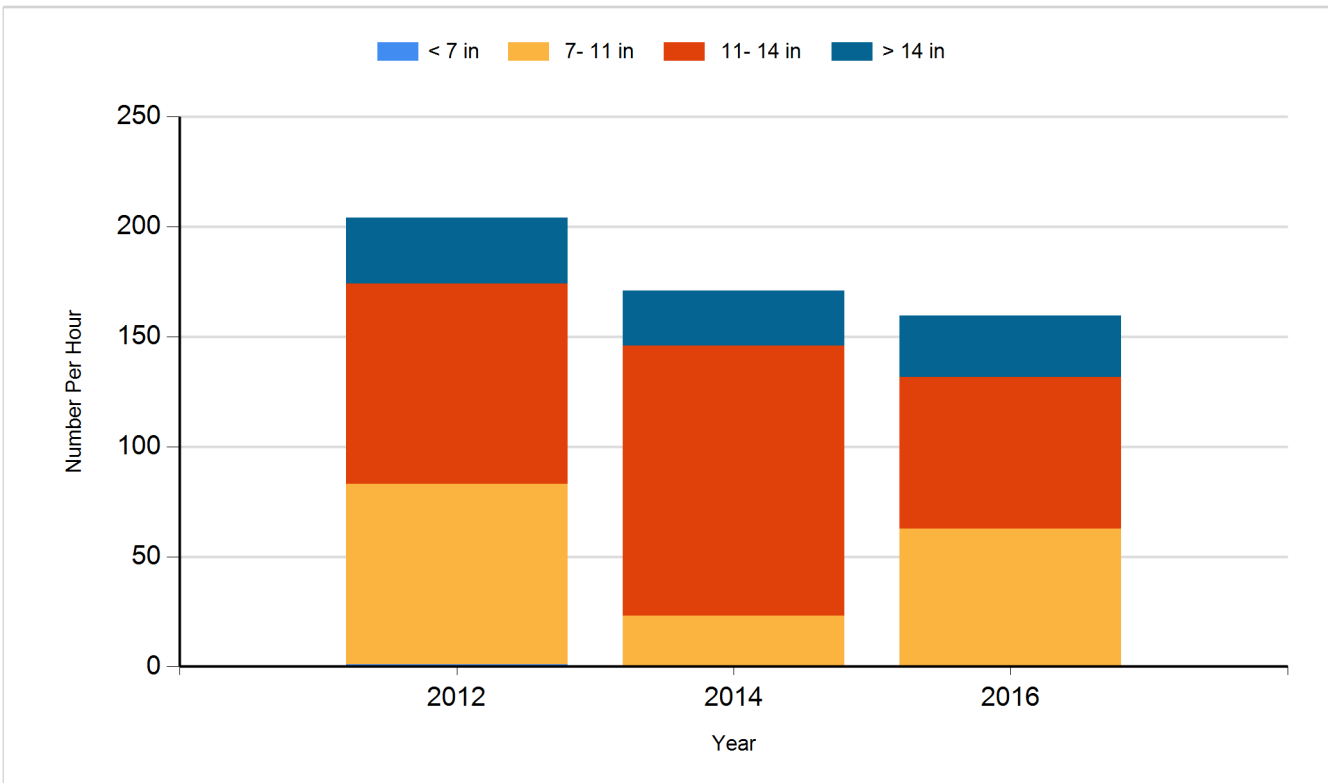
Species: Northern Pike
Gear: std exp gill net



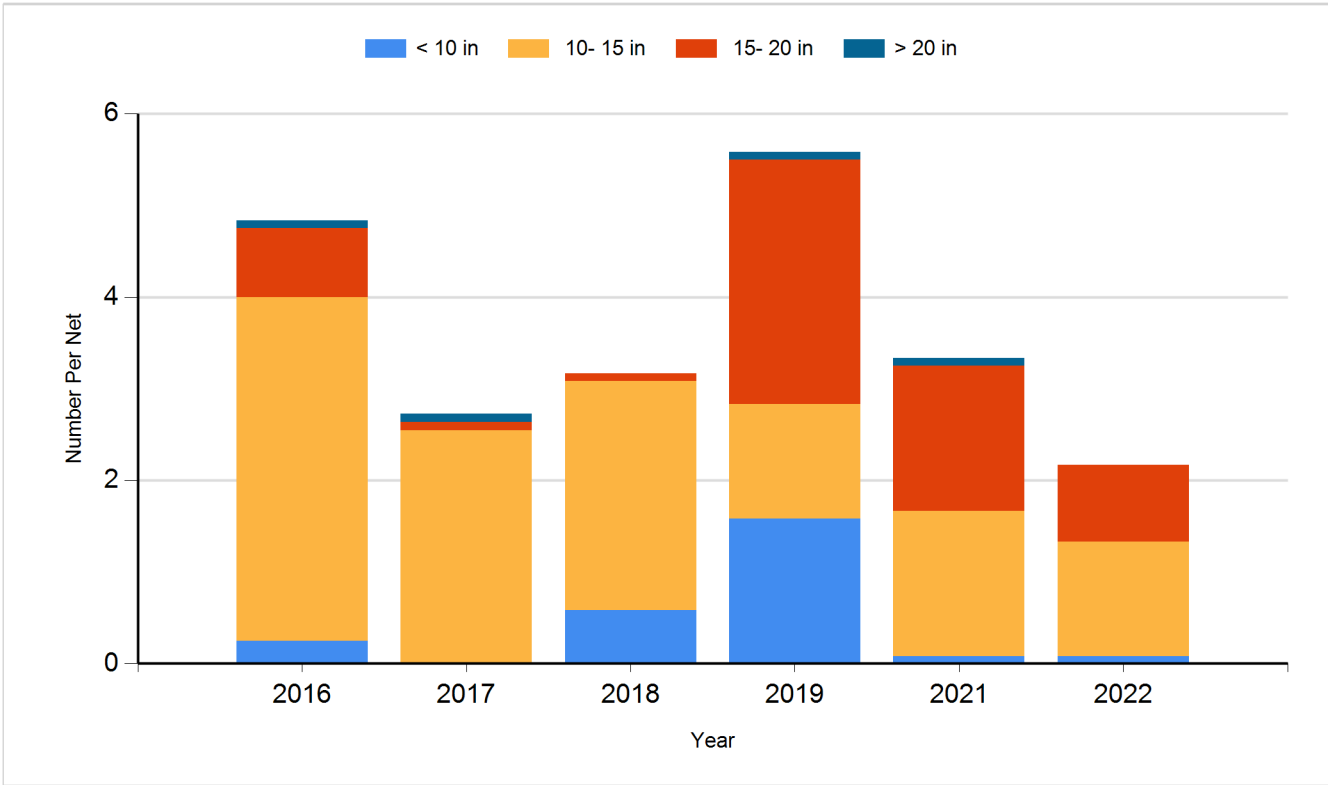
Species: Smallmouth Bass
Gear: boat shocker (day)



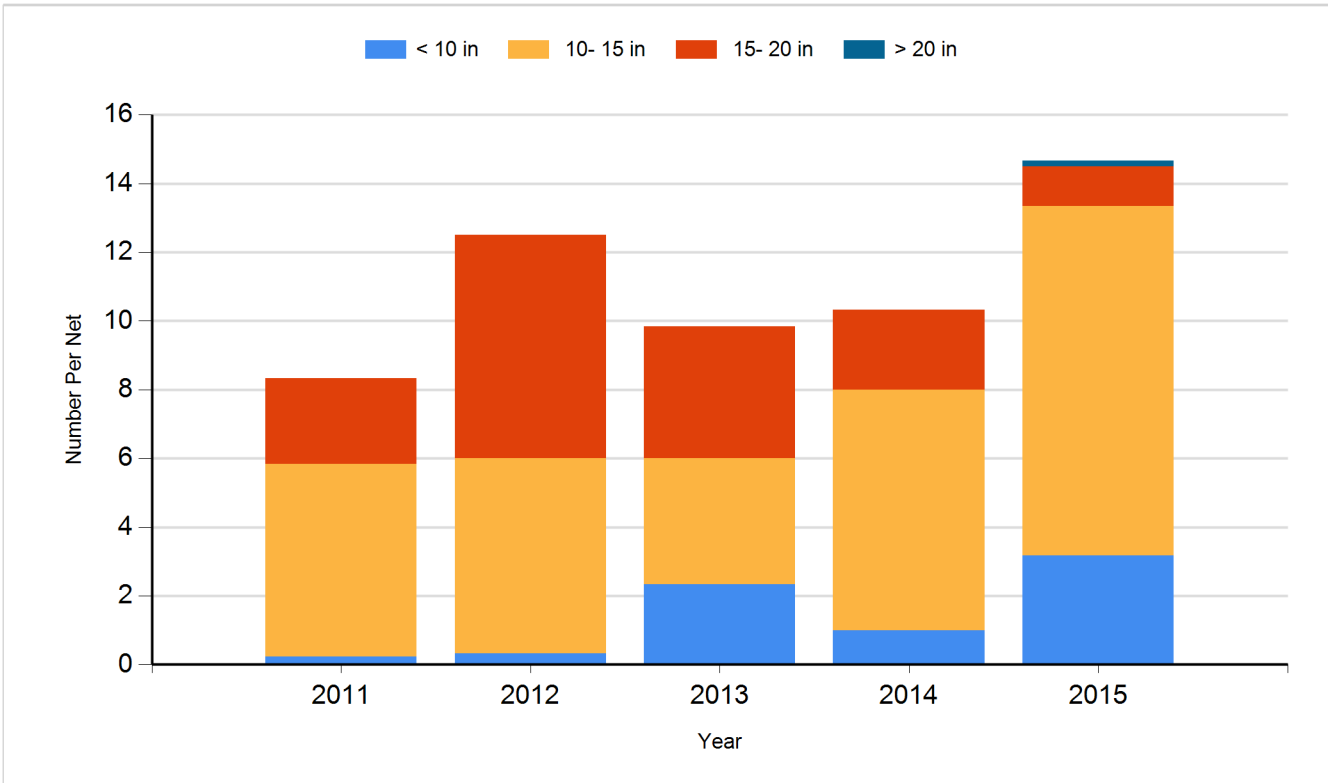
Species: Smallmouth Bass
Gear: boat shocker (night, DC)



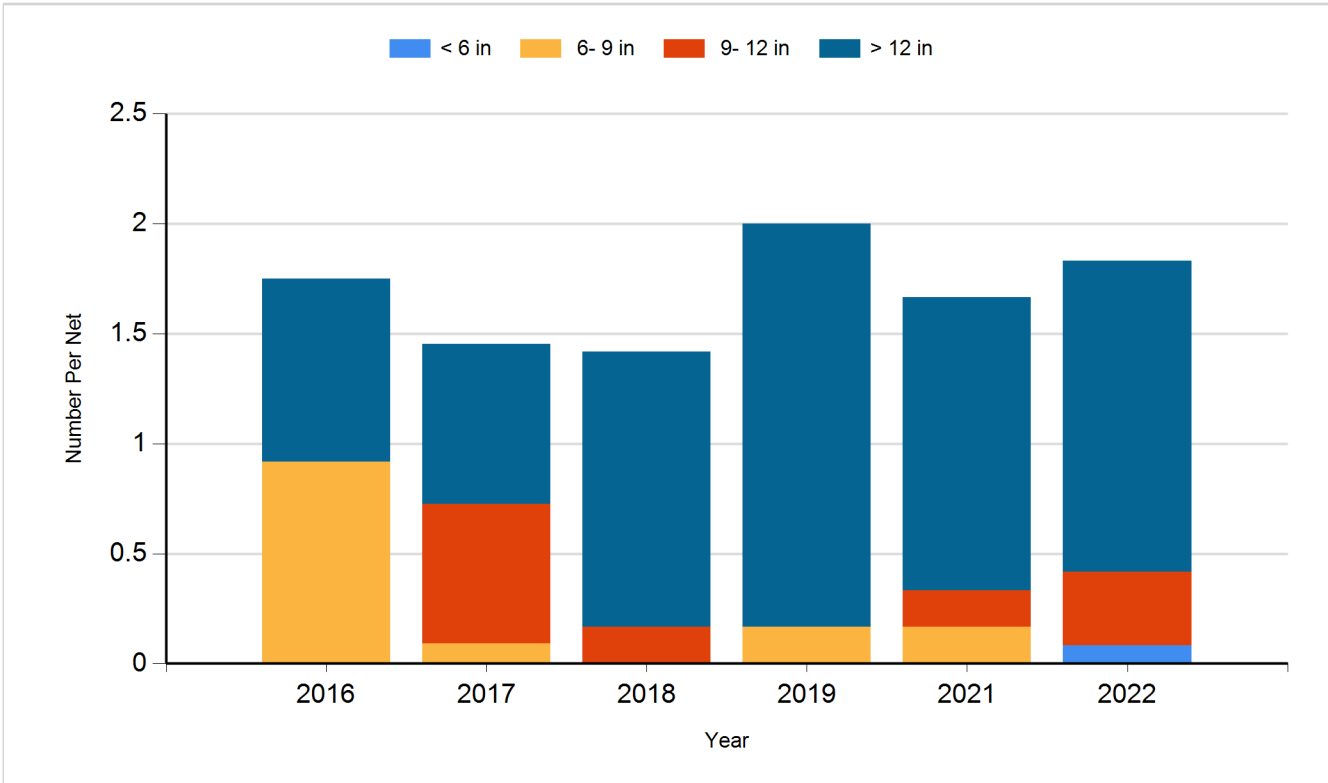
Species: Walleye
Gear: AFS std gill net



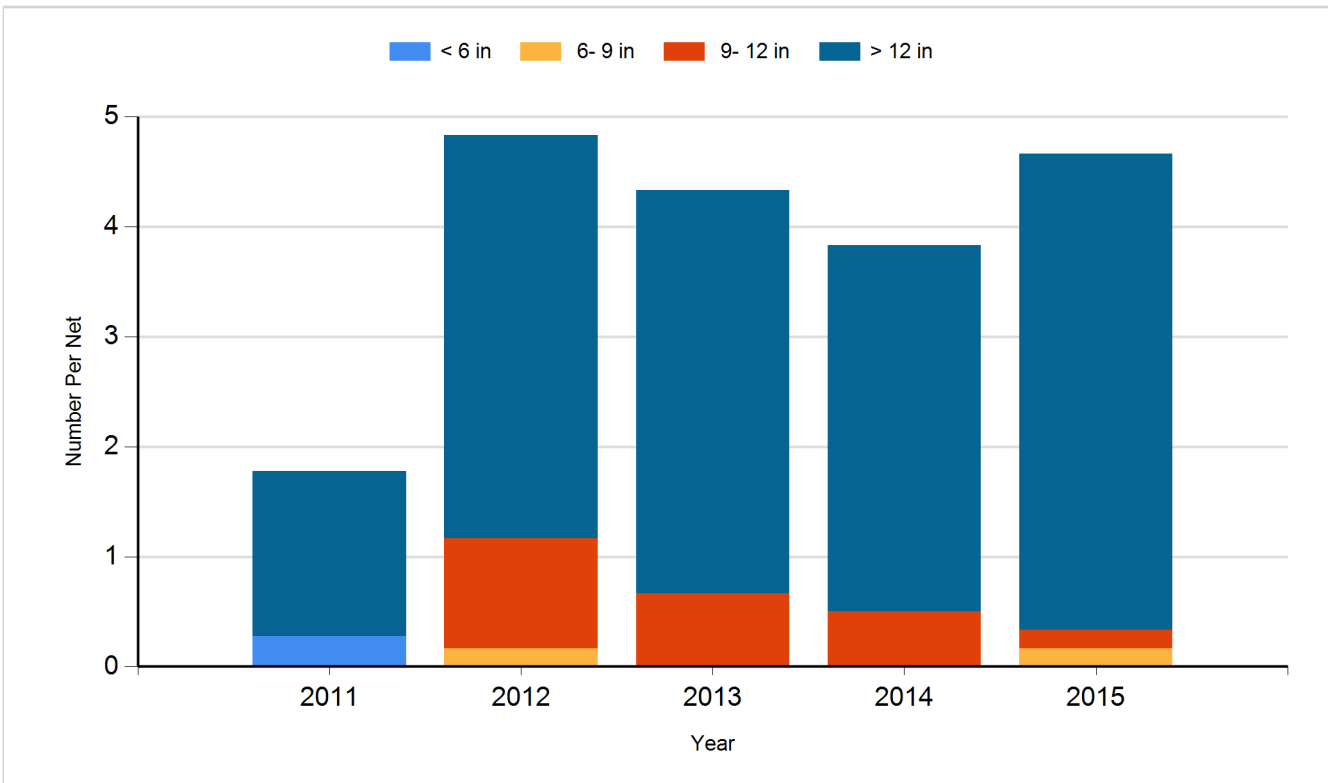
Species: Walleye
Gear: std exp gill net



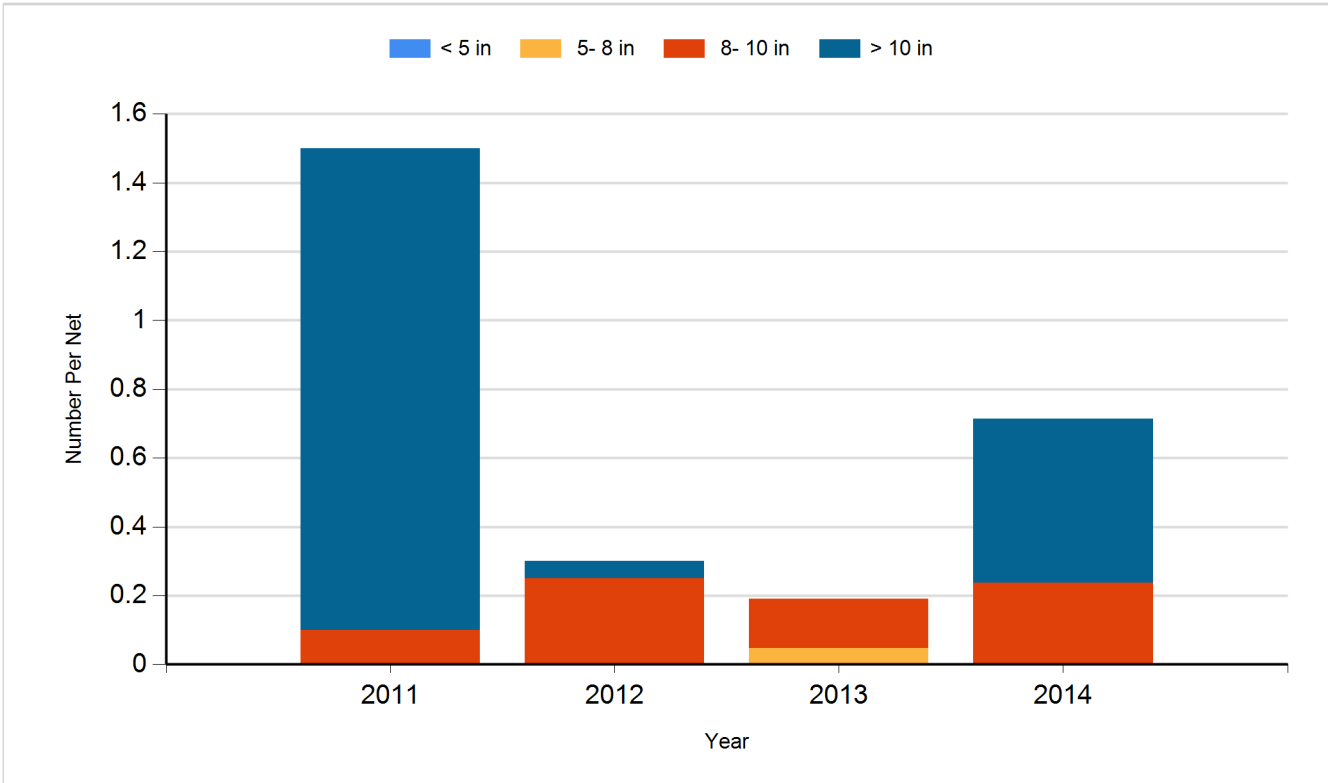
Species: White Bass
Gear: AFS std gill net



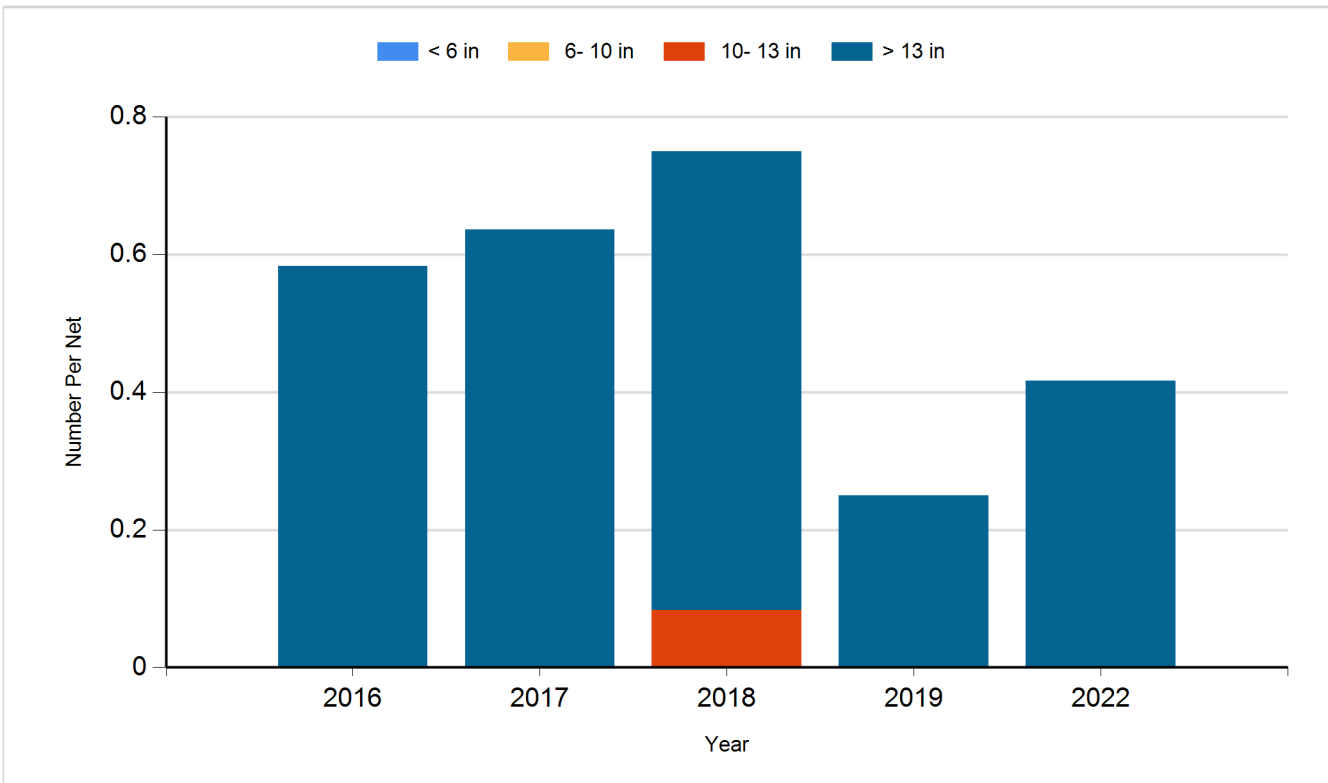
Species: White Bass
Gear: std exp gill net



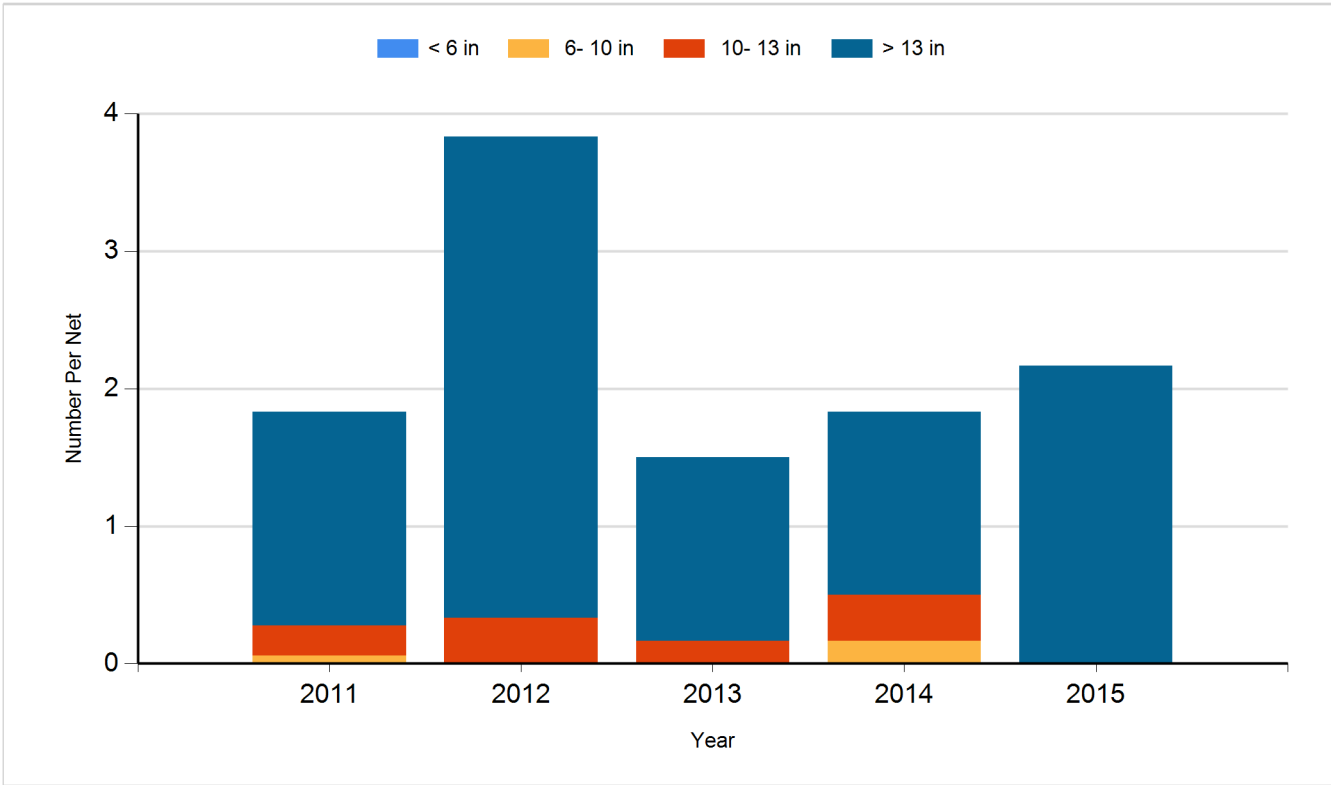
Species: White Crappie
Gear: frame net (std 3/4 in)



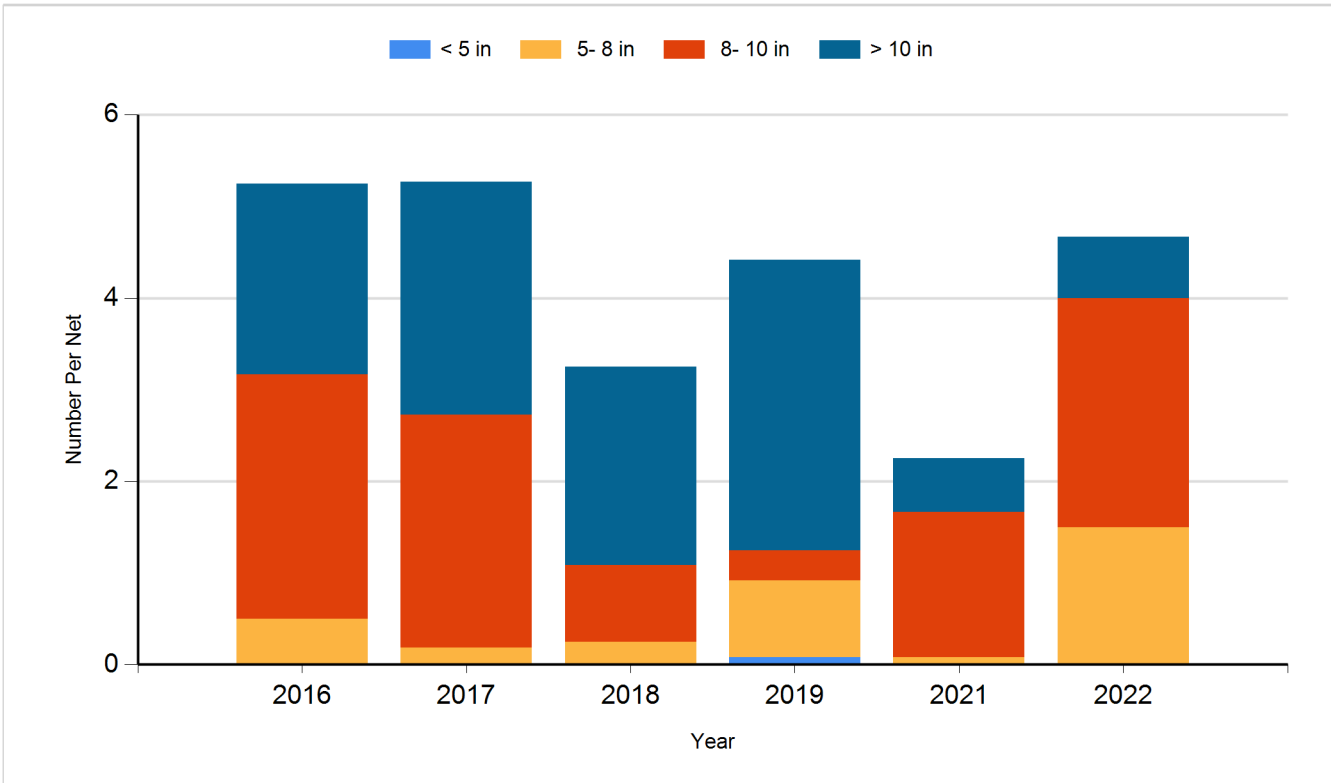
Species: White Sucker
Gear: AFS std gill net



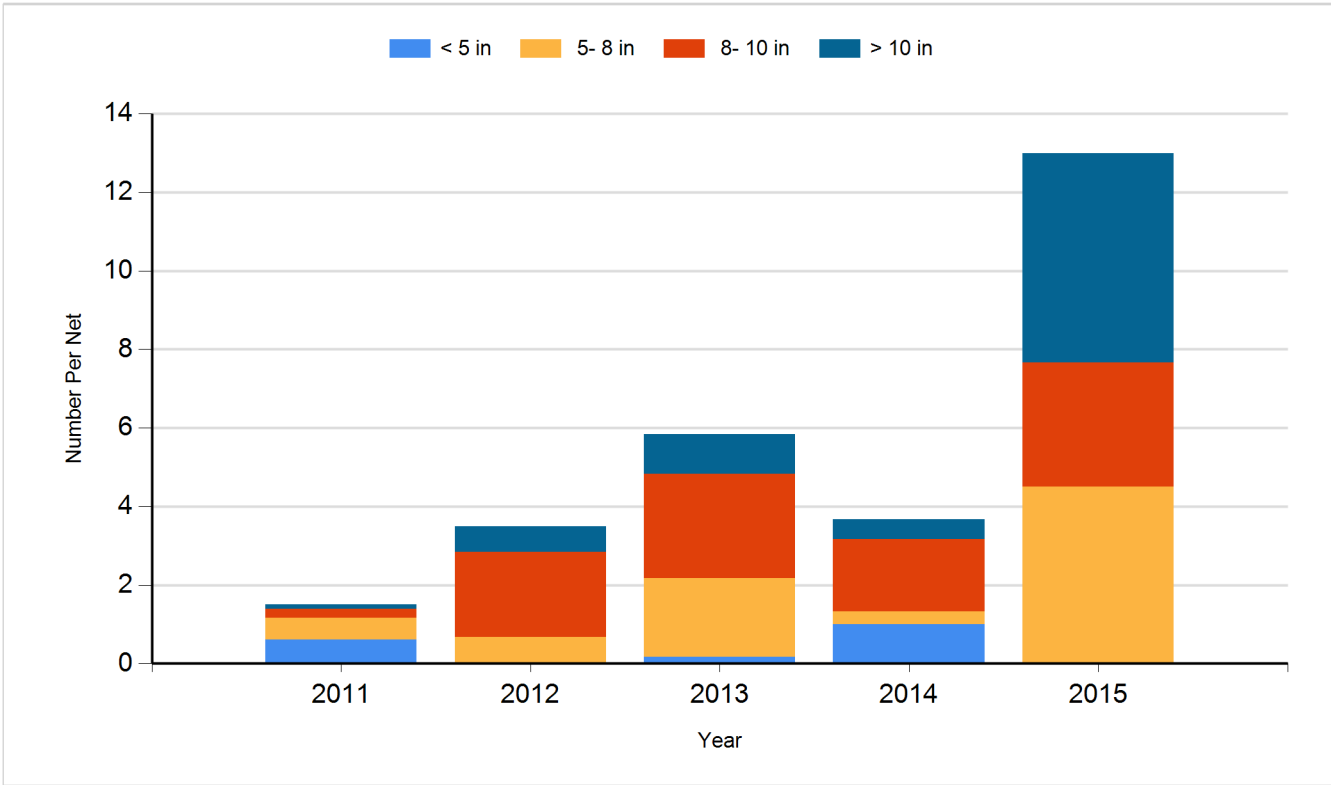
Species: White Sucker
Gear: std exp gill net



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
2013	Walleye	Fry	2,400,000
2014	Walleye	Fry	2,500,000
2016	Walleye	Fry	2,400,000
2017	Walleye	Fry	2,400,000
2018	Walleye	Fry	2,400,000
2019	Walleye		2,400,000
2021	Walleye	Fry	2,400,000
2022	Walleye	Fry	2,500,000