SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Mina, Edmunds County

SNK-Lake-23-800

2021

Lake Information

Name: Mina

County: Edmunds

Surface Area: 741 Acres

Maximum Depth: 27 Feet

Mean Depth: 9 Feet

Surveys and Investigations

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

Gear	Date	Effort
fall night EF-WAE	Oct 14, 2021	2400 seconds

Common Fish Species Present

Walleye

Channel Catfish

Bluegill

Black Crappie

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

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	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
AFS std frame net	Black Bullhead						15.3					15.30
	Black Crappie						0.3					0.30
	Bluegill						14.1					14.10
	Channel Catfish						1.2					1.20
	Common Carp						0.2					0.20
	Freshwater Drum						0.1					0.10
	Largemouth Bass						0.0					0.00
	Northern Pike						0.6					0.60
	Walleye						0.2					0.20
	White Sucker						0.4					0.40
	Yellow Perch						1.1					1.10
AFS std gill net	Bigmouth Buffalo					0.0	0.0	0.0	0.0	0.0		0.00
	Black Bullhead					16.8	9.3	6.8	2.3	7.5		8.54
	Black Crappie					0.0	0.0	0.0	0.0	0.1		0.02
	Bluegill					0.3	0.6	0.1	1.0	0.3		0.46
	Channel Catfish					3.3	2.2	1.4	3.3	3.0		2.64
	Common Carp					0.5	0.3	0.0	0.0	0.8		0.32
	Freshwater Drum					6.9	2.6	5.1	4.3	2.3		4.24
	Largemouth Bass					0.1	0.0	0.0	0.0	0.0		0.02
	Northern Pike					0.3	1.0	0.4	0.9	1.3		0.78
	Walleye					1.6	0.4	2.5	1.1	1.4		1.40
	White Sucker					0.7	1.2	0.6	0.8	0.3		0.72
	Yellow Perch					16.7	7.1	15.4	10.9	22.4		14.50
boat shocker (night)	Walleye*			7.0	69.0	77.6	133.5					71.78
fall night EF-WAE*	Walleye							78.0	99.0	17.2	265.5	114.93
frame net (std 3/4 in)	Black Bullhead	85.5	35.2	31.1	41.8				1.3	5.7		33.43
	Black Crappie	31.3	0.2	0.1	0.1				0.2	0.8		5.45
	Bluegill	5.6	6.7	16.5	5.7				7.6	6.6		8.12
	Bluegill X Gr. Sunfish Hybrid	0.0	0.0	0.0	0.1				0.0	0.0		0.02
	Channel Catfish	1.2	0.6	1.4	0.7				0.2	2.1		1.03
	Common Carp	0.5	0.2	0.6	0.6				0.1	0.0		0.33
	Freshwater Drum	0.0	0.4	0.3	0.9				0.5	0.7		0.47

		CPUE										
Gear	Species	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
frame net (std 3/4 in)	Northern Pike	2.0	0.9	0.8	0.4				0.2	1.1		0.90
	O. Spotted X Gr. Sunfish Hybrid	0.0	0.0	0.0	0.0				0.0	0.0		0.00
	Orangespotted Sunfish	0.0	0.0	0.0	0.0				0.0	0.0		0.00
	Sunfish Hybrid	0.0	0.0	0.0	0.0				0.0	0.0		0.00
	Walleye	0.7	0.1	0.3	0.1				0.4	1.7		0.55
	White Sucker	0.1	0.5	0.3	0.3				0.1	0.1		0.23
	Yellow Perch	2.1	1.2	9.6	1.6				3.4	5.3		3.87
std exp gill net	Black Bullhead	44.7	17.0	24.5	23.5							27.43
	Black Crappie	1.0	0.0	0.0	0.0							0.25
	Bluegill	0.0	0.7	0.2	0.0							0.23
	Channel Catfish	1.0	3.2	1.0	2.7							1.98
	Common Carp	1.2	0.2	0.5	1.2							0.78
	Freshwater Drum	3.3	7.3	5.5	2.3							4.60
	Largemouth Bass	0.2	0.0	0.0	0.0							0.05
	Northern Pike	1.3	0.7	0.5	2.3							1.20
	Orangespotted Sunfish	0.0	0.0	0.0	0.0							0.00
	Walleye	1.2	3.5	0.7	1.7							1.78
	White Sucker	0.2	0.0	0.2	0.2							0.15
	Yellow Perch	14.8	8.7	27.2	32.5							20.80

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.

			Year									
Gear	Species	Index	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AFS std frame net	Black Crappie	PSD						100				
		PSD-P						0				
		Wr						109				
	Bluegill	PSD						85				
		PSD-P						8				
		Wr						125				
	Channel Catfish	PSD						59				
		PSD-P						18				
		Wr						99				
	Walleye	PSD						100				
		PSD-P						50				
		Wr						79				
AFS std gill net	Black Crappie	PSD									0	
		PSD-P									0	
		Wr									126	
	Bluegill	PSD					50	57	100	100	100	
		PSD-P					50	14	0	92	100	
		Wr					109	124	121	119	122	
	Channel Catfish	PSD					77	54	100	100	100	
		PSD-P					56	15	53	44	56	
		Wr					110	109	108	110	101	
	Walleye	PSD					74	100	7	46	12	
		PSD-P					16	0	0	8	6	
		Wr					97	82	90	86	86	
boat shocker (night)	Walleye	PSD			0	0	0	0				
		PSD-P			0	0	0	0				
		Wr			101	92	98	89				
frame net (std 3/4 in)	Black Crappie	PSD	90	100	100	0				25	73	
		PSD-P	15	100	100	0				0	27	
		Wr	112		116	117				108	110	
	Bluegill	PSD	55	31	92	98				93	87	
		PSD-P	21	13	2	24				48	52	

			Year									
Gear	Species	Index	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
frame net (std 3/4 in)	Bluegill	Wr	124	113	127	119				124	125	
	Channel Catfish	PSD	100	91	48	69				100	97	
		PSD-P	0	0	9	8				0	21	
		Wr	96	106	97	86				103	94	
	Walleye	PSD	25	0	80	0				43	16	
		PSD-P	0	0	40	0				0	3	
		Wr	79	76	102					84	82	
std exp gill net	Black Crappie	PSD	50			0						
		PSD-P	0			0						
		Wr	115									
	Bluegill	PSD		25	0							
		PSD-P		25	0							
		Wr		139	142							
	Channel Catfish	PSD	100	100	100	100						
		PSD-P	0	16	67	56						
		Wr	116	102	119	93						
	Walleye	PSD	29	62	100	60						
		PSD-P	0	5	25	20						
		Wr	84	91	104	96						

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	8	54 (3)	200 (1)	227 (4)							
2012	532	160 (52)	225 (364)	250 (106)	257 (10)						

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	137	93 (10)	173 (56)	198 (11)	215 (60)						
2017	268	75 (18)	111 (36)	160 (22)	177 (187)	229 (5)					
2015	102	137 (6)	176 (56)	201 (27)	208 (12)			240 (1)			

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	20	226 (3)	296 (10)	357 (6)							675 (1)
2019	16	213 (5)	312 (7)	413 (2)		461 (1)					621 (1)
2018	48	248 (31)	324 (15)	390 (2)							
2017	6	201 (1)		418 (2)	436 (2)				492 (1)		
2016	19	267 (2)	393 (11)				551 (1)	533 (3)			404 (2)
2015	10	290 (4)	386 (2)		470 (2)		562 (1)	599 (1)			
2014	4				431 (1)	472 (3)					
2013	21		317 (5)	389 (4)	411 (11)		513 (1)				
2012	7			357 (7)							

Fish Condition

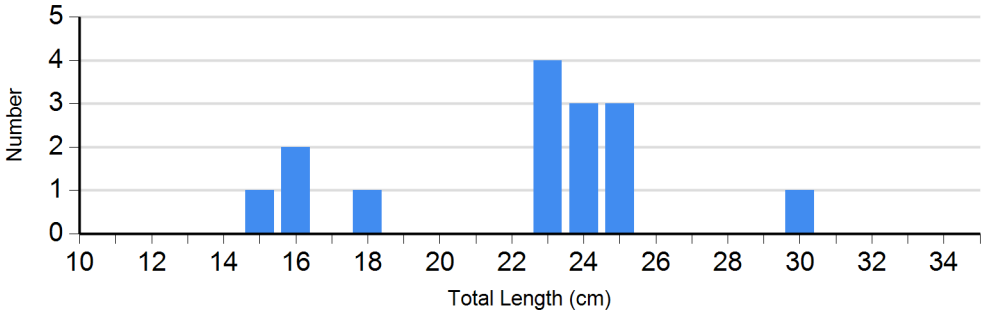
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2017	0		5	109 (1.3)	0		0	
	2019	3	109 (0.9)	1	105	0		0	
	2020	4	118 (1.7)	7	108 (2.5)	3	108 (0.9)	1	99
Bluegill Frame Net	2017	38	126 (2.2)	196	126 (0.8)	20	117 (2.2)	0	
	2019	10	126 (4.1)	61	131 (1.5)	66	116 (1.1)	0	
	2020	16	130 (3.1)	41	130 (1.3)	62	120 (1.3)	0	
Channel Catfish Gill Net	2017	12	105 (3.8)	10	119 (3.4)	4	96 (8.7)	0	
	2018	0		8	104 (2.2)	7	110 (5.7)	2	116 (3.5)
	2019	0		22	111 (3.1)	14	109 (3.8)	3	102 (7.4)
	2020	0		16	102 (2.5)	17	99 (2.7)	3	98
Walleye Gill Net	2017	0		5	82 (3.0)	0		0	
	2018	28	90 (0.9)	2	89 (1.5)	0		0	
	2019	7	86 (1.6)	5	85 (2.0)	1	95	0	
	2020	15	85 (1.2)	1	85	0		1	93

Length Frequency Distribution

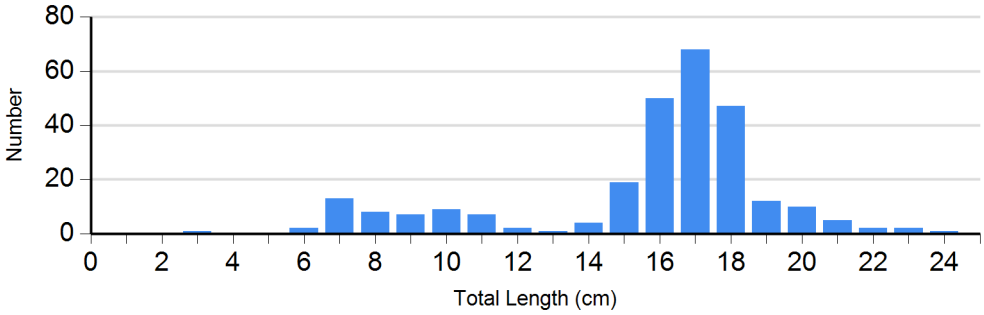
Length frequency histogram of species sampled by year.

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



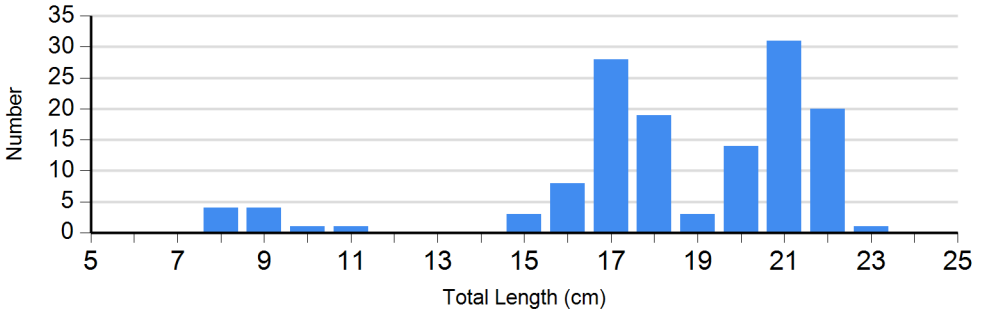
2020

Species: Bluegill
Gear: AFS std frame net

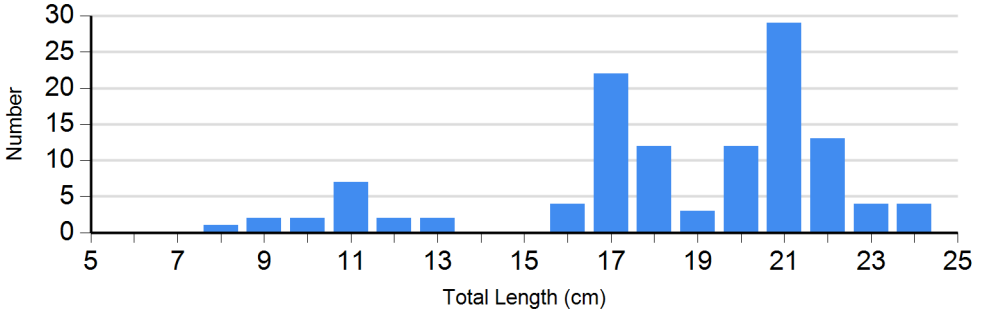


2017

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

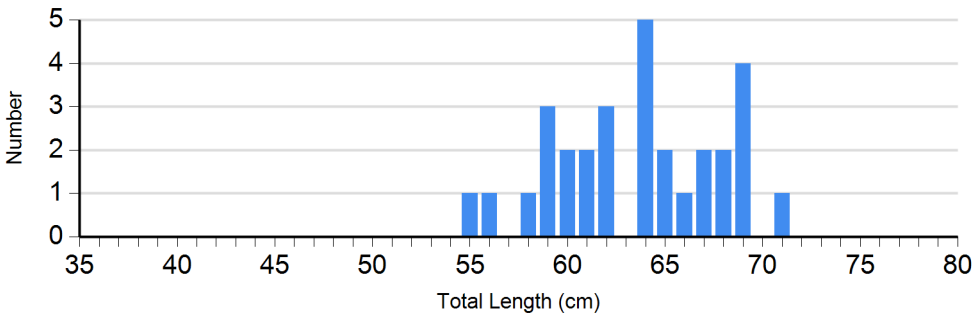


2019



2020

Species: Channel Catfish
Gear: AFS std gill net



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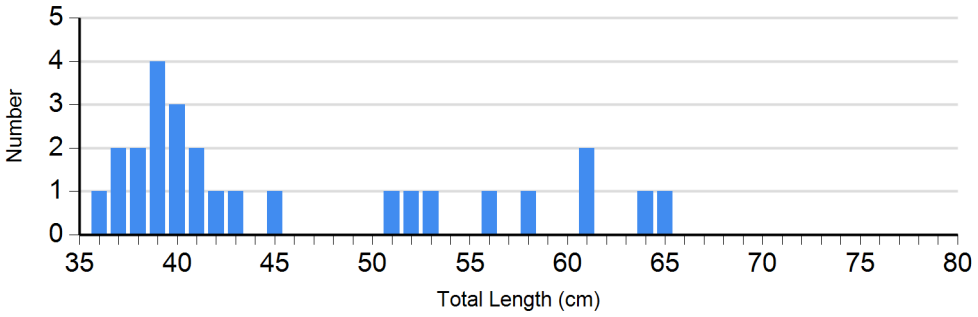

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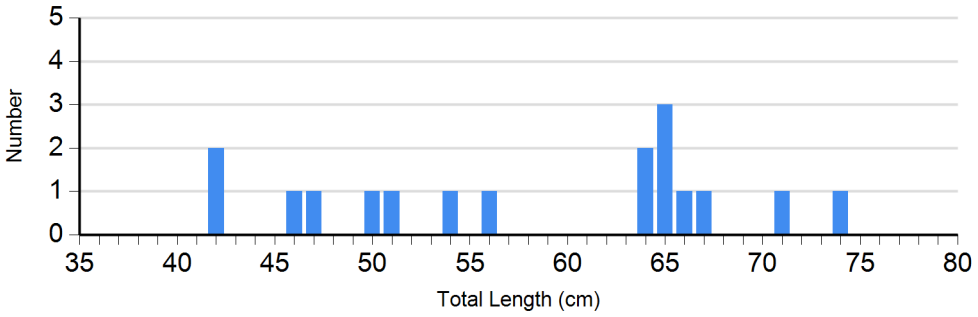

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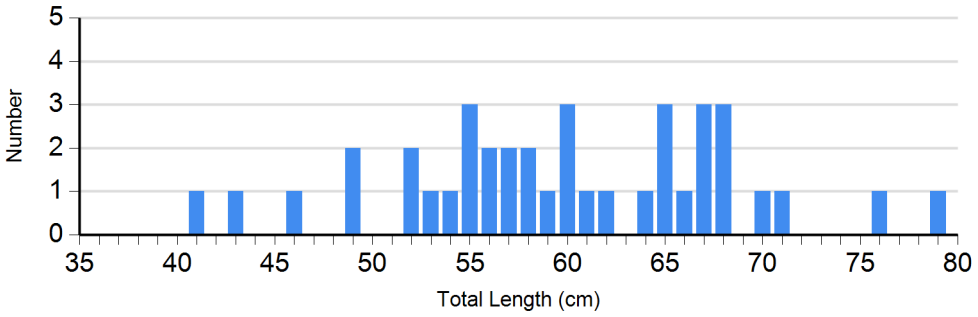
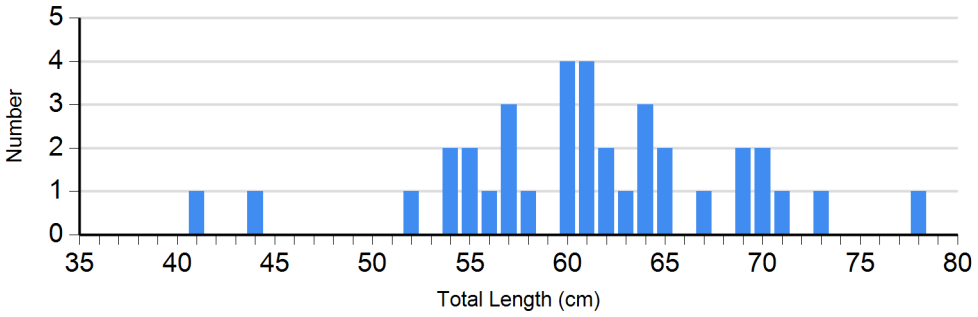
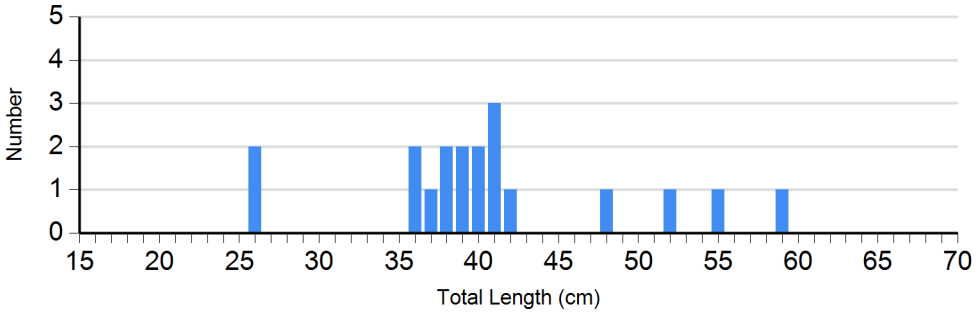


2019



2020

Species: Walleye
Gear: AFS std gill net



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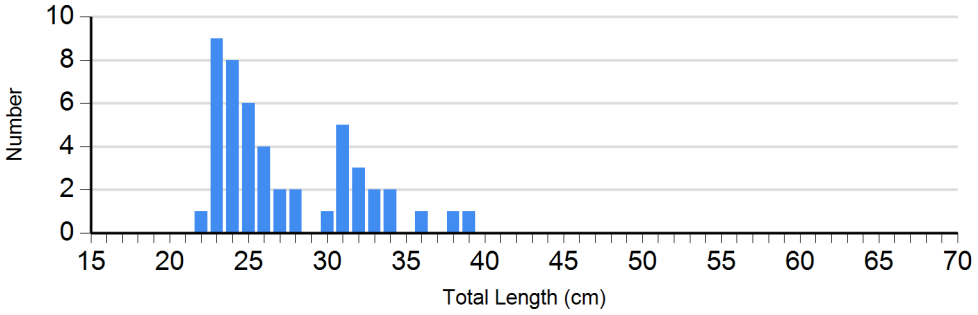
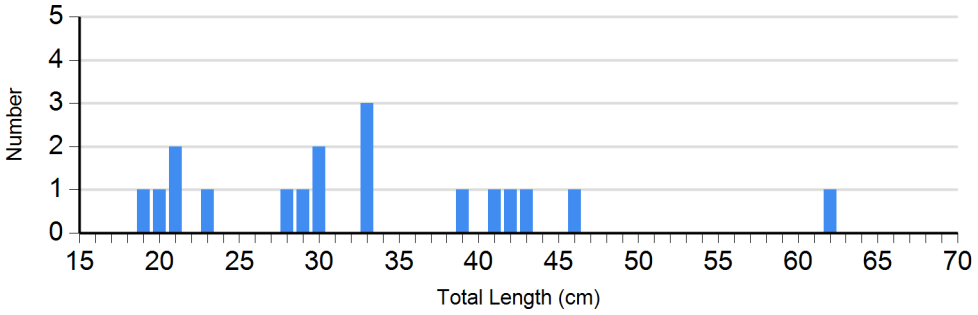
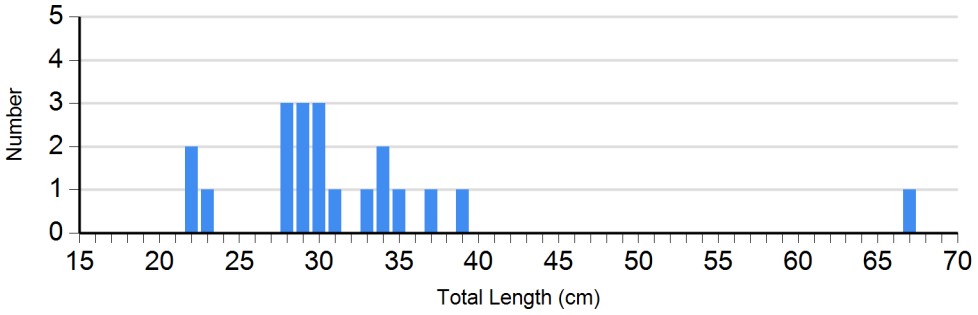


2018



2019

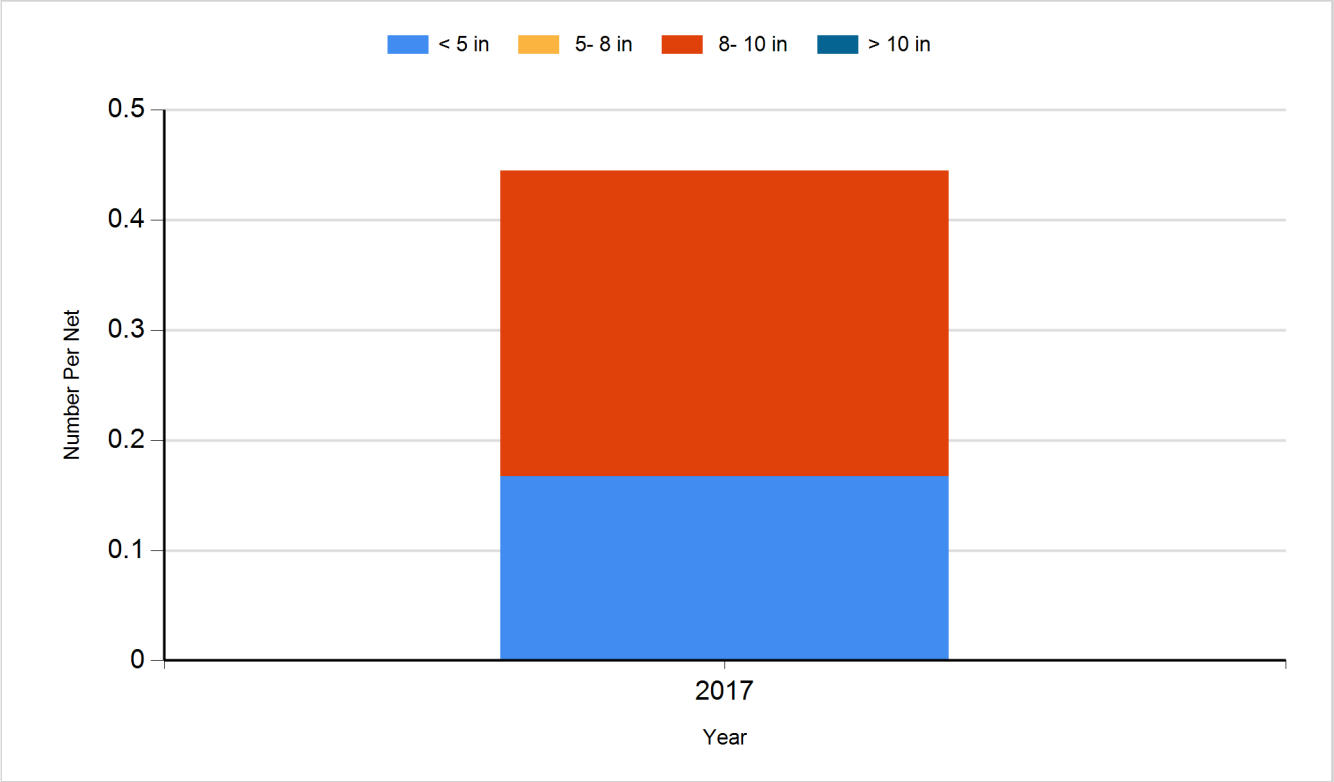


2020

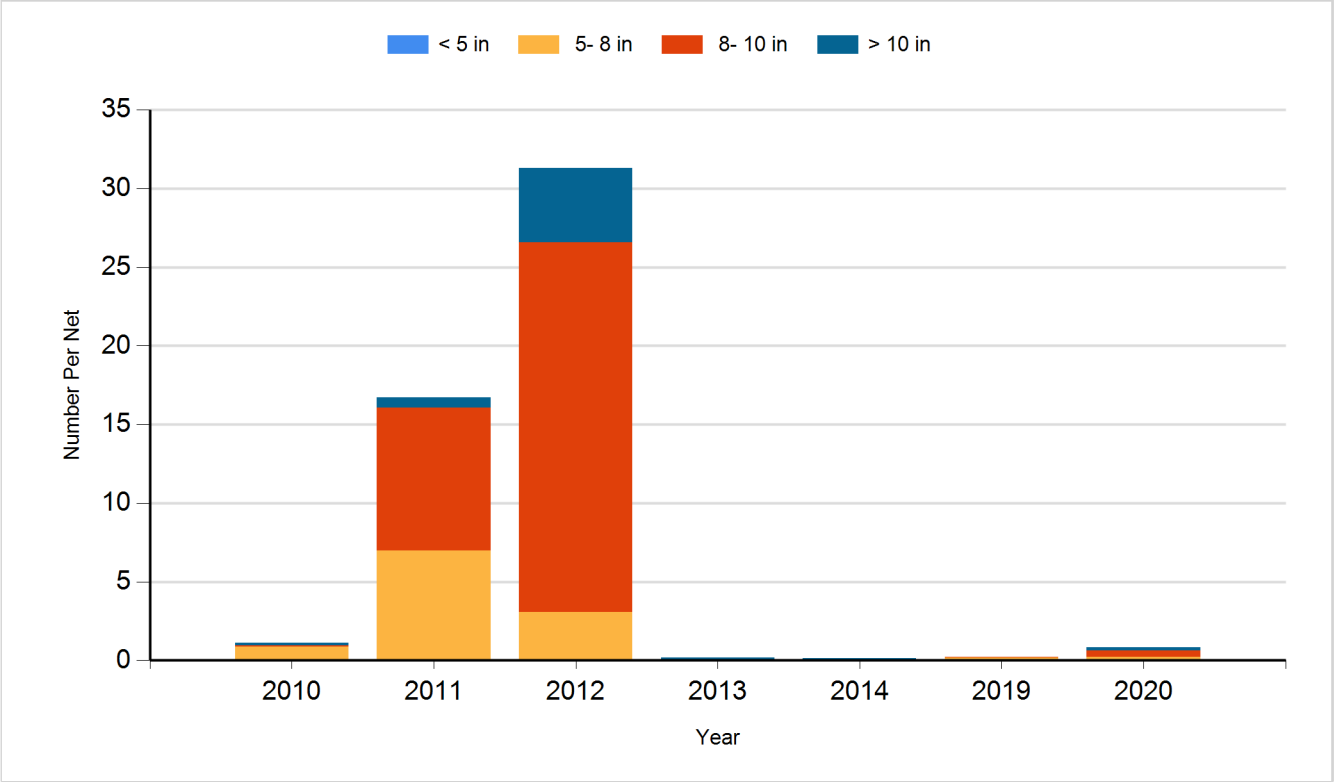
Historic Fish Sizes and Relative Abundance

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

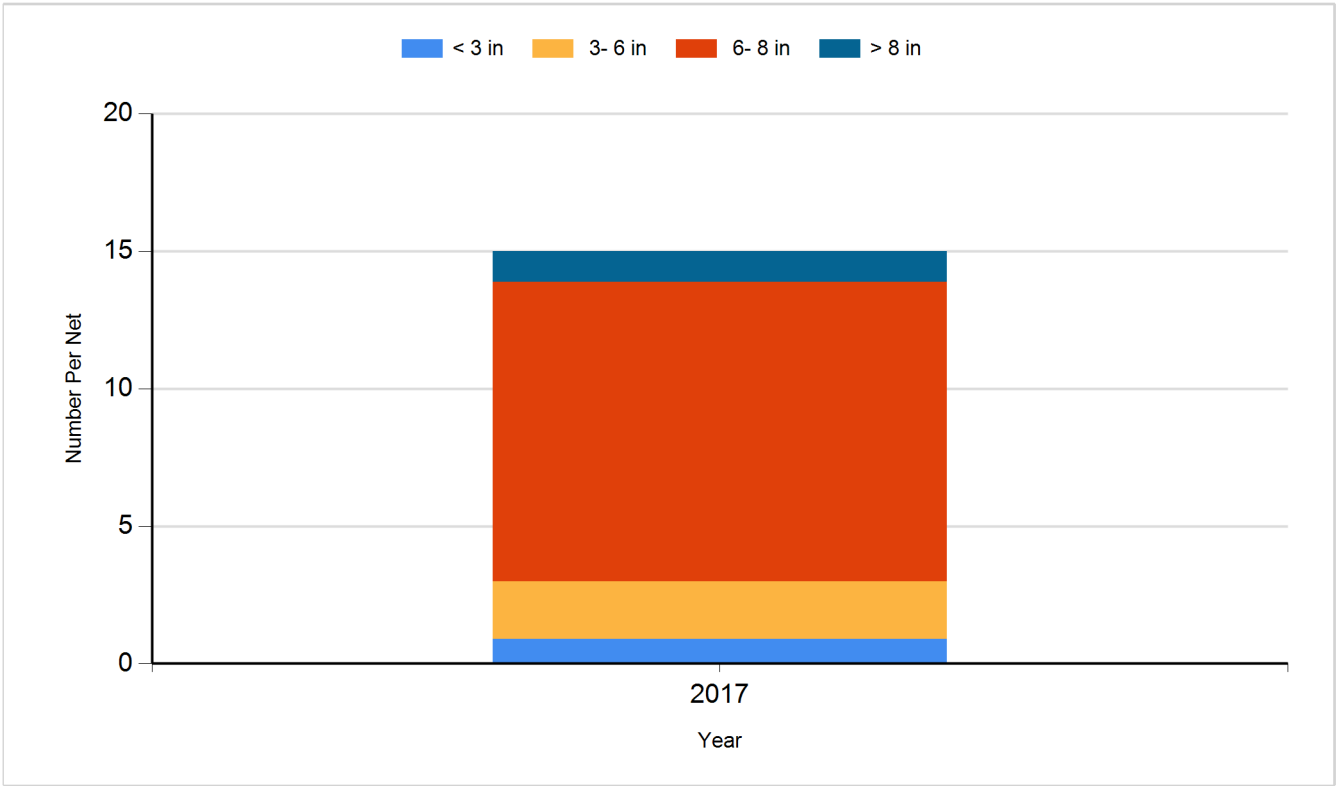
Species: Black Crappie
Gear: AFS std frame net



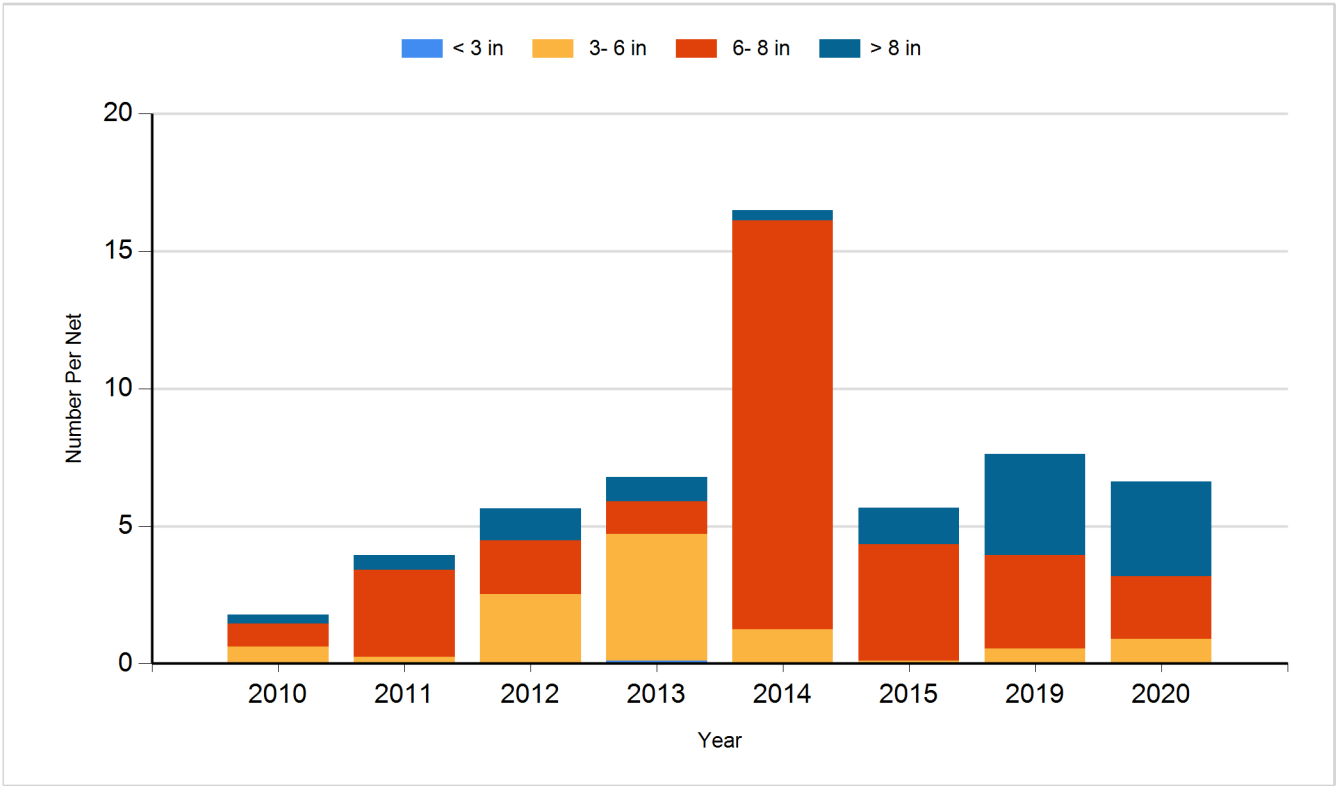
Species: Black Crappie
Gear: frame net (std 3/4 in)



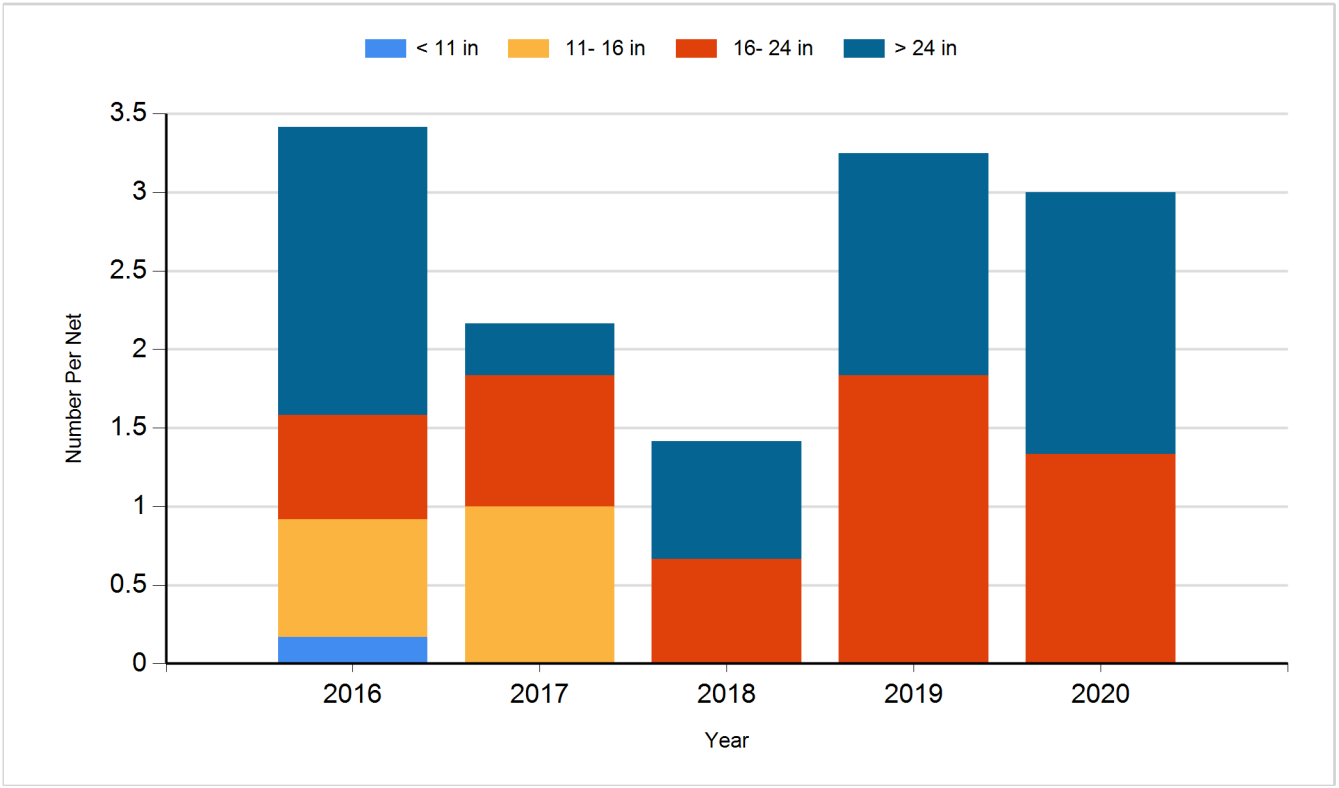
Species: Bluegill
Gear: AFS std frame net



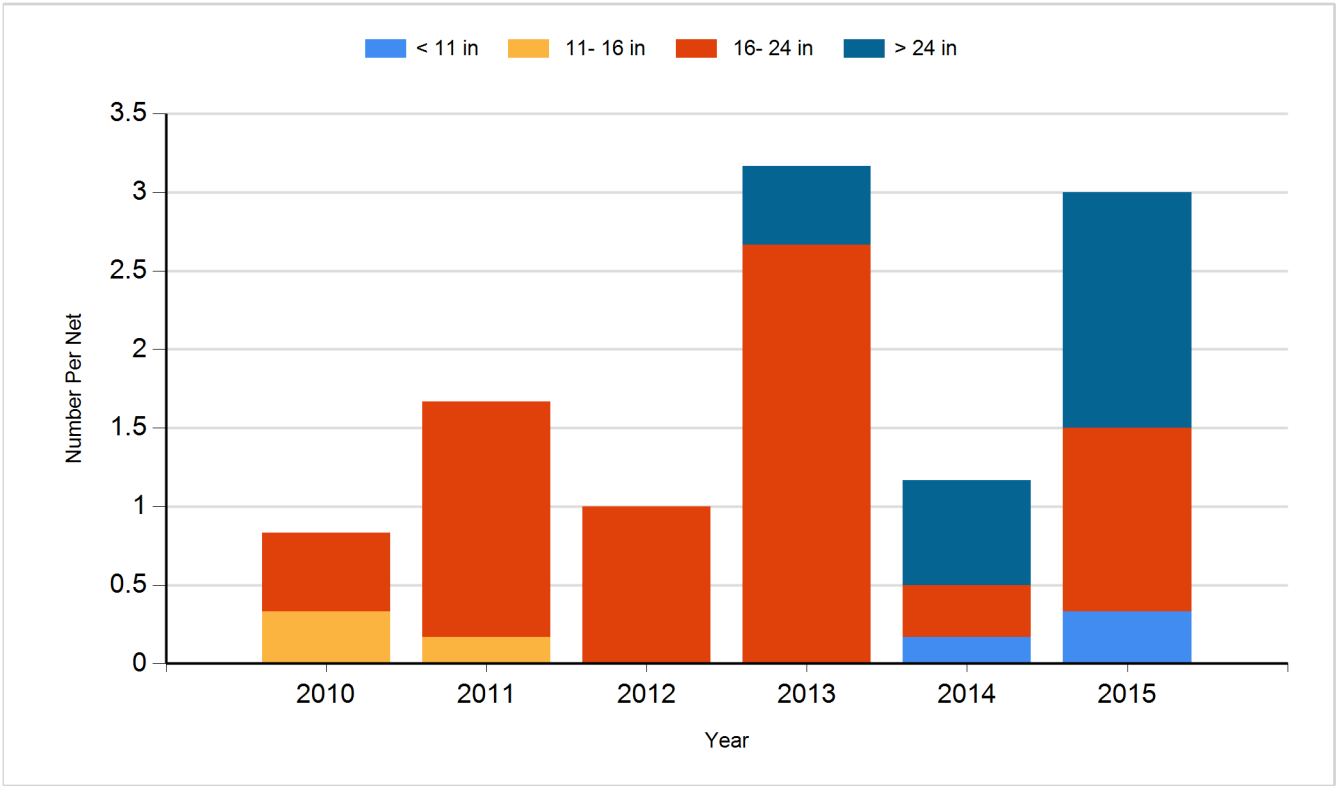
Species: Bluegill
Gear: frame net (std 3/4 in)



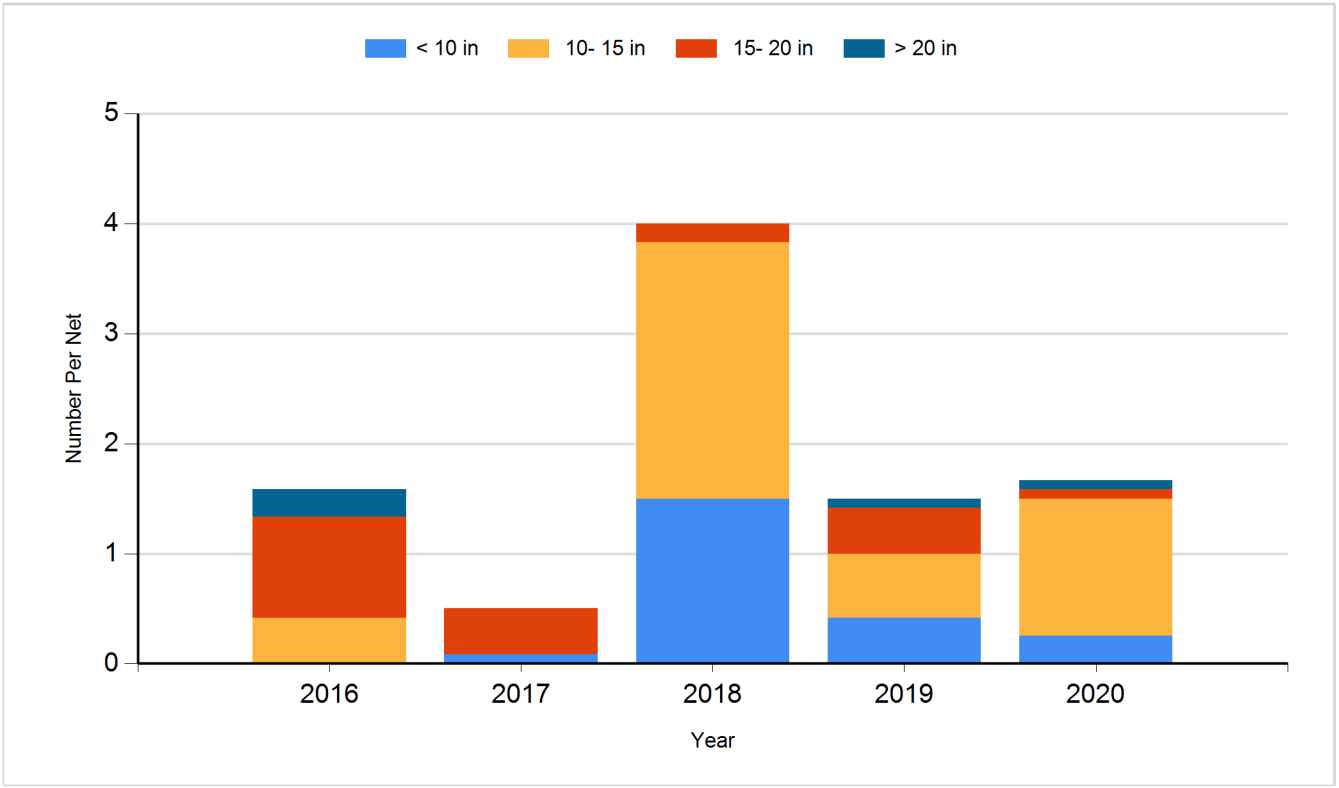
Species: Channel Catfish
Gear: AFS std gill net



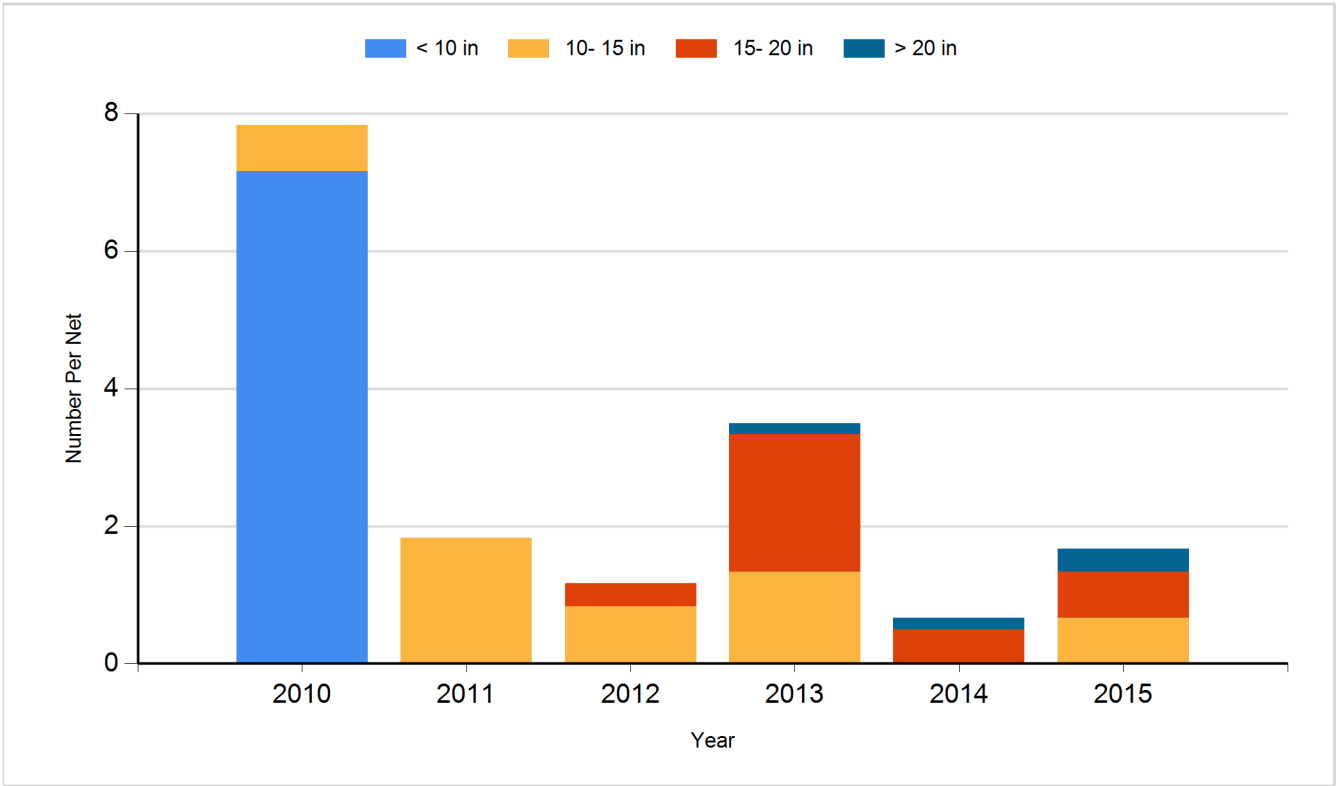
Species: Channel Catfish
Gear: std exp gill net



Species: Walleye
Gear: AFS std gill net



Species: Walleye
Gear: std exp gill net



Fish Stocking

Number of fish stocked by year, species, and size.

Year	Species	Size	Number
2010	Walleye	Small Fingerling	80,300
2011	Walleye	Small Fingerling	79,980
2012	Channel Catfish	Fingerling	17,075
2012	Walleye	Large Fingerling	7,485
2012	Walleye	Small Fingerling	80,850
2013	Walleye	Small Fingerling	48,900
2014	Walleye	Small Fingerling	79,906
2015	Walleye	Small Fingerling	80,060
2016	Saugeye	Small Fingerling	115,890
2017	Saugeye	Small Fingerling	65,420
2018	Saugeye	Small Fingerling	60,180
2019	Saugeye	Small Fingerling	60,900
2021	Saugeye	Juvenile	61,100