SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Hwy 81 West, Kingsbury County
MBS-Lake-233-800
2024

Lake Information

Name: Hwy 81 West

County: Kingsbury

Surface Area: 1,951 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jul 30, 2024	10 net-nights
AFS std gill net	Jul 31, 2024	10 net-nights
frame net (std 3/4 in)	Jul 30, 2024	5 net-nights
frame net (std 3/4 in)	Jul 31, 2024	5 net-nights

Common Fish Species Present

Walleye

Muskellunge

Yellow Perch

White Bass

Bluegill

Black Crappie

Northern Pike

Common Carp

Sunfish Hybrid

Smallmouth Bass

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	Black Bullhead	1	0.1	0.1	0		0			
	Black Crappie	7	0.4	0.2	14		0		122	7
	Common Carp	34	0.9	0.5	18		12			
	Northern Pike	21	1.1	0.4	100		52	17	93	2
	Smallmouth Bass	11	0.6	0.4	82		18		118	11
	Walleye	56	2.8	0.7	73	9	58	10	88	2
	White Bass	132	6.6	2.1	95	3	87	4	92	1
	Yellow Perch	633	31.7	6.3	16	2	3	1	98	1
frame net (std 3/4 in)	Black Bullhead	5	0.4	0.4	50		25			
	Black Crappie	22	2.0	1.3	15		0		106	3
	Bluegill	25	2.5	1.4	12		0		118	5
	Common Carp	38	1.1	0.6	36		27			
	Green Sunfish	2	0.2	0.3	0		0			
	Northern Pike	2	0.2	0.3	50		50		88	8
	Smallmouth Bass	6	0.4	0.3	75		75		92	5
	Sunfish Hybrid	8	0.8	0.5	0		0			
	Walleye	2	0.2	0.2	0		0		78	1
	White Bass	3	0.3	0.4	100		100		88	2
	Yellow Bullhead	5	0.5	0.3	100		100			
	Yellow Perch	239	21.6	15.8	10	3	6	2	99	2

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std gill net	Black Bullhead			6.9	2.5	0.0	0.2	0.0	0.0	0.0	0.1	1.21
	Black Crappie			0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.06
	Bluegill			0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.03
	Common Carp			0.3	0.2	2.6	0.9	0.4	0.1	0.2	0.9	0.70
	Northern Pike			0.0	0.0	0.1	0.4	0.5	0.4	1.1	1.1	0.45
	Smallmouth Bass			0.9	1.2	1.8	0.8	1.1	0.0	0.7	0.6	0.89
	Walleye			6.0	4.9	2.3	3.0	2.8	2.6	3.5	2.8	3.49
	White Bass			3.7	2.4	1.2	2.8	7.4	5.2	3.7	6.6	4.13
	Yellow Bullhead			0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.05
	Yellow Perch			14.4	17.7	2.1	4.9	13.4	10.7	8.4	31.7	12.91
frame net (std 3/4 in)	Black Bullhead	100.4	10.9		9.7	0.3	0.4	1.1	0.0	0.0	0.4	13.69
	Black Crappie	0.0	0.0		0.0	0.0	0.2	2.0	0.1	0.4	2.0	0.52
	Bluegill	0.0	0.0		0.2	3.2	0.5	11.8	3.9	14.4	2.5	4.06
	Common Carp	0.4	0.2		6.1	2.0	5.9	2.8	0.3	0.1	1.1	2.10
	Green Sunfish	0.2	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.04
	Largemouth Bass	0.1	0.0		0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.02
	Muskellunge	0.0	0.0		0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.04
	Northern Pike	0.0	0.5		0.1	0.0	1.0	2.9	1.1	3.2	0.2	1.00
	Orangespotted Sunfish	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Pumpkinseed	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.03
	Smallmouth Bass	0.4	1.0		2.2	0.7	4.6	2.6	0.9	1.9	0.4	1.63
	Sunfish Hybrid	0.0	0.0		0.0	0.0	0.0	0.0	0.1	0.2	0.8	0.12
	Walleye	0.7	1.6		2.2	0.7	4.7	0.9	0.3	1.2	0.2	1.39
	White Bass	0.1	5.8		2.1	0.3	13.7	8.8	0.3	0.5	0.3	3.54
	Yellow Bullhead	16.7	2.3		8.1	0.1	1.1	2.1	0.5	0.1	0.5	3.50
	Yellow Perch	0.6	0.1		2.5	0.1	2.8	3.2	3.2	1.8	21.6	3.99
std exp gill net	Black Bullhead	68.0	16.5									42.25
	Common Carp	0.3	0.3									0.30
	Largemouth Bass	0.0	0.0									0.00
	Northern Pike	0.7	0.3									0.50
	Smallmouth Bass	2.7	1.8									2.25
	Walleye	30.3	7.3									18.80
	White Bass	10.3	9.0									9.65
	Yellow Bullhead	0.7	0.3									0.50

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
std exp gill net	Yellow Perch	50.3	75.8									63.05

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std gill net	Black Crappie	PSD									0	14
		PSD-P									0	0
		Wr									138	122
	Bluegill	PSD									0	
		PSD-P									0	
		Wr									128	
	Common Carp	PSD			67	50	38	56	100	100	100	18
		PSD-P			67	50	23	11	75	100	75	12
	Northern Pike	PSD					100	0	20	100	95	100
		PSD-P					0	0	0	25	23	52
		Wr					92	84	91	79	92	93
	Smallmouth Bass	PSD			38	50	22	13	36		77	82
		PSD-P			38	25	22	0	9		54	18
		Wr			109	106	101	92	102		113	118
	Walleye	PSD			74	84	78	23	79	96	99	73
		PSD-P			48	61	61	20	43	38	43	58
		Wr			91	86	82	80	83	86	85	88
	White Bass	PSD			100	100	100	100	92	100	97	95
		PSD-P			100	100	100	68	70	100	89	87
		Wr			97	93	89	88	94	95	91	92
	Yellow Perch	PSD			61	7	10	78	22	1	35	16
		PSD-P			19	2	0	24	13	0	1	3
		Wr			101	96	102	103	100	107	108	98
frame net (std 3/4 in)	Black Crappie	PSD						50	90	100	0	15
		PSD-P						0	45	100	0	0
		Wr						134	108	107	99	106
	Bluegill	PSD				0	3	80	3	0	1	12
		PSD-P				0	0	0	1	0	0	0
		Wr				109	123	192	138	165	162	118
	Common Carp	PSD	100	100		61	35	88	100	100	100	36
		PSD-P	50	100		49	10	58	89	100	100	27
	Muskellunge	PSD							100		100	
		PSD-P							100		100	

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
frame net (std 3/4 in)	Northern Pike	PSD		100		100	0	40	83	91	94	50
		PSD-P		80		100	0	20	7	9	34	50
		Wr		98		80		87	84	81	81	88
	Smallmouth Bass	PSD	100	70		77	86	78	73	67	47	75
		PSD-P	100	50		68	57	52	58	67	47	75
		Wr	106	87		104	95	94	99	100	104	92
	Walleye	PSD	100	81		86	100	40	100	67	92	0
		PSD-P	71	75		68	43	34	67	33	67	0
		Wr	89	75		83	89	82	80	84	80	78
	White Bass	PSD	100	100		100	100	100	100	100	100	100
		PSD-P	0	86		95	100	91	99	100	100	100
		Wr	97	79		93	95	85	86	91	84	88
	Yellow Perch	PSD	83	0		8	0	100	81	0	39	10
		PSD-P	0	0		8	0	39	69	0	0	6
		Wr	96	83		95	106	111	97	115	91	99
std exp gill net	Common Carp	PSD	100	100								
		PSD-P	0	0								
	Northern Pike	PSD	100	100								
		PSD-P	50	100								
		Wr	93	81								
	Smallmouth Bass	PSD	63	57								
		PSD-P	25	57								
		Wr	109	114								
	Walleye	PSD	44	76								
		PSD-P	29	31								
		Wr	92	88								
	White Bass	PSD	97	100								
		PSD-P	81	72								
		Wr	100	94								
	Yellow Perch	PSD	90	13								
		PSD-P	14	10								
		Wr	98	98								

Length at Capture

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

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2024	39		330 (14)			459 (1)	553 (19)		584 (2)		636 (3)
2023	81	235 (12)	263 (1)	421 (3)	449 (11)	465 (30)	553 (3)	556 (1)	564 (1)	635 (2)	645 (18)
2022	27	205 (1)		408 (6)	445 (10)		492 (1)		597 (1)	615 (2)	600 (6)
2021	35	212 (7)	403 (4)	400 (12)	463 (1)		524 (1)	524 (1)	538 (3)		612 (6)
2020	33	227 (3)	293 (23)		508 (2)						636 (5)
2019	35	216 (15)	338 (2)	417 (1)	445 (2)		516 (3)			589 (1)	634 (11)
2018	50	268 (4)	373 (6)	442 (7)	455 (1)	518 (2)			549 (2)	613 (18)	630 (10)
2017	54	280 (7)	382 (14)	443 (3)	462 (4)		511 (2)	616 (5)	613 (14)		650 (5)
2016	32	258 (10)	389 (3)	436 (10)		546 (1)	565 (1)	553 (5)		614 (1)	691 (1)
2015	94	260 (27)	361 (36)		471 (1)	536 (5)	546 (9)	603 (2)	542 (3)		622 (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+
2024	604	163 (537)	232 (39)	264 (23)	243 (5)						
2023	168	162 (97)	217 (70)		307 (1)						
2021	131	163 (105)	239 (9)	272 (15)	315 (1)	333 (1)					
2015	151	160 (13)	235 (124)	264 (7)	276 (8)						

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).

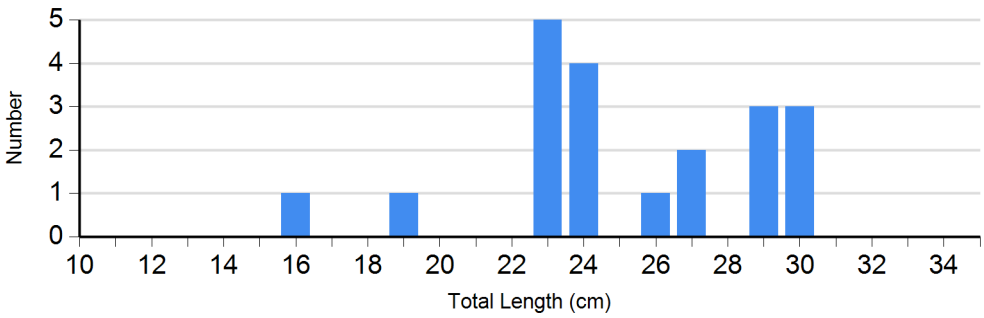
		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2020	1	151	1	117	0		0	
	2021	2	106 (1.6)	9	112 (1.8)	6	108 (2.8)	3	98 (3.2)
	2022	0		0		0		1	107
	2023	4	99 (11.9)	0		0		0	
	2024	17	106 (3.0)	3	106 (3.7)	0		0	
Bluegill Frame Net	2020	1	324	4	159 (3.4)	0		0	
	2021	114	139 (1.9)	3	124 (9.2)	1	123	0	
	2022	39	165 (4.6)	0		0		0	
	2023	142	162 (3.1)	2	164	0		0	
	2024	22	118 (4.2)	3	120 (9.7)	0		0	
Northern Pike Gill Net	2020	4	84 (4.2)	0		0		0	
	2021	4	92 (3.2)	1	86	0		0	
	2022	0		3	83 (4.3)	1	70	0	
	2023	1	249	16	86 (1.7)	4	78 (5.7)	1	86
	2024	0		10	95 (2.4)	11	92 (2.2)	0	
Walleye Gill Net	2020	23	79 (1.1)	1	87	2	82 (3.2)	4	80 (3.1)
	2021	6	90 (3.1)	10	89 (1.6)	10	75 (2.4)	2	74 (0.5)
	2022	1	83	15	88 (1.4)	7	85 (4.8)	3	75 (7.2)
	2023	1	99	38	86 (0.7)	18	86 (2.9)	12	81 (1.7)
	2024	15	85 (1.9)	8	90 (2.4)	25	92 (1.7)	7	79 (5.4)
White Bass Gill Net	2020	0		9	95 (1.8)	3	91 (1.8)	16	83 (0.8)
	2021	6	98 (4.1)	16	94 (1.9)	34	96 (0.7)	18	86 (0.9)
	2022	0		0		38	97 (1.3)	14	90 (1.4)

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
White Bass Gill Net	2023	2		6	91	27	92 (1.3)	39	91 (1.2)
	2024	7	89 (2.4)	10	93 (2.2)	32	91 (0.4)	82	92 (0.8)
Yellow Perch Gill Net	2020	11	100 (3.6)	26	104 (1.1)	12	104 (2.0)	0	
	2021	105	100 (0.7)	12	103 (3.5)	15	98 (1.9)	2	91 (0.1)
	2022	106	107 (0.8)	1		0		0	
	2023	110	114 (1.2)	57	101 (0.8)	0		1	107
	2024	532	99 (0.5)	82	99 (0.9)	19	82 (3.9)	0	

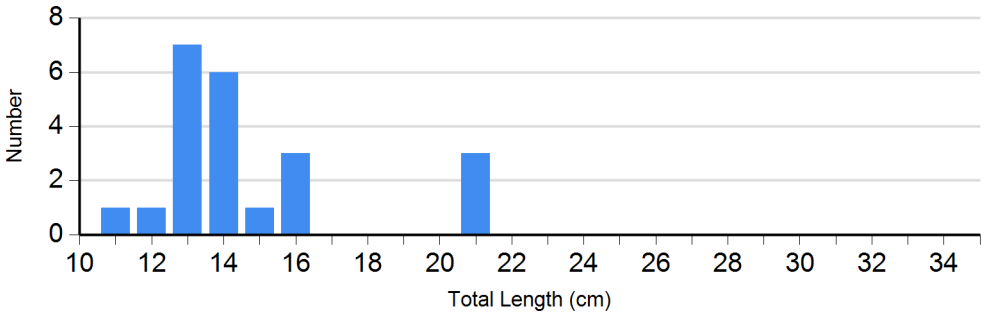
Length Frequency Distribution

Length frequency histogram of species sampled by year.

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

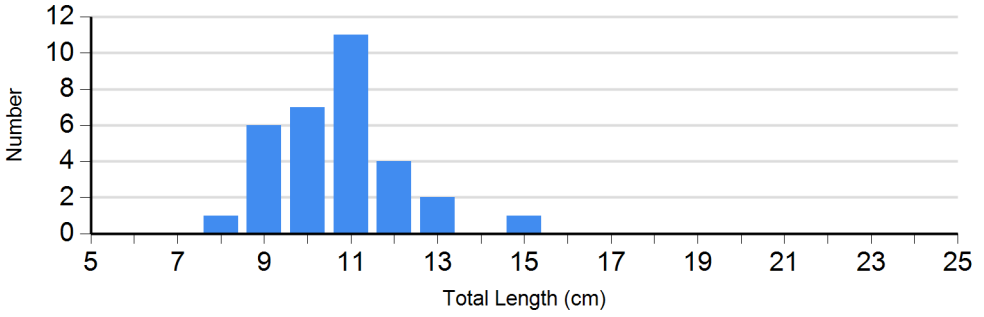


2021

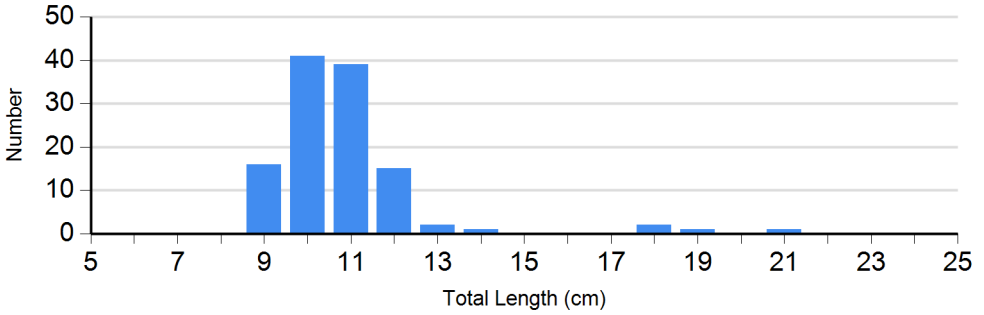


2024

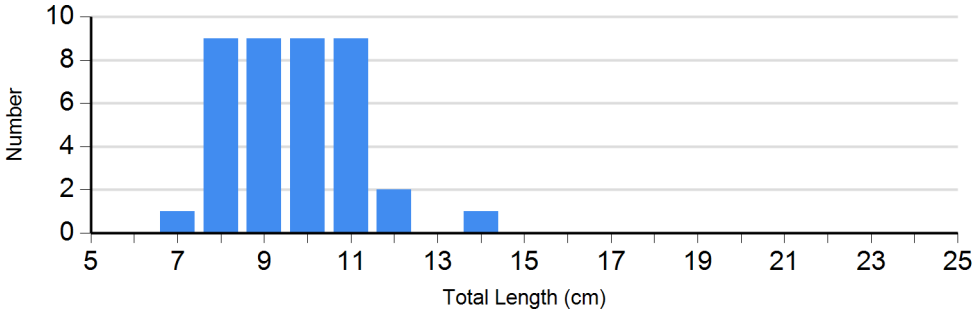
Species: Bluegill
Gear: frame net (std 3/4 in)



2019



2021



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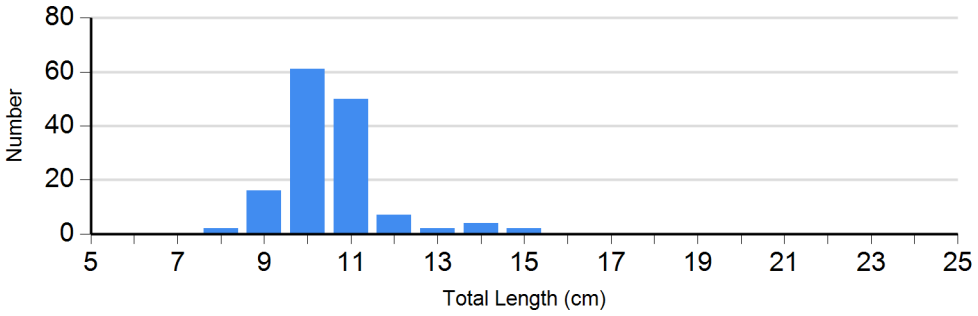
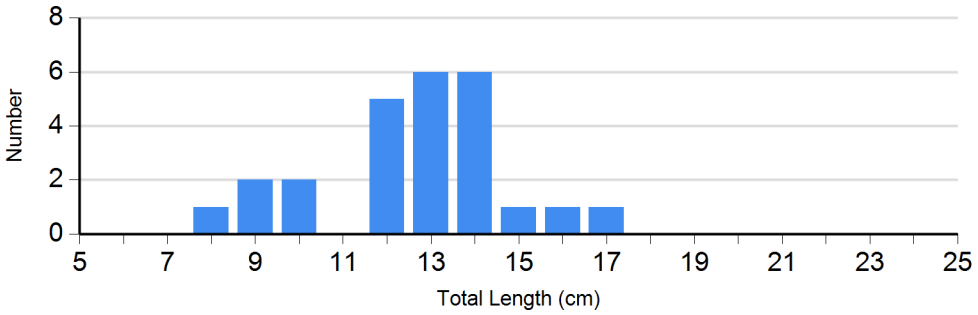
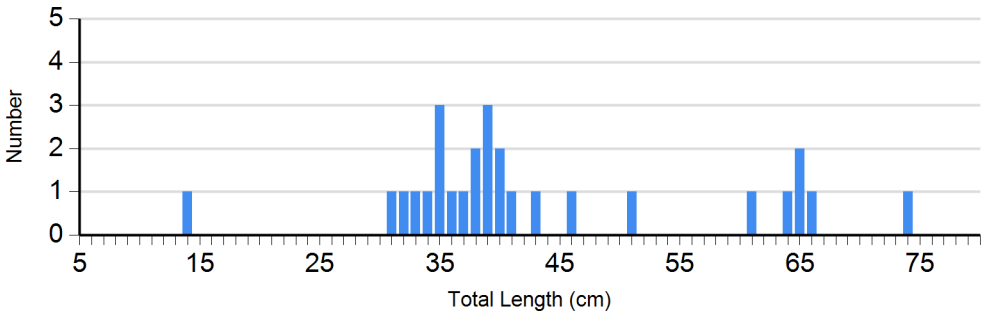


2023

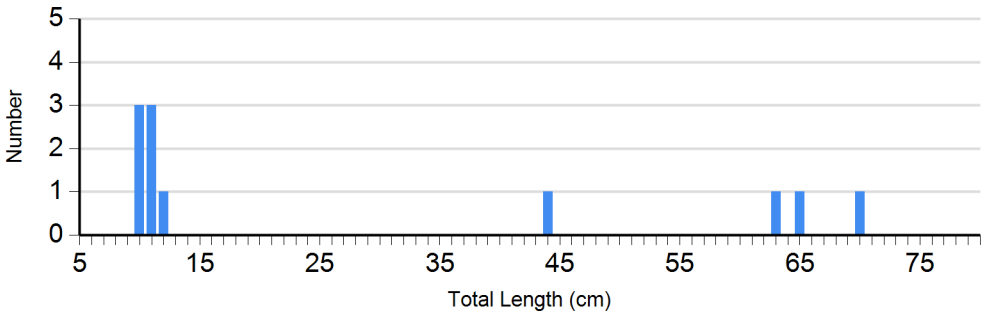


2024

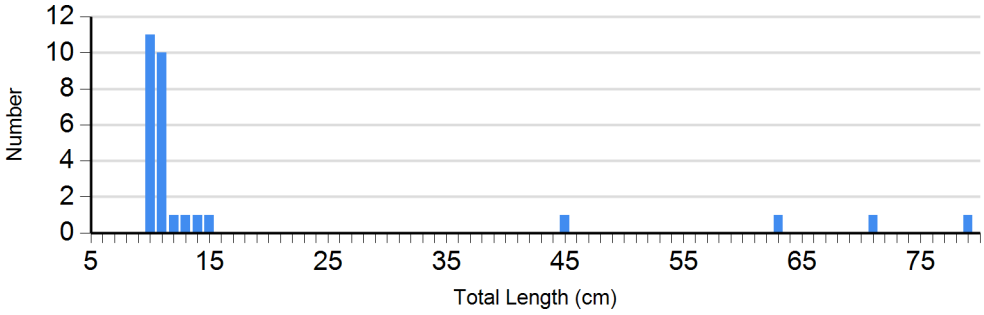
Species: Common Carp
Gear: AFS std gill net



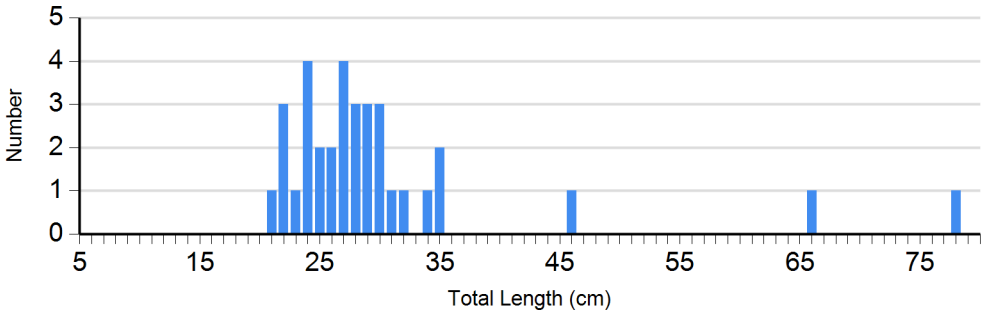
2019



2021

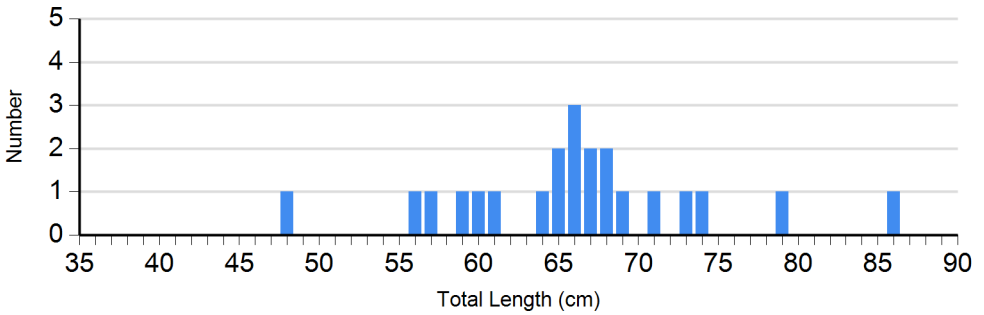


2023



2024

Species: Northern Pike
Gear: AFS std gill net



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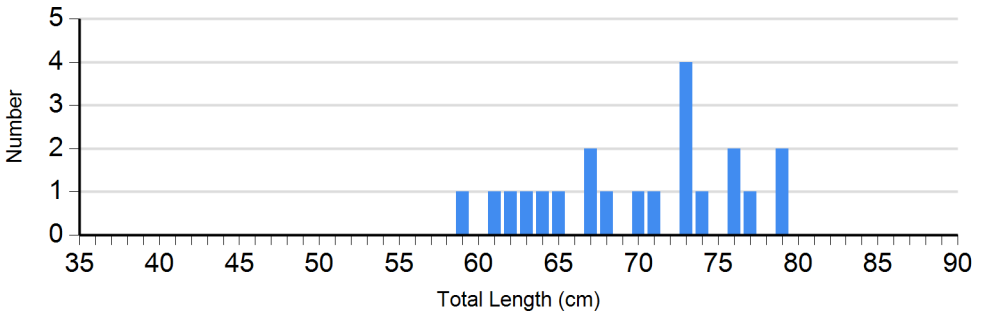
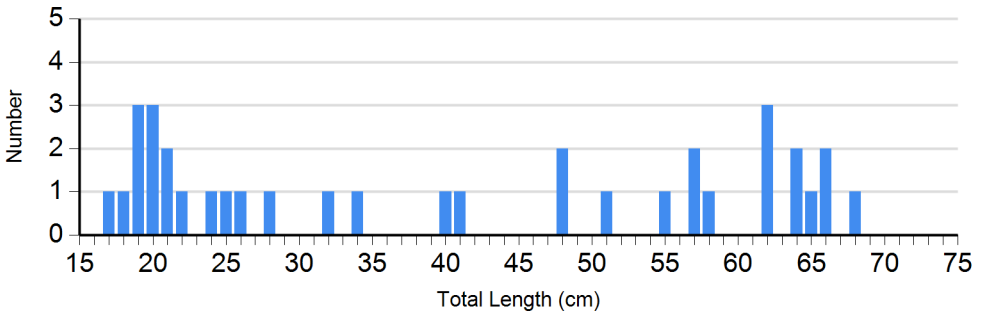
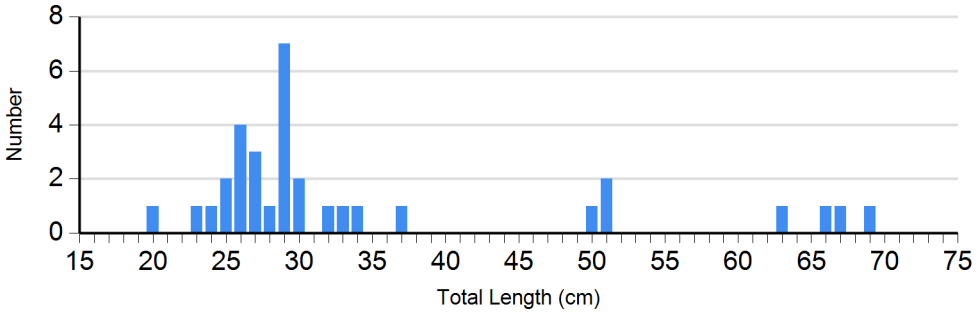


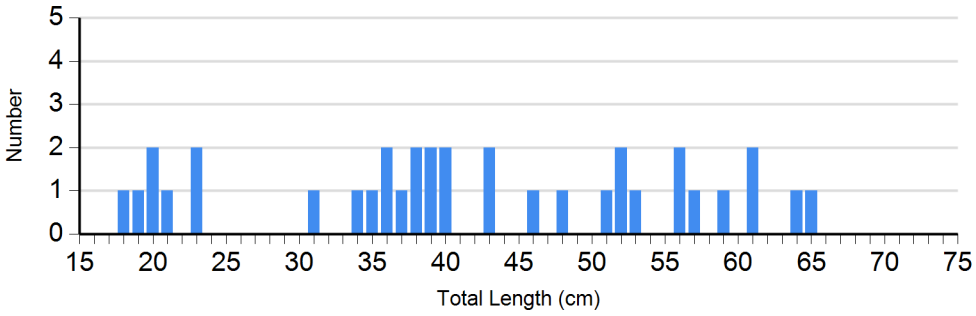
2024

Species: Walleye
Gear: AFS std gill net



2019


2020
Number
Total Length (cm)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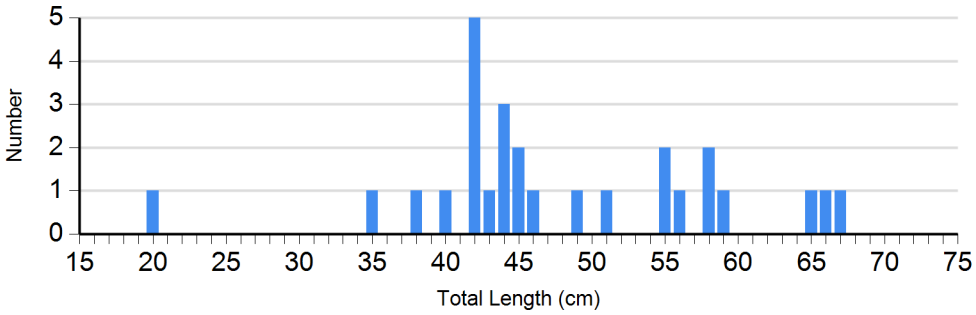
Number
Total Length (cm)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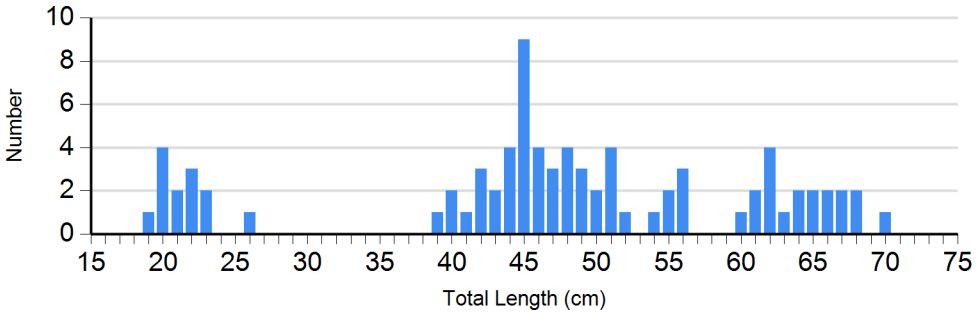
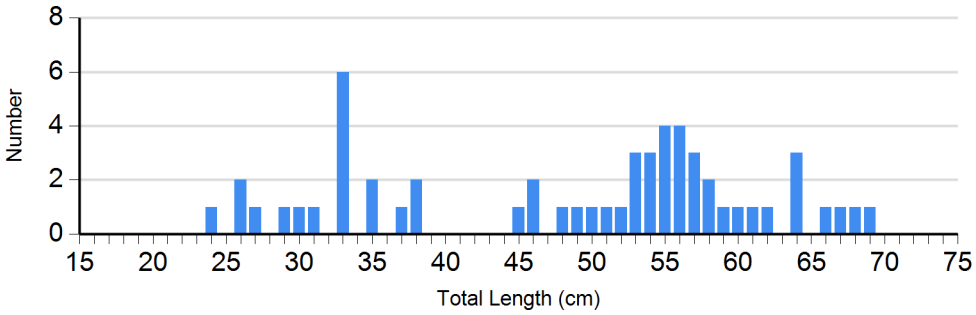
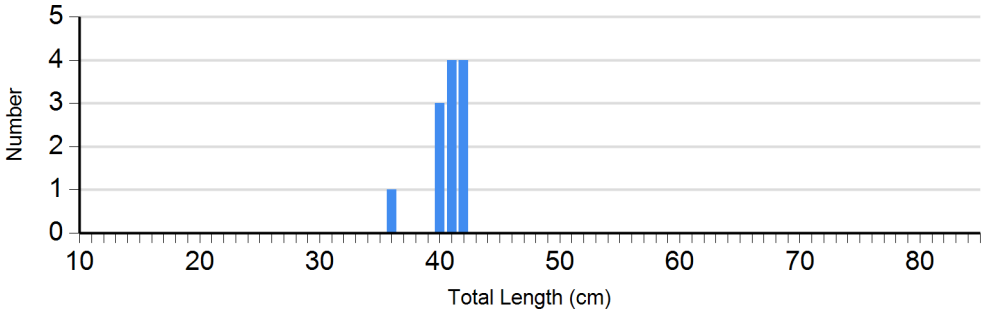
Number
Total Length (cm)


2023
Number
Total Length (cm)


2024
Number
Total Length (cm)

Species: White Bass
Gear: AFS std gill net



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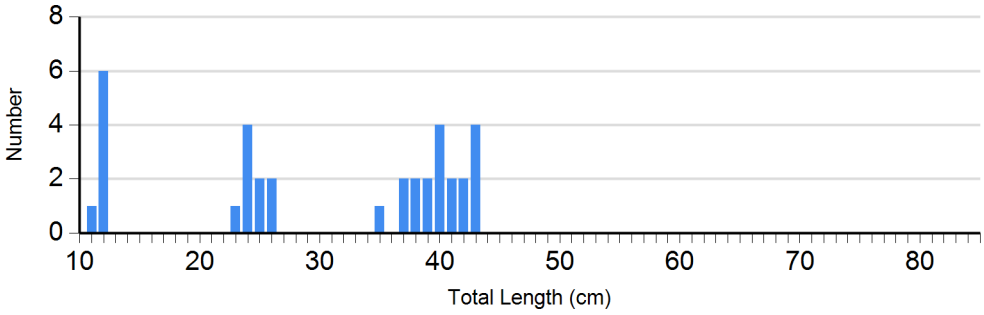
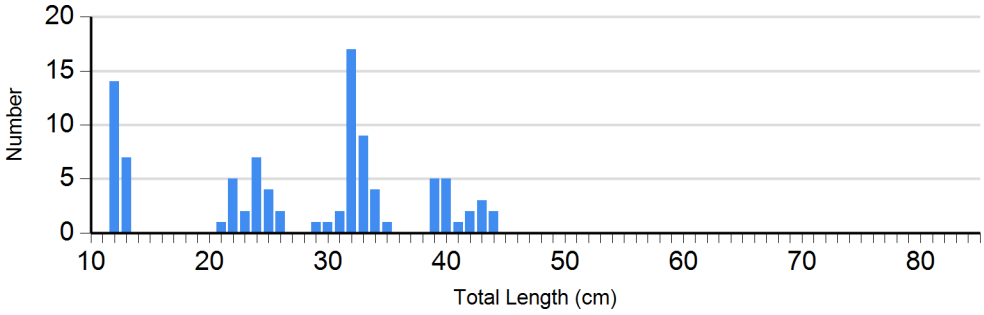
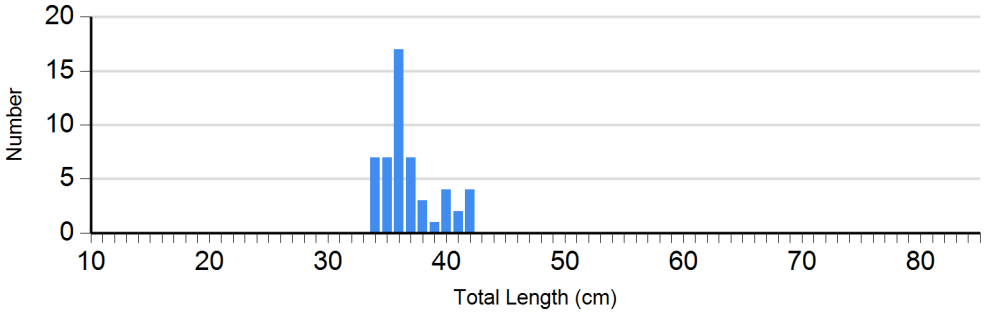


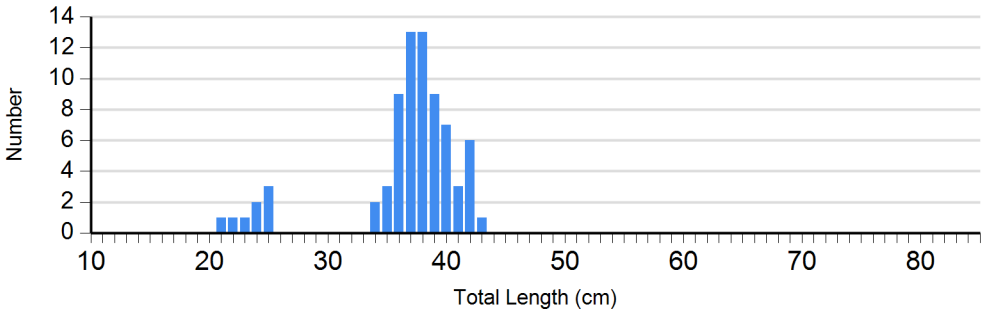
2020



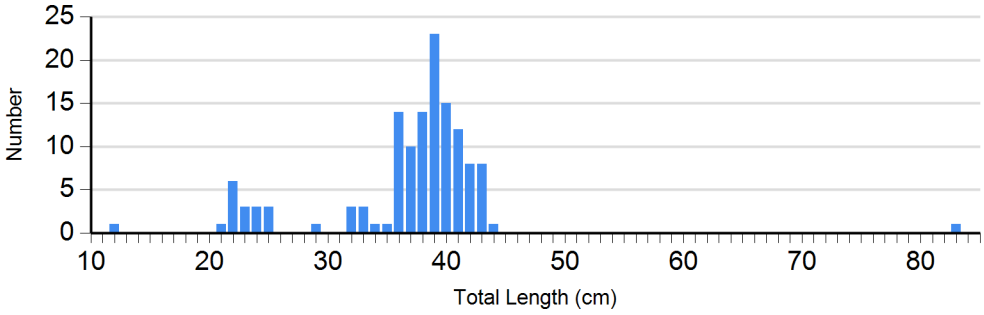
2021



2022

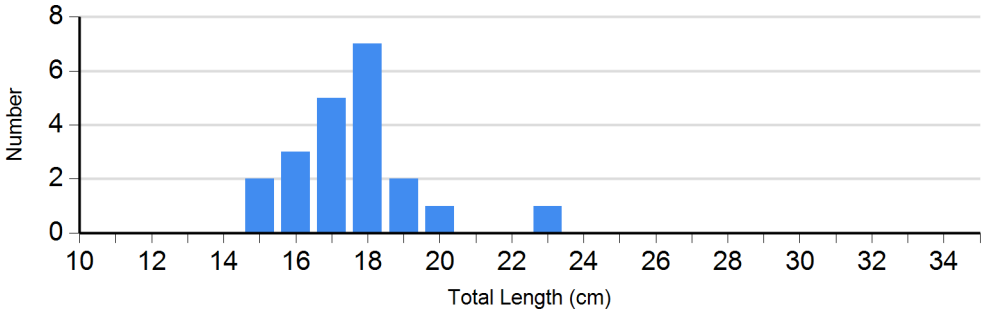


2023

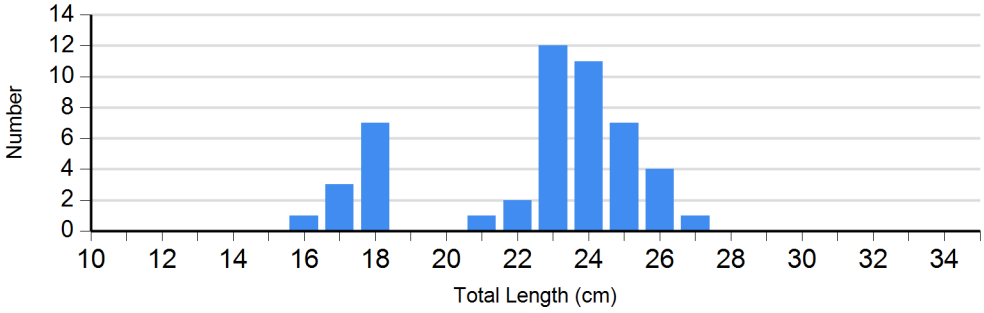


2024

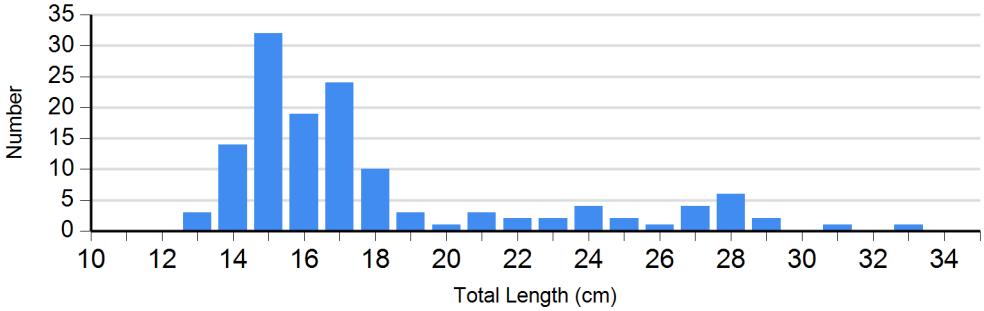
Species: Yellow Perch
Gear: AFS std gill net



2019



2020



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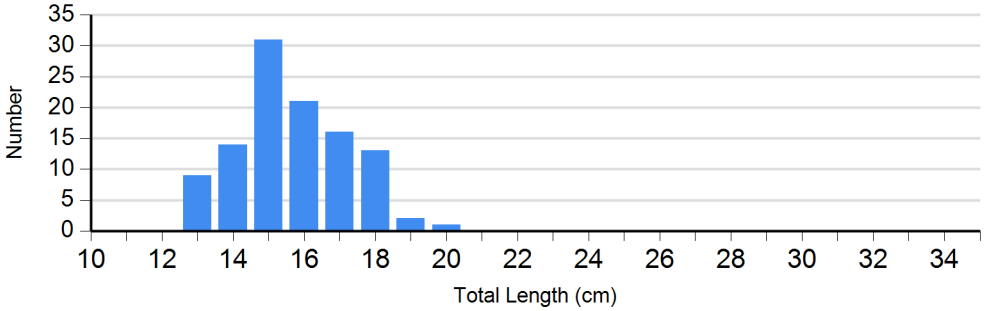

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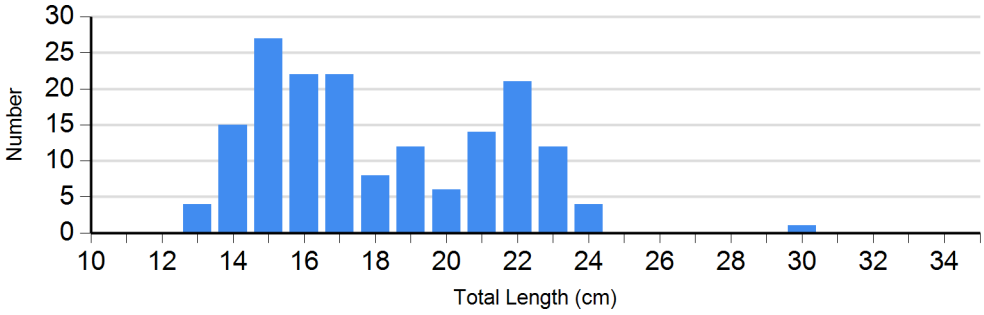
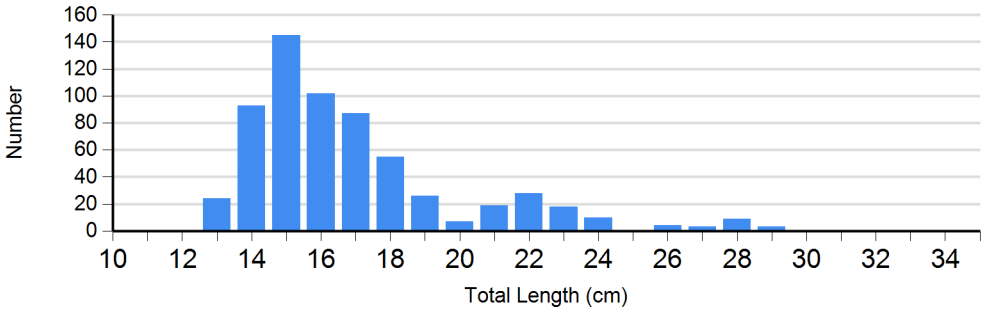

Number
30
25
20
15
10
5
0
10 12 14 16 18 20 22 24 26 28 30 32 34
Total Length (cm)

2023

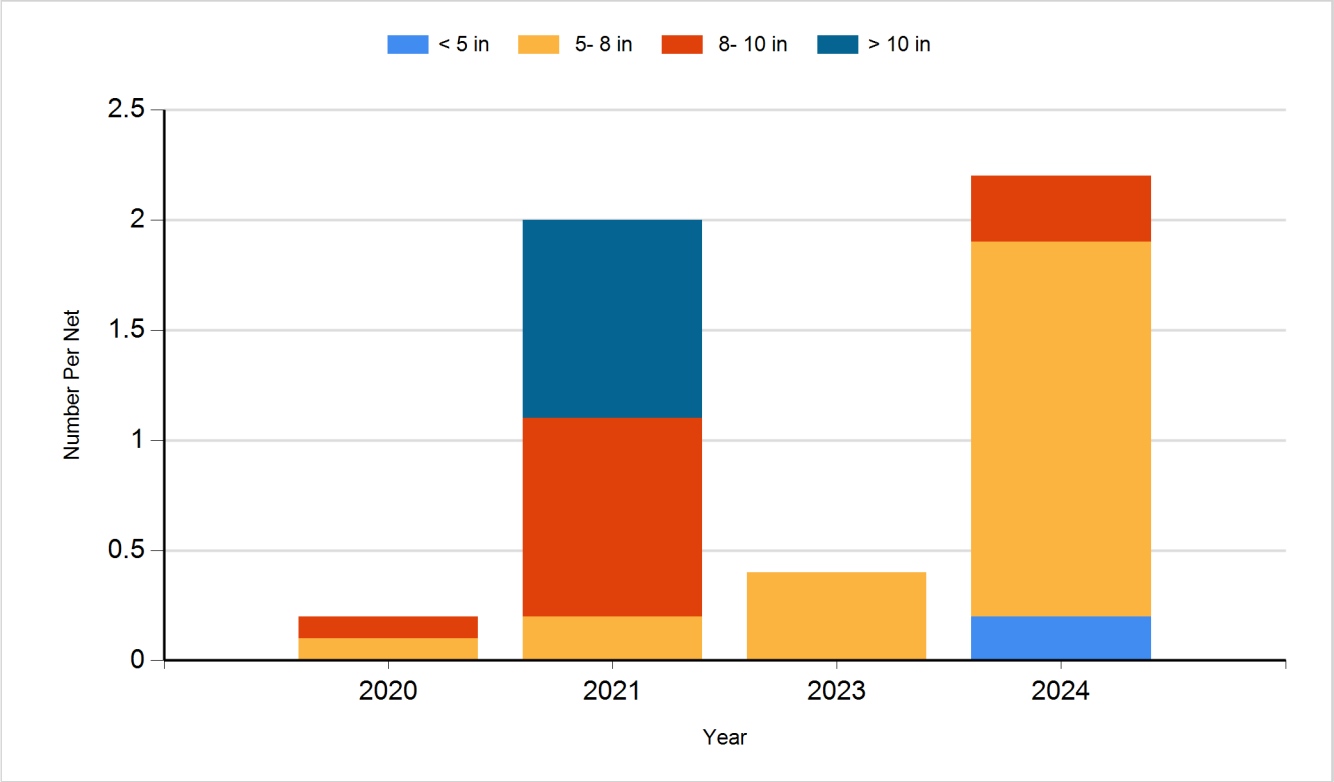

Number
160
140
120
100
80
60
40
20
0
10 12 14 16 18 20 22 24 26 28 30 32 34
Total Length (cm)

2024

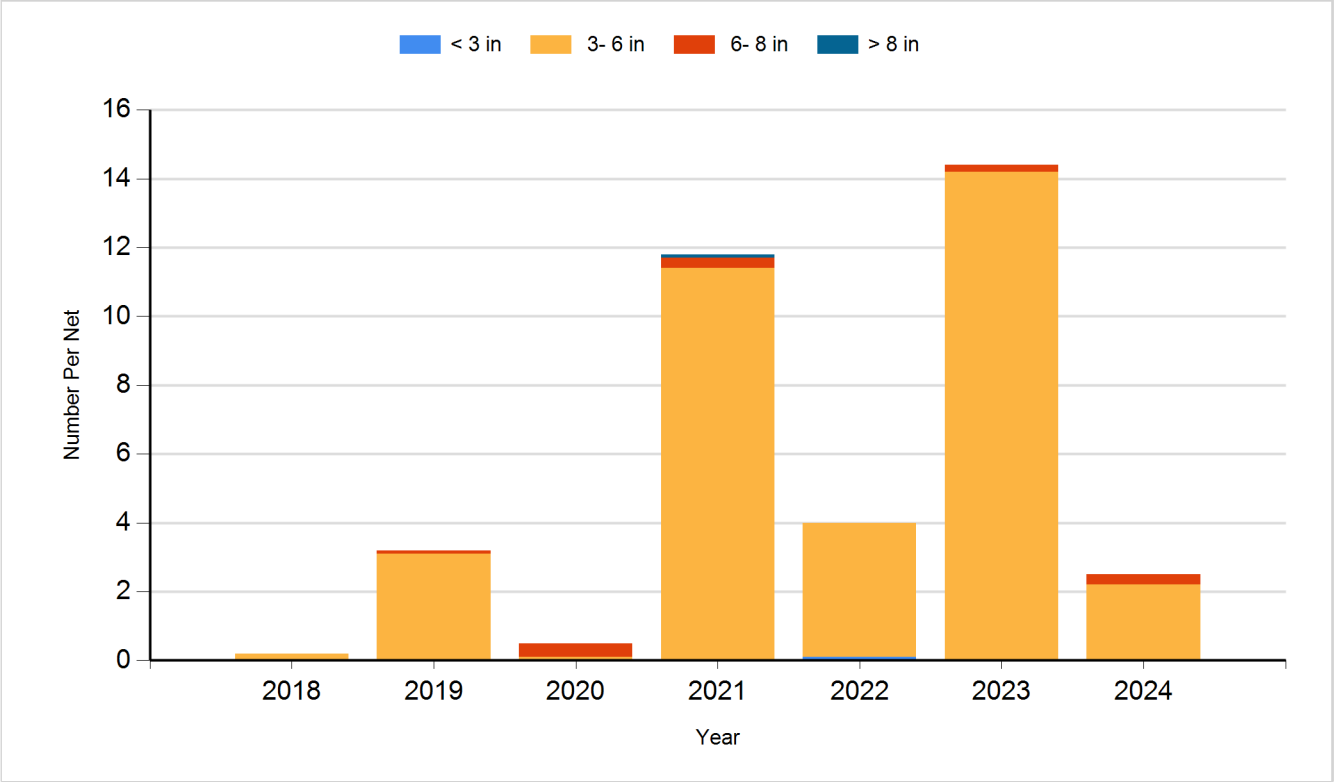
Historic Fish Sizes and Relative Abundance

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

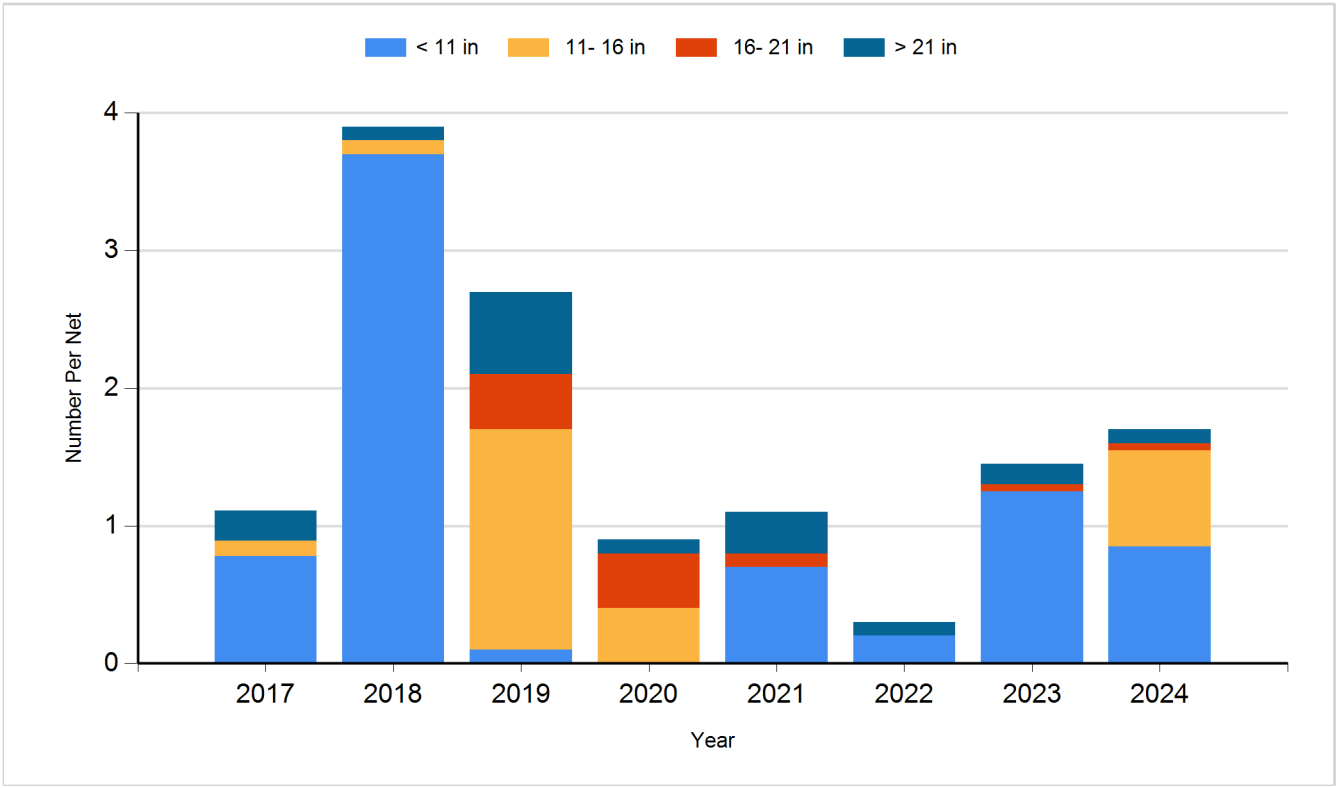
Species: Black Crappie
Gear: frame net (std 3/4 in)



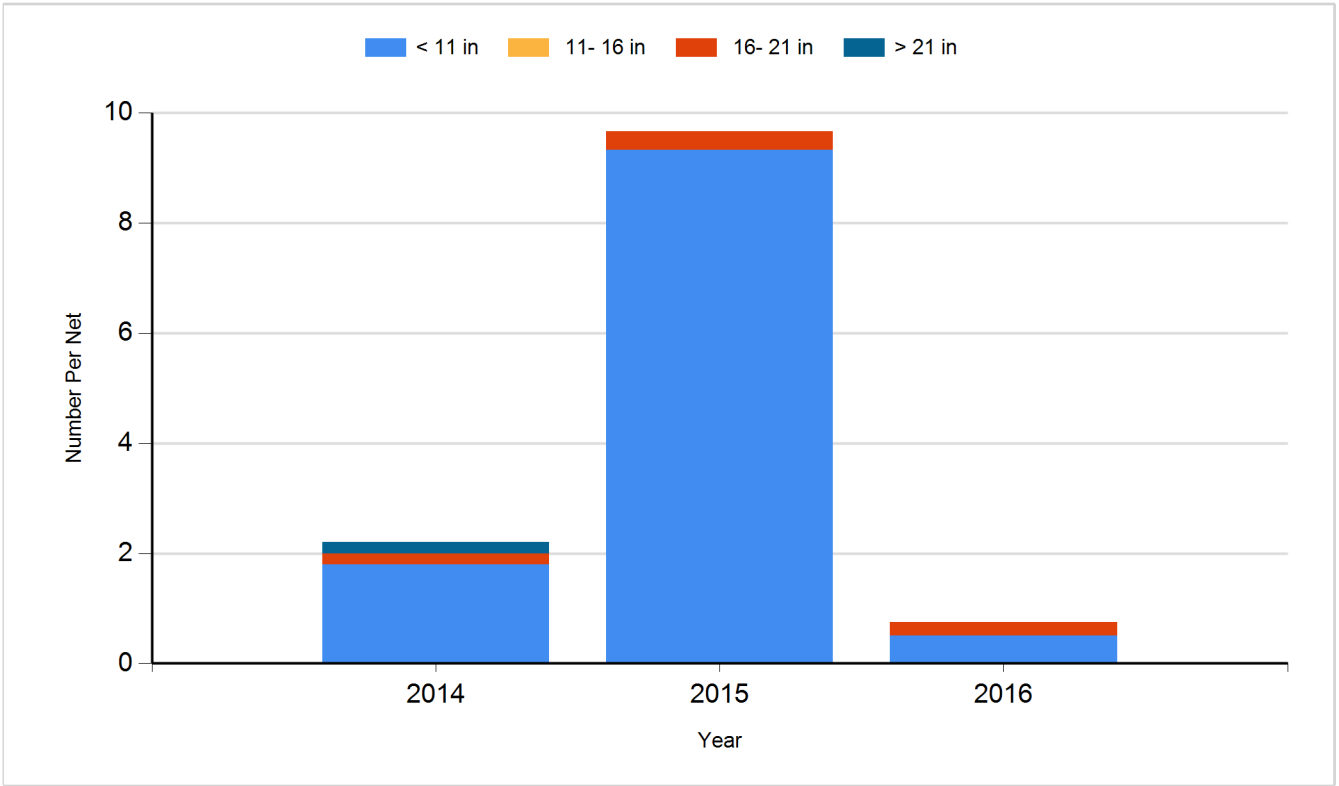
Species: Bluegill
Gear: frame net (std 3/4 in)



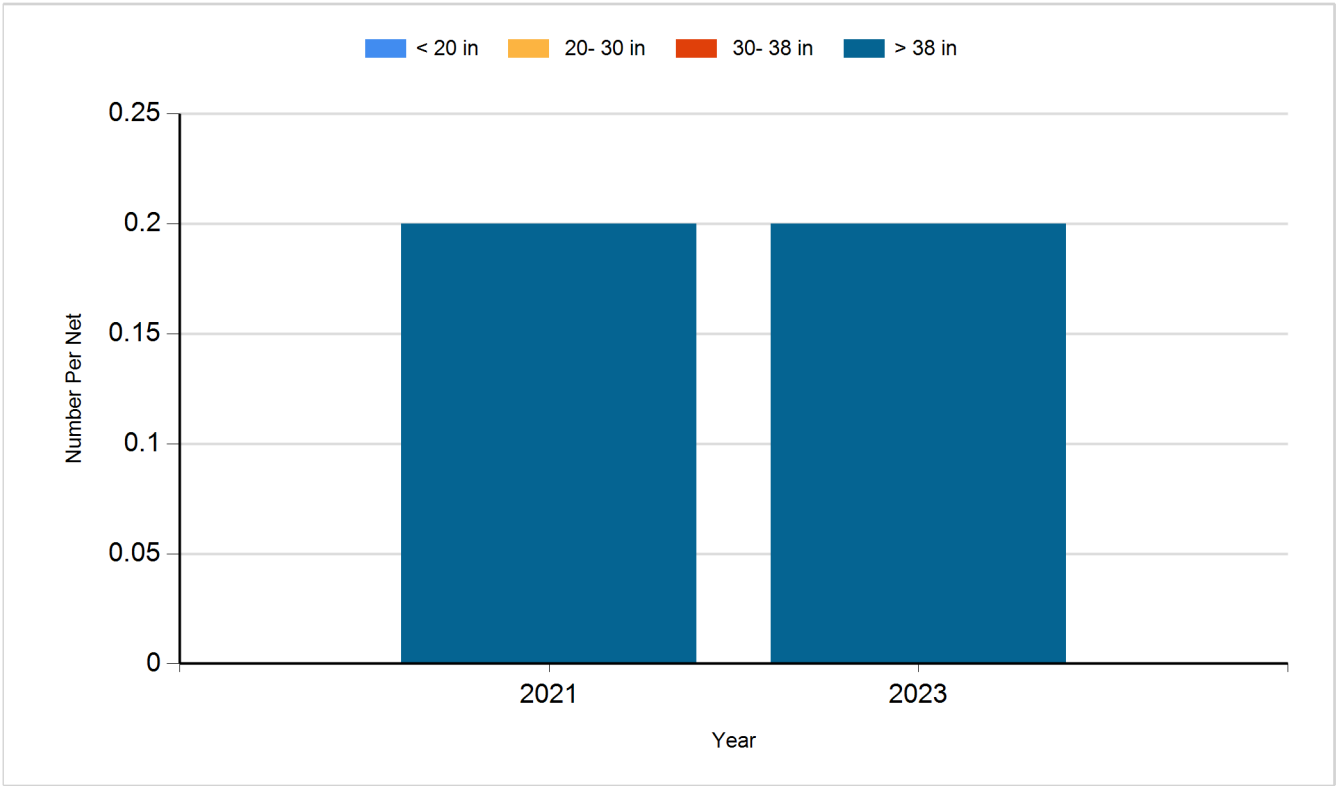
Species: Common Carp
Gear: AFS std gill net



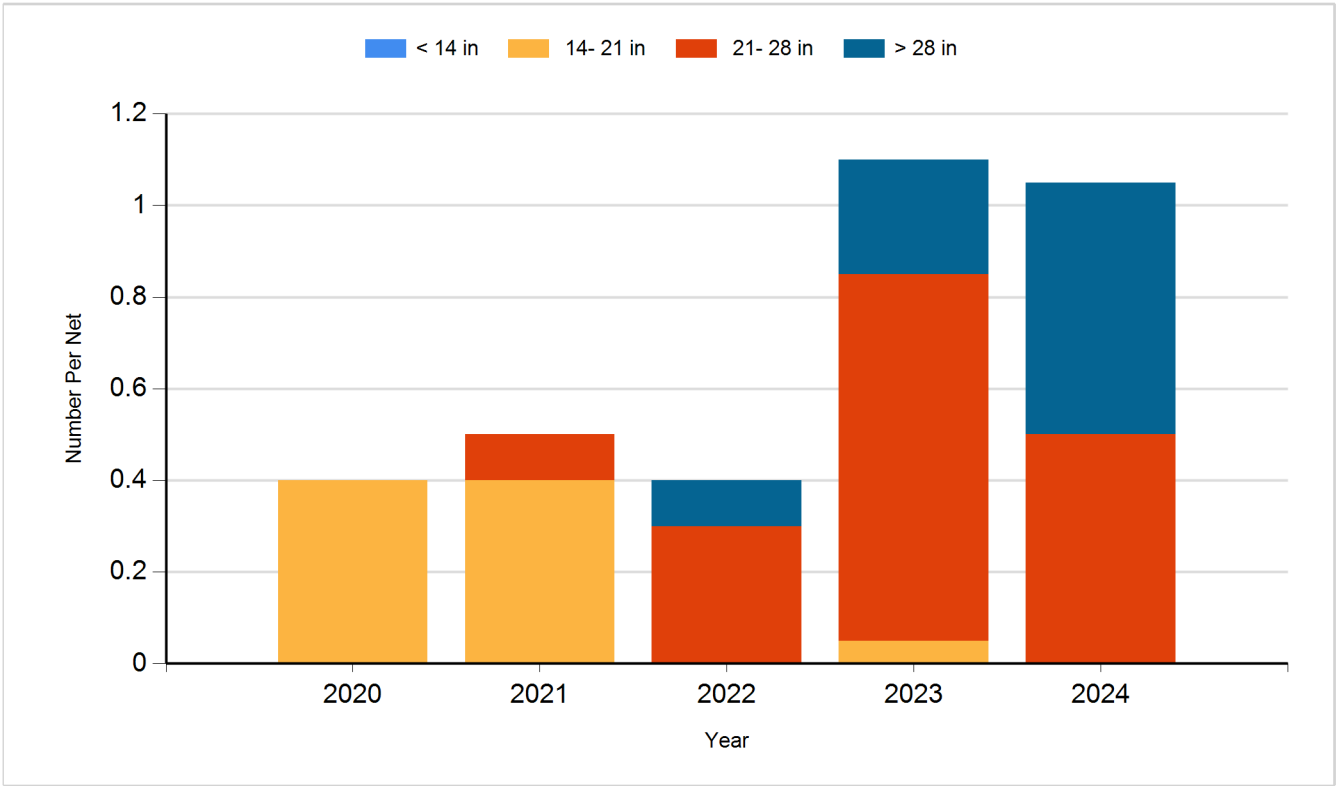
Species: Common Carp
Gear: std exp gill net



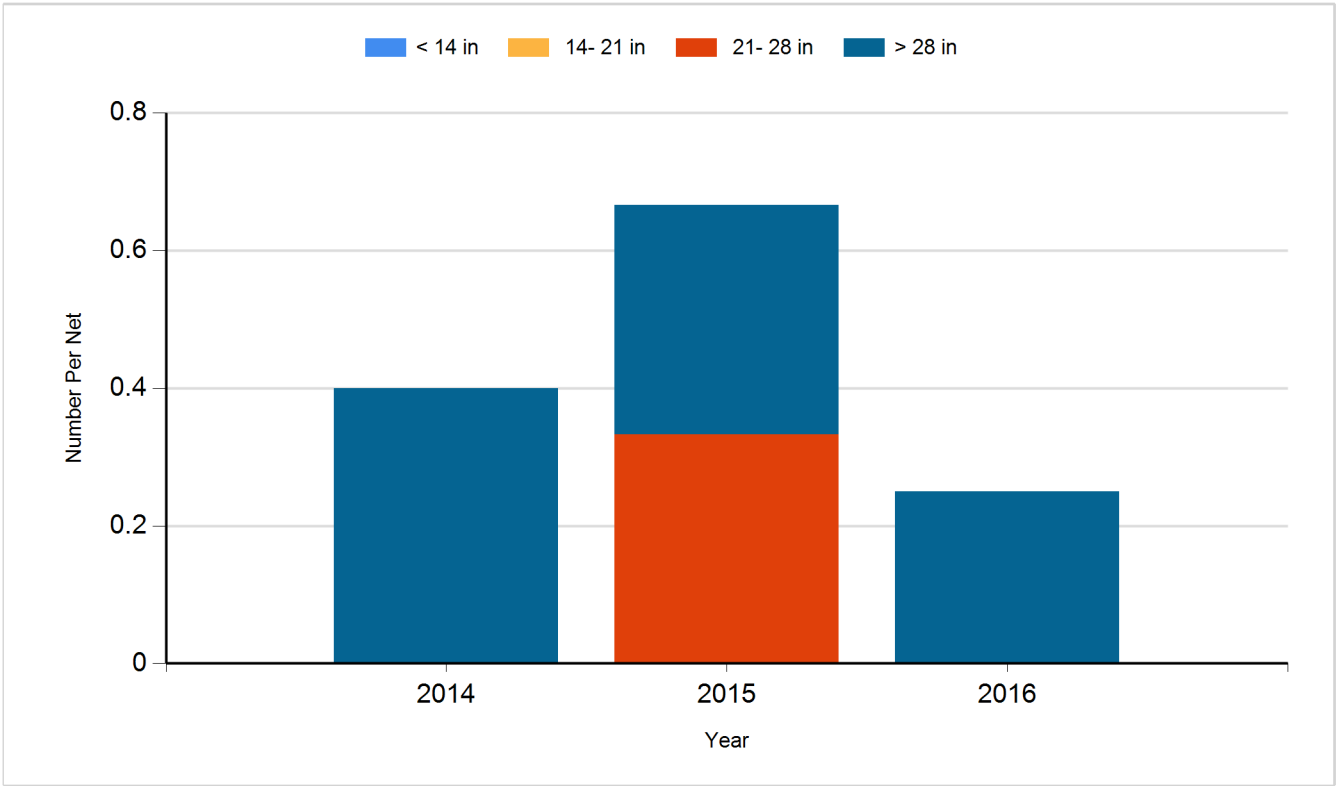
Species: Muskellunge
Gear: frame net (std 3/4 in)



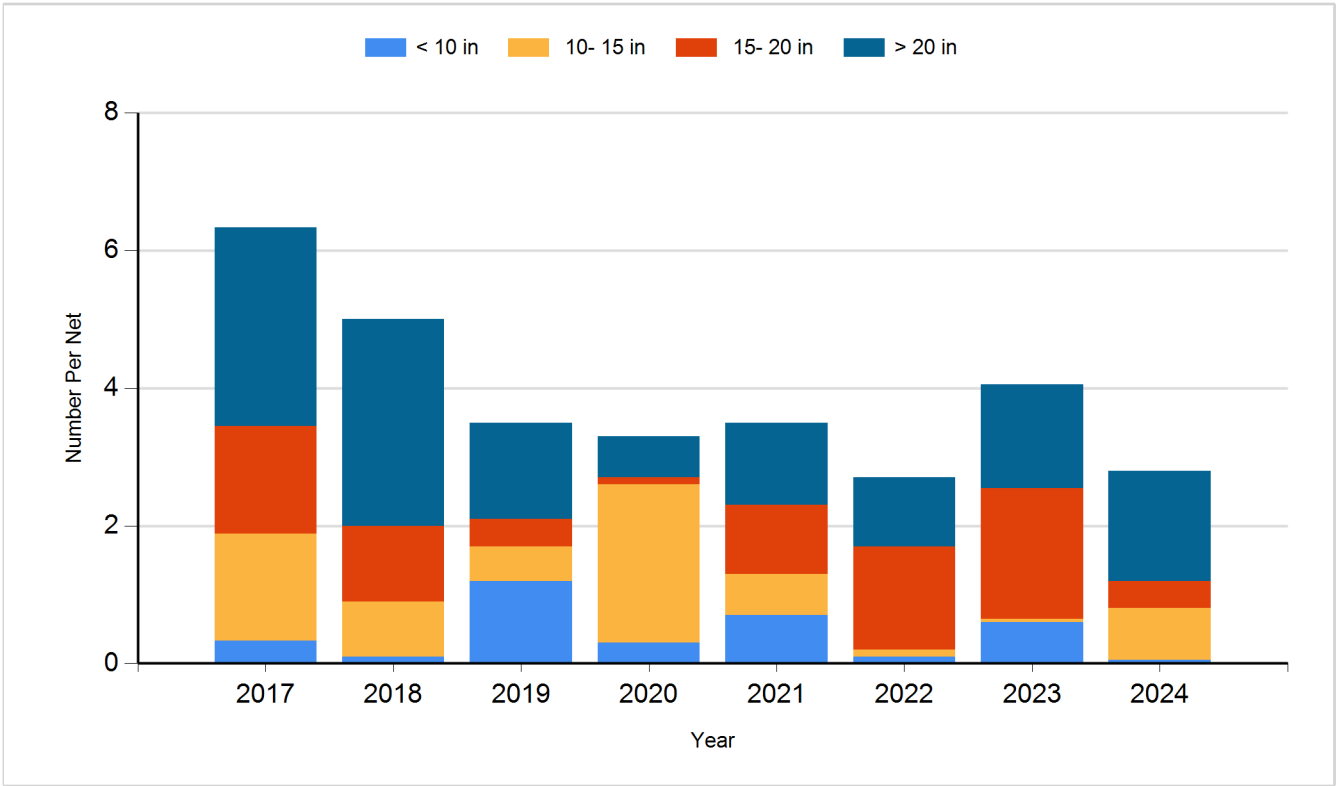
Species: Northern Pike
Gear: AFS std gill net



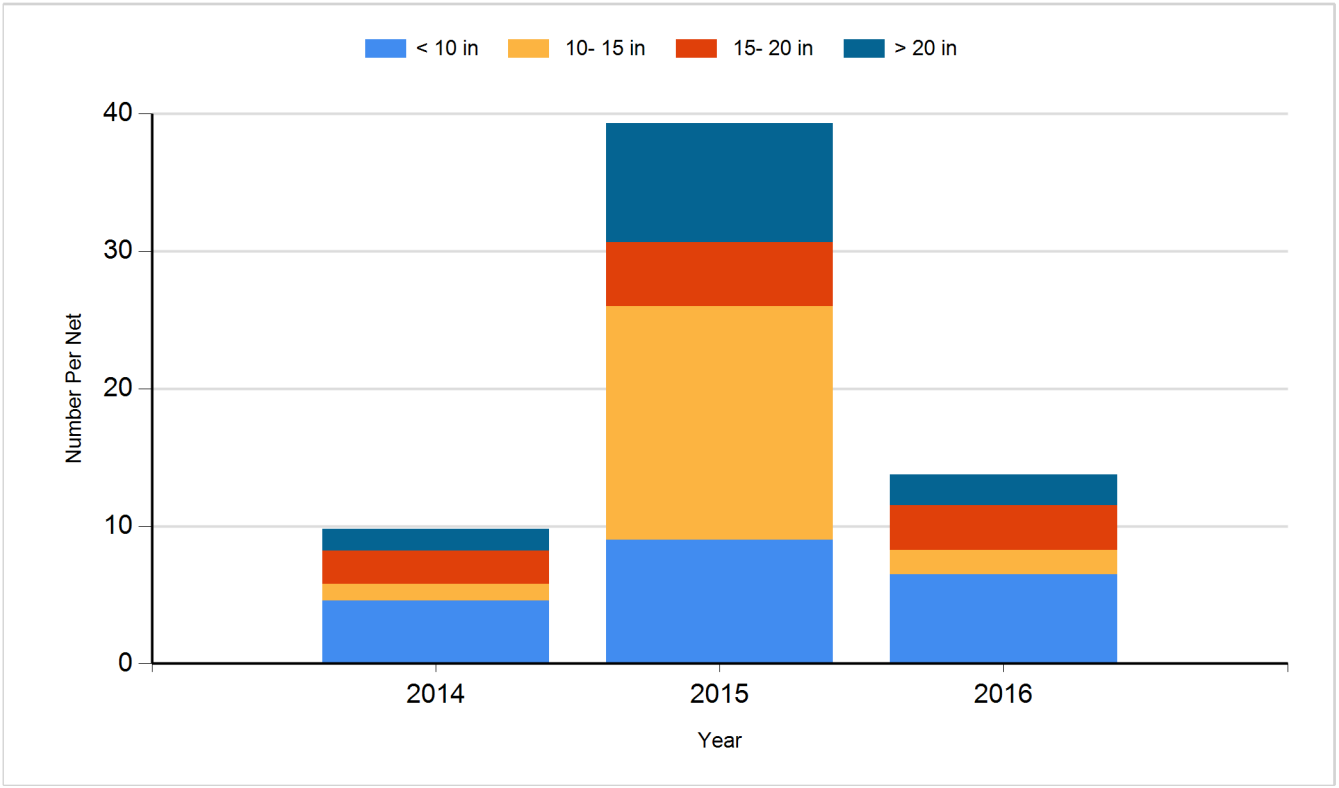
Species: Northern Pike
Gear: std exp gill net



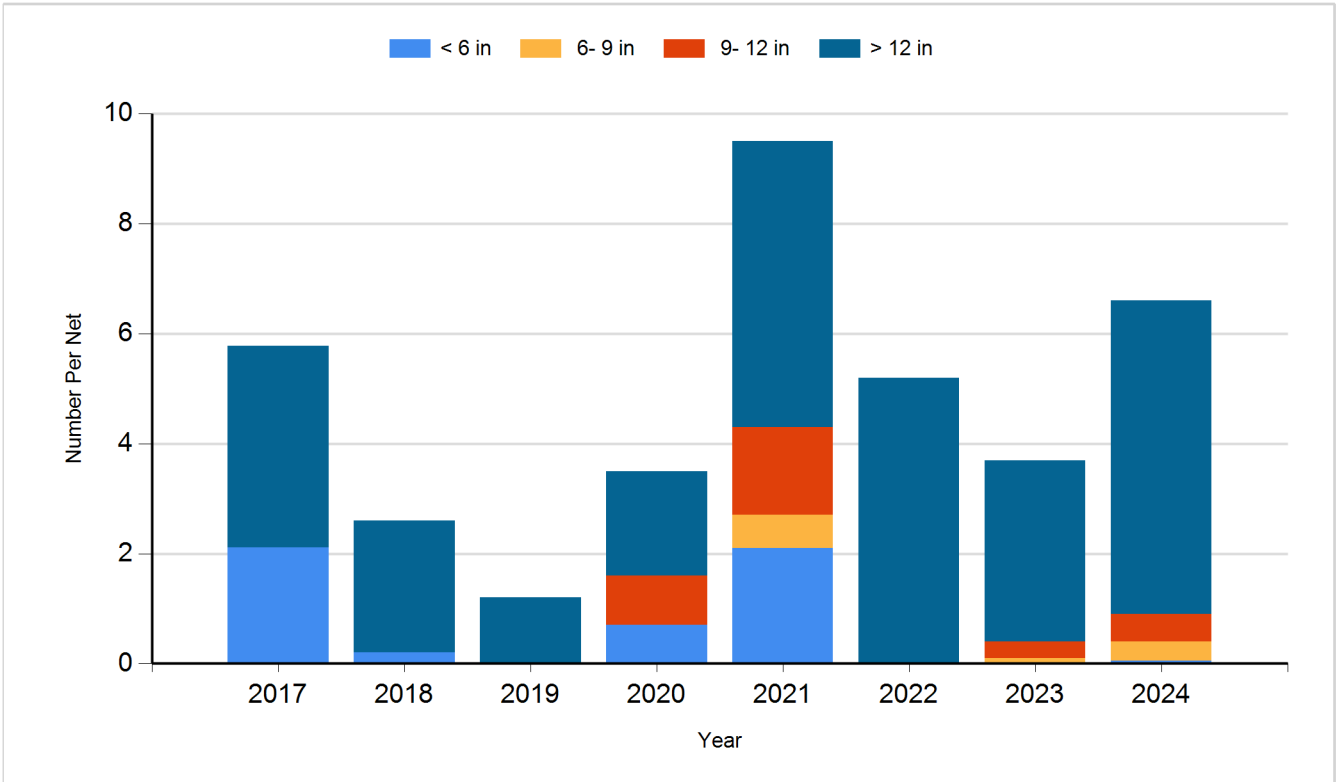
Species: Walleye
Gear: AFS std gill net



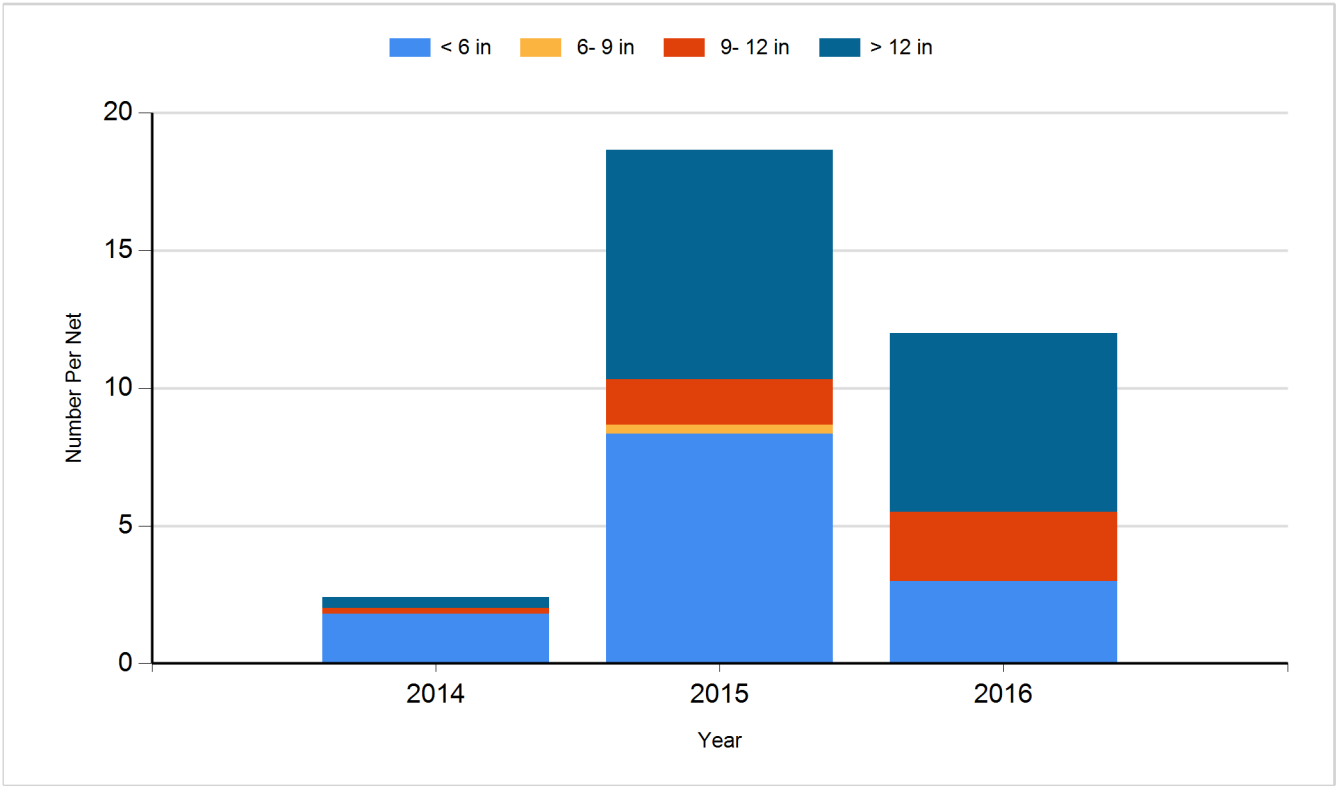
Species: Walleye
Gear: std exp gill net



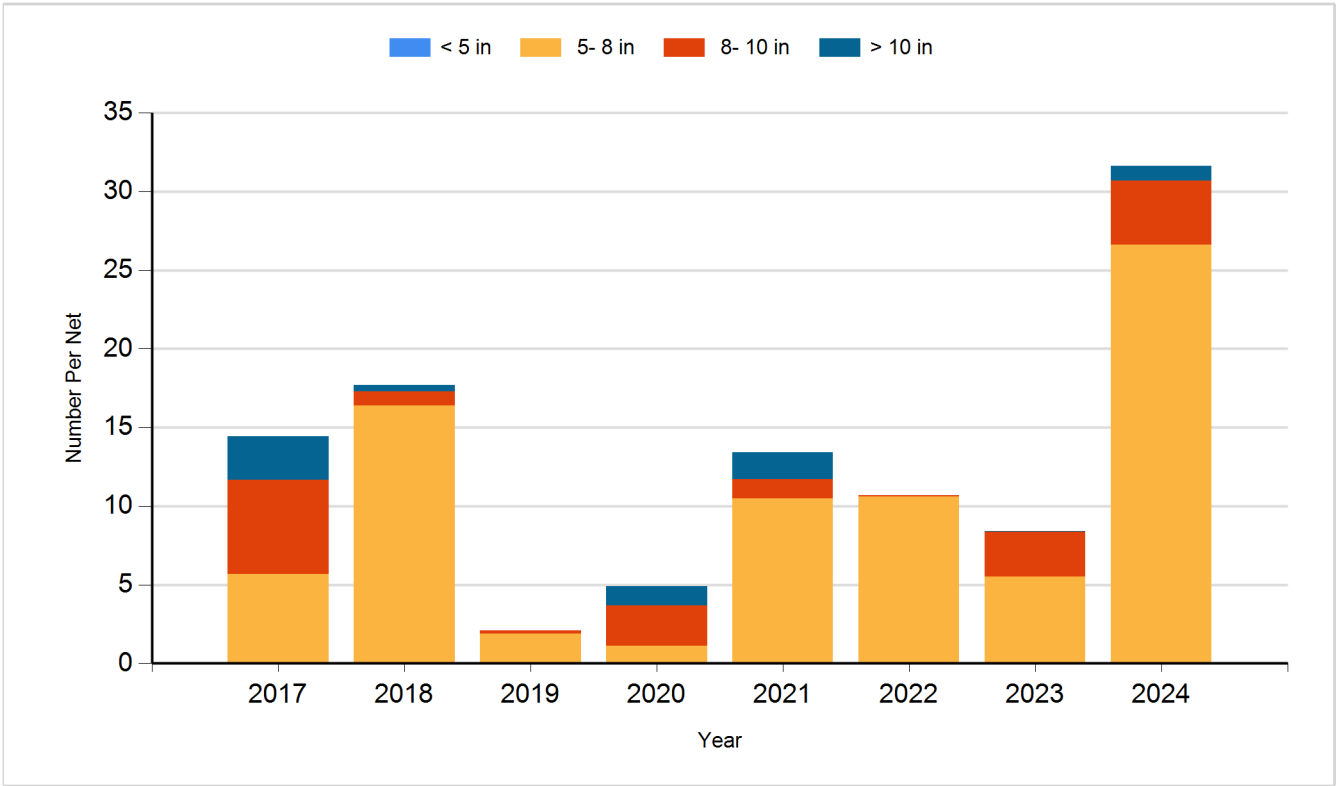
Species: White Bass
Gear: AFS std gill net



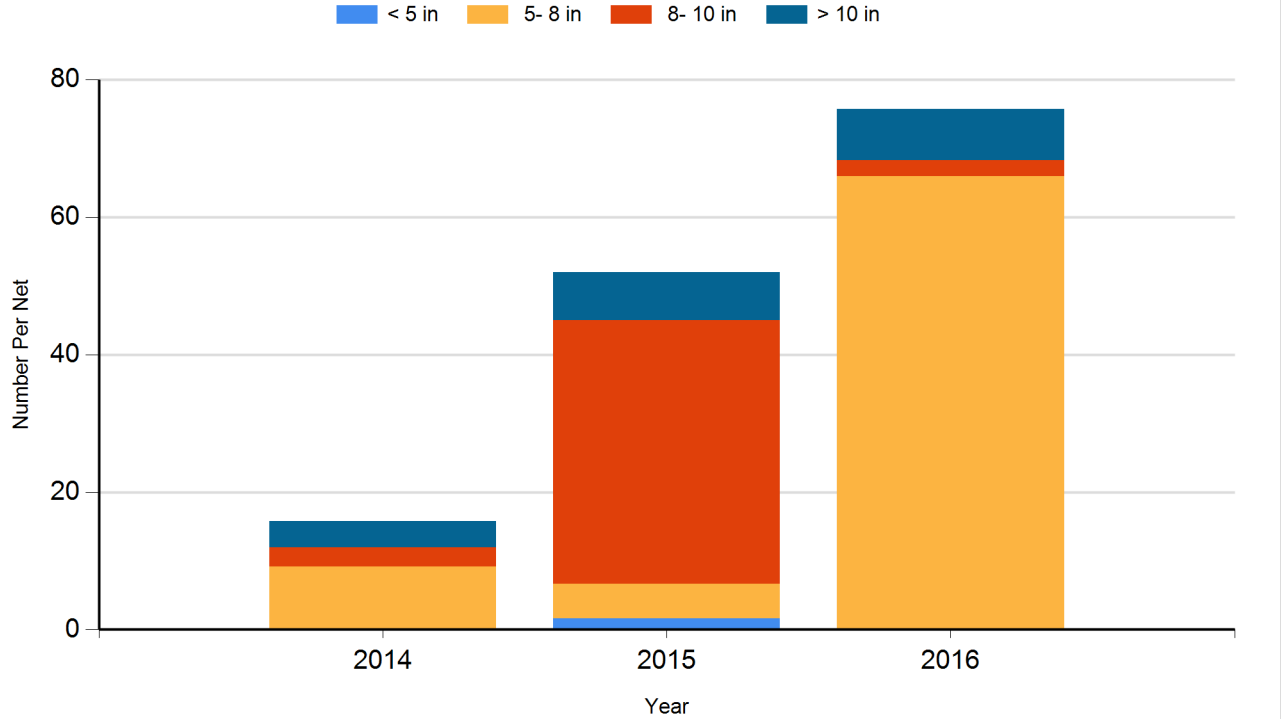
Species: White Bass
Gear: std exp gill net



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
2014	Muskellunge	Large Fingerling	1,063
2015	Walleye	Small Fingerling	108,300
2016	Muskellunge	Large Fingerling	1,387
2017	Walleye	Fingerling	113,760
2019	Walleye	Small Fingerling	108,900
2020	Muskellunge		25
2021	Walleye	Juvenile	119,700