New Underwood Lake Survey Summary

New Underwood Lake is a 20-acre impoundment located a half mile north and a half mile west of the town of New Underwood. Low water combined with the harsh winter of 2022/2023 caused a substantial winterkill. The lake was typically managed as a Largemouth Bass/ Bluegill fishery. The winterkill was such that Bluegill were not sampled in 2023 or 2024 after having 336.3 per net in 2022. It also knocked down Black Crappie and Largemouth Bass numbers substantially. Species present in the lake now include Black Bullhead, Black Crappie, Channel Catfish, Golden Shiner, Largemouth Bass, Northern Pike and Yellow Perch.

Black Bullhead. Black Bullhead numbers have increased since the partial winterkill with catch rates for stock length and larger fish increasing by 27,275% since 2022. Fish ranged from 5.5-7 inches.

Black Crappie. Black Crappie numbers had a huge decline from the winterkill with a catch rate of 3.5 per net in 2023. In 2024, a catch rate of 198.3 was observed. Most of the fish sampled were in the 4 to 7 inch range, with an occasional ten inch fish.

Largemouth Bass. Since the partial winterkill, 191 adult bass have been stocked. Last year, 16 of the stocked bass were captured in the electrofishing survey. In 2024, only 3 of the stocked fish were present in the survey. The 2024 sample shows a large number of bass in the 3 to 4 inch range.

Yellow Perch. Twenty Yellow Perch were caught in the frame net survey. Most perch were between 6 and 11 inches in the sample. Twenty-three hundred, adult perch have been stocked in New Underwood in the past two years

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
New Underwood Dam, Pennington County
MCE-Lake-8-000
2024

Lake Information

Name: New Underwood Dam

County: Pennington

Surface Area: 18 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	Oct 23, 2024	1150 seconds
frame net (std 3/4 in)	Jul 15, 2024	4 net-nights

Common Fish Species Present

Largemouth Bass

Yellow Perch

Channel Catfish

Bluegill

Black Crappie

Black Bullhead

Northern Pike

Golden Shiner

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
boat shocker (night)	Largemouth Bass	88	27.8	25.2	44		0		118	6
frame net (std 3/4 in)	Black Bullhead	979	230.0	49.6	39	2	10	1	115	1
	Black Crappie	778	181.3	63.2	3	1	1	1	119	1
	Channel Catfish	1	0.3	0.4	100		100		99	
	Golden Shiner	1	0.0	0.0						
	Northern Pike	1	0.3	0.4	100		0		111	
	Yellow Perch	19	4.8	4.2	74		16		90	3

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 frame net	Black Bullhead			0.5								0.50
	Black Crappie			13.8								13.80
	Bluegill			62.8								62.80
	Golden Shiner			0.0								0.00
	Green Sunfish			0.3								0.30
	Yellow Perch			1.3								1.30
boat shocker (day)	Largemouth Bass							162.0	61.5			111.75
boat shocker (night)	Largemouth Bass				102.0	144.0				38.6	27.8	78.10
frame net (std 3/4 in)	Black Bullhead	2.3			1.7	2.7		5.3	0.8	2.5	230.0	35.04
	Black Crappie	1.3			1.7	15.3		48.5	241.5	3.5	181.3	70.44
	Bluegill	67.0			24.3	21.7		162.5	335.8	0.0	0.0	87.33
	Catfish	0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.00
	Channel Catfish	0.5			0.0	0.0		0.0	0.8	0.5	0.3	0.30
	Golden Shiner	0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.00
	Green Sunfish	0.8			0.0	17.7		0.0	0.0	0.0	0.0	2.64
	Largemouth Bass	0.5			0.0	0.0		0.3	1.3	0.5	0.0	0.37
	Northern Pike	0.0			0.0	0.0		0.0	0.8	0.5	0.3	0.23
	White Sucker	0.3			0.0	0.0		0.0	0.3	0.0	0.0	0.09
	Yellow Perch	55.3			4.0	3.0		9.5	3.8	30.0	4.8	15.77

10-Year Size Structure and Condition Statistics by Gear and Species

Species proportional size distribution (PSD), proportional size distribution of preferred length fish (PSD-P), and relative weight (Wr) collected by different gear types across 10 years.

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std frame net	Black Bullhead	PSD			100							
		PSD-P			100							
		Wr			89							
	Black Crappie	PSD			44							
		PSD-P			7							
		Wr			96							
	Bluegill	PSD			59							
		PSD-P			8							
		Wr			99							
	Yellow Perch	PSD			60							
		PSD-P			20							
		Wr			82							
boat shocker (day)	Largemouth Bass	PSD							41	50		
		PSD-P							34	39		
		Wr							94	106		
boat shocker (night)	Largemouth Bass	PSD				41	36				56	44
		PSD-P				12	11				6	0
		Wr				96	100				111	118
frame net (std 3/4 in)	Black Bullhead	PSD	100			100	100		90	100	100	39
		PSD-P	89			60	63		10	0	50	10
		Wr	93			99	102		107	129	102	115
	Black Crappie	PSD	100			40	83		4	4	7	3
		PSD-P	0			0	9		1	1	0	1
		Wr	99			101	97		94	93	109	119
	Bluegill	PSD	91			86	97		21	17		
		PSD-P	1			3	3		1	1		
		Wr	106			106	108		104	89		
	Channel Catfish	PSD	50							33	50	100
		PSD-P	50							0	0	100
		Wr	83							85	84	99
	Largemouth Bass	PSD	100						0	100	0	
		PSD-P	100						0	80	0	

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
frame net (std 3/4 in)	Largemouth Bass	Wr	103						85	95	99	
	Northern Pike	PSD								0	100	100
		PSD-P								0	0	0
		Wr								87	92	111
	Yellow Perch	PSD	41			75	89		34	27	17	74
		PSD-P	0			0	0		3	7	0	16
		Wr	95			100	97		83	75	100	90

Length at Capture

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

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2017	248	94 (1)	132 (94)	158 (51)	188 (72)	192 (22)	202 (8)				

Fish Condition

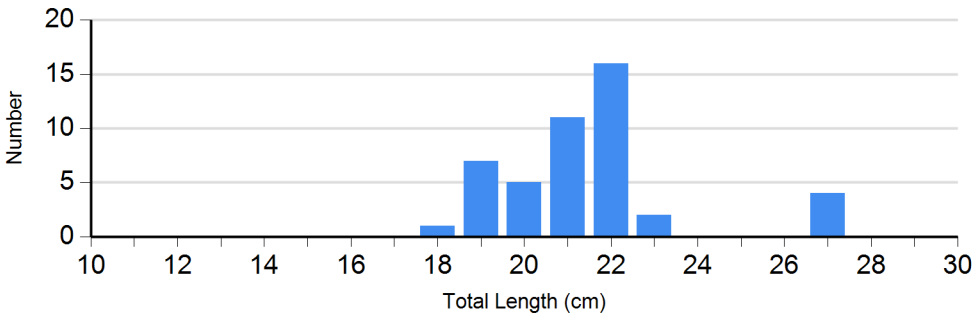
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2021	186	97 (0.8)	6	76 (1.9)	2	83	0	
	2022	930	94 (0.4)	28	71 (1.4)	8	76	0	
	2023	13	110 (4.4)	1	97	0		0	
	2024	702	119 (0.9)	17		6	101	0	
Bluegill Frame Net	2021	515	109 (1.2)	129	94 (1.2)	6	92	0	
	2022	1113	91 (0.5)	221	86 (1.8)	9	79	0	
Largemouth Bass Electro Fishing	2021	17	91 (0.7)	2	97 (5.9)	10	99 (1.6)	0	
	2022	9	99 (2.1)	2	119 (8.4)	7	112 (4.4)	0	
	2023	14	114 (4.5)	16	111 (3.1)	2	93 (25.5)	0	
	2024	5	126 (7.1)	4	109 (2.9)	0		0	

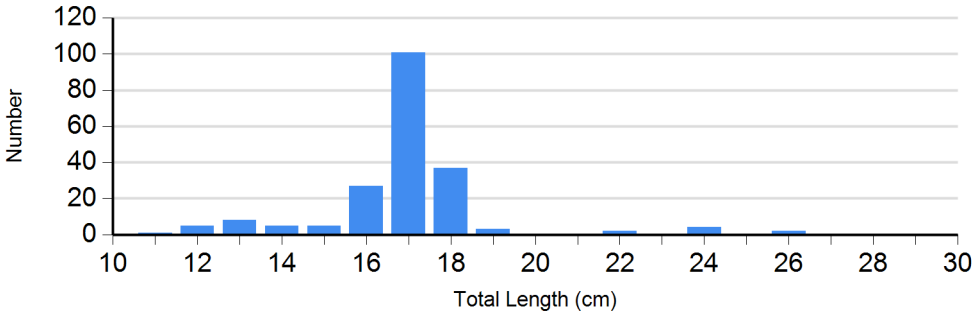
Length Frequency Distribution

Length frequency histogram of species sampled by year.

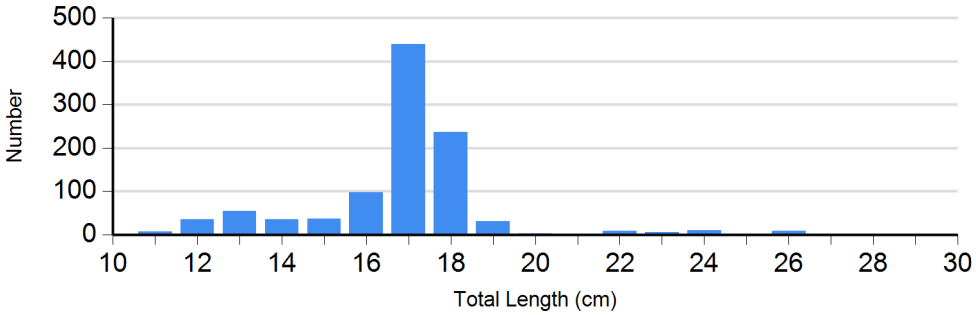
Species: Black Crappie
Gear: frame net (std 3/4 in)



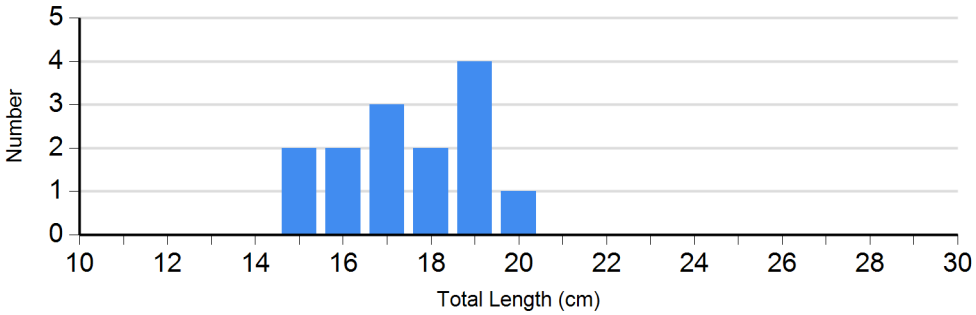
2019



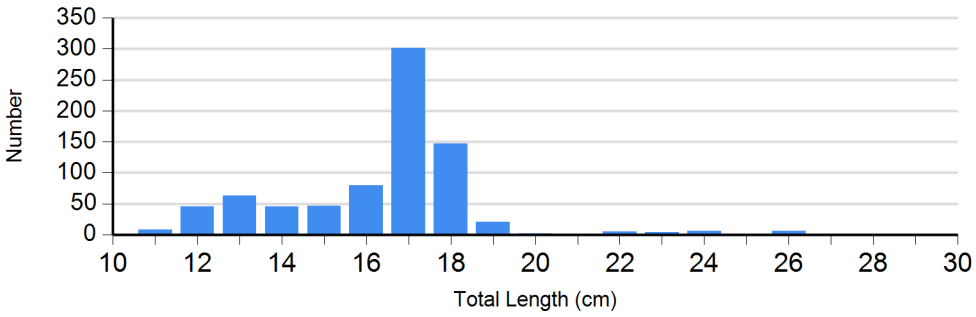
2021



2022



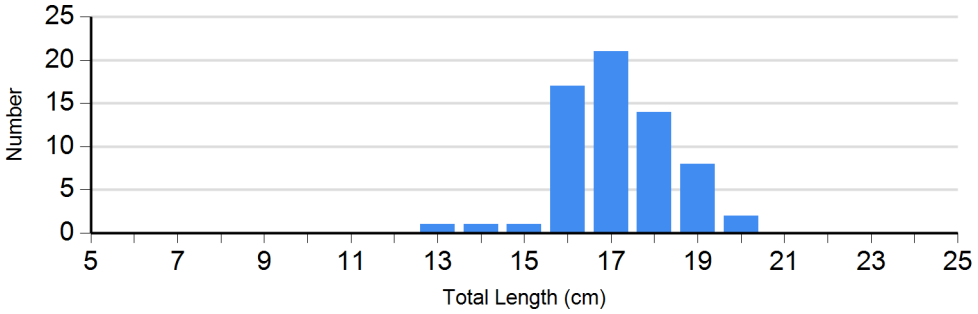
2023



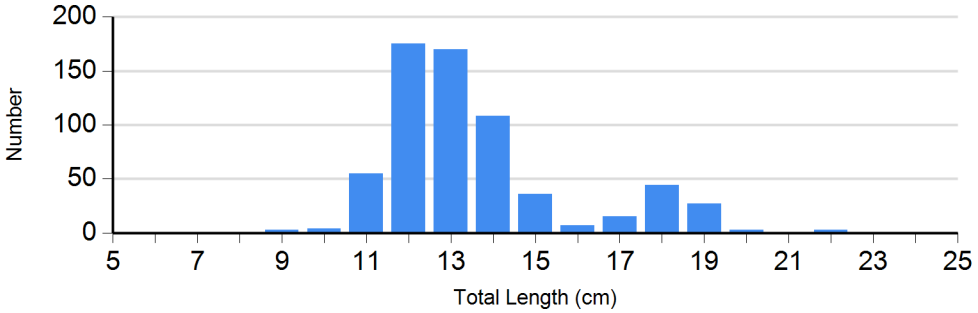
2024

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

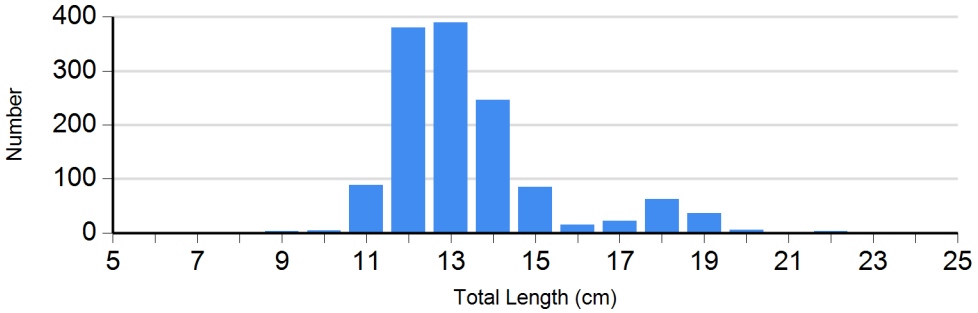
2019



2021

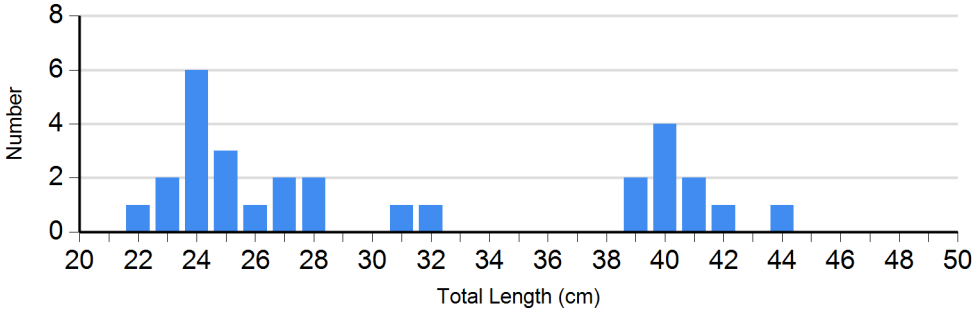


2022

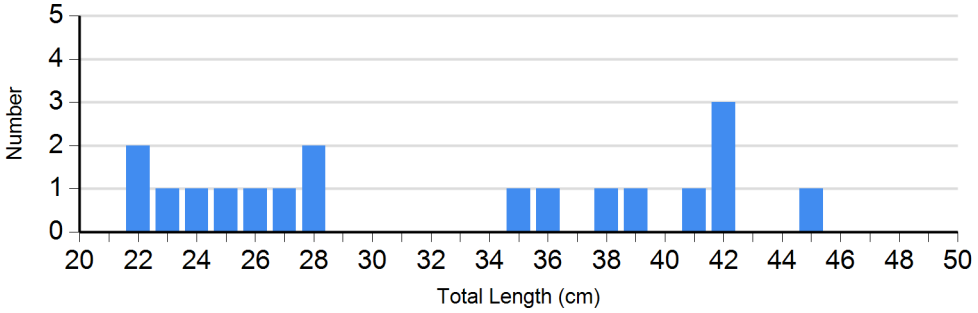


Species: Largemouth Bass
Gear: boat shocker (day)

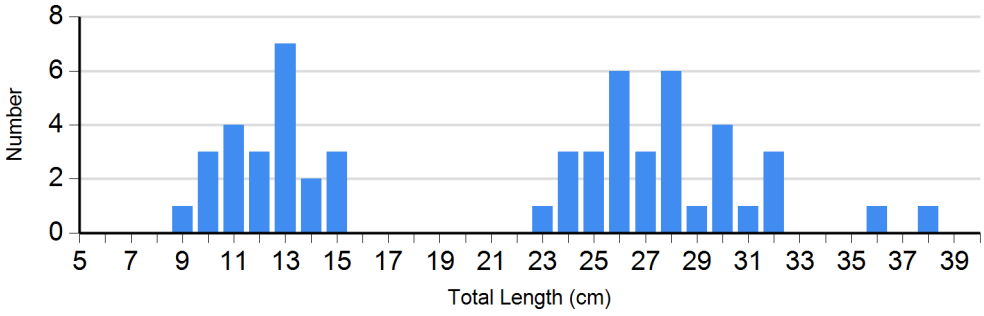
2021



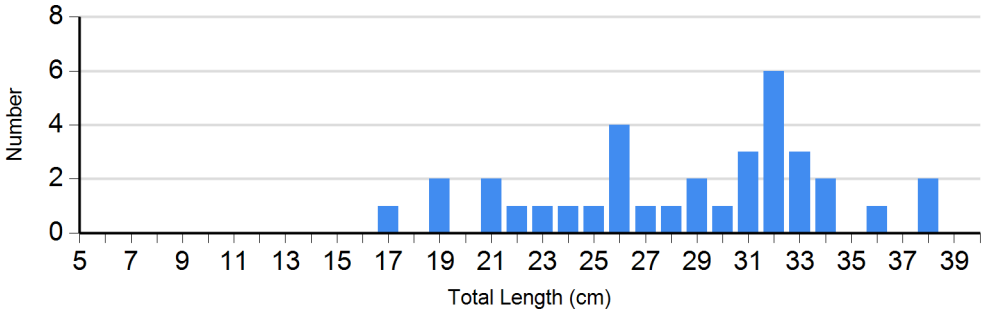
2022



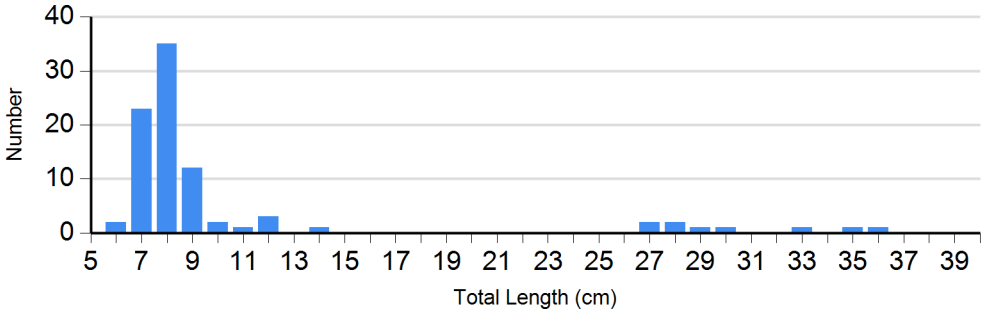
Species: Largemouth Bass
Gear: boat shocker (night)



2019



2023

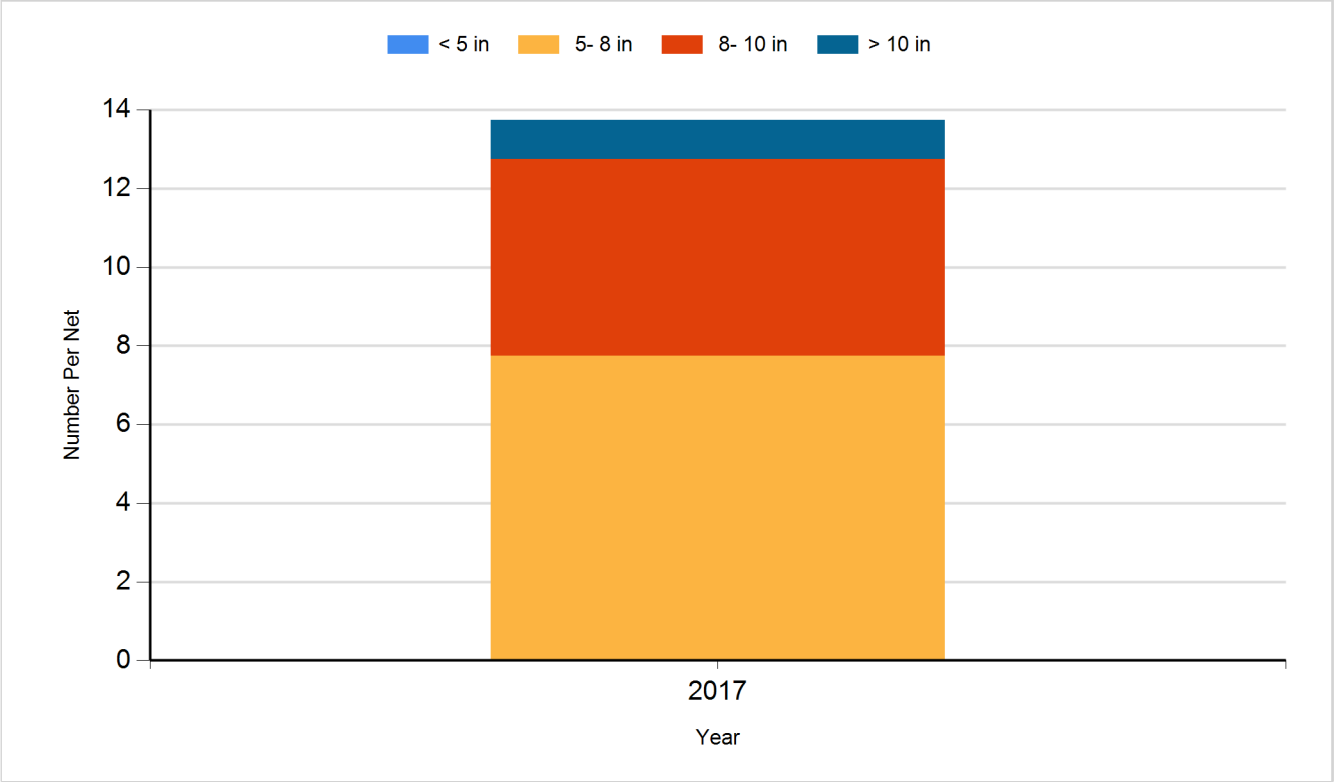


2024

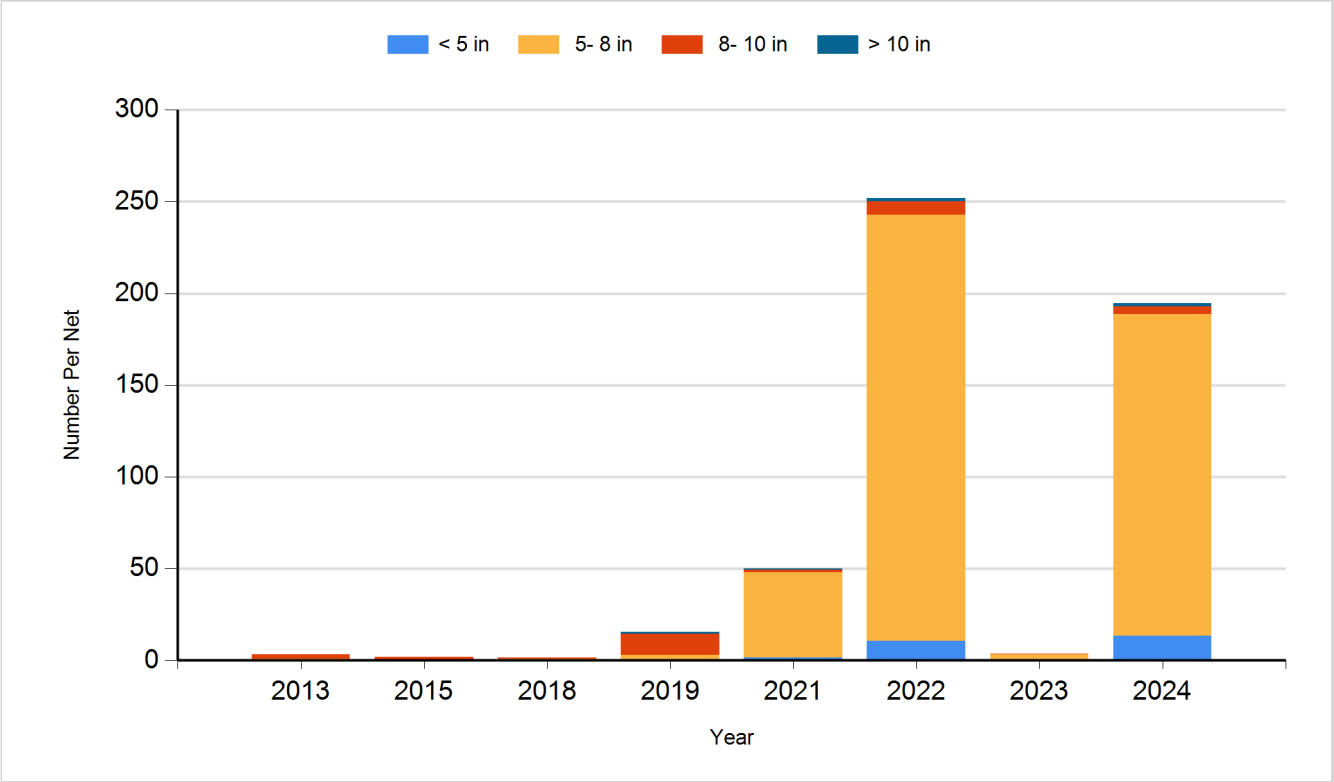
Historic Fish Sizes and Relative Abundance

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

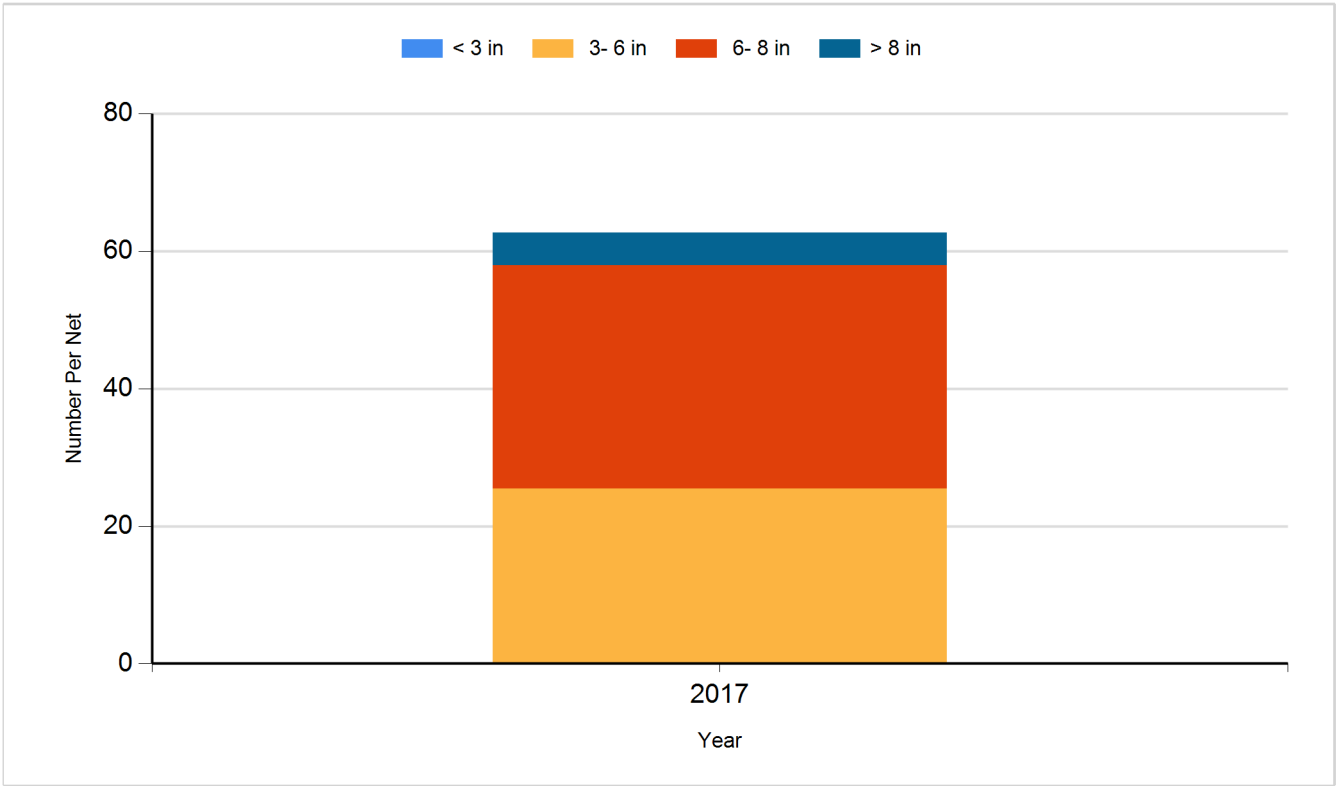
Species: Black Crappie
Gear: AFS std frame net



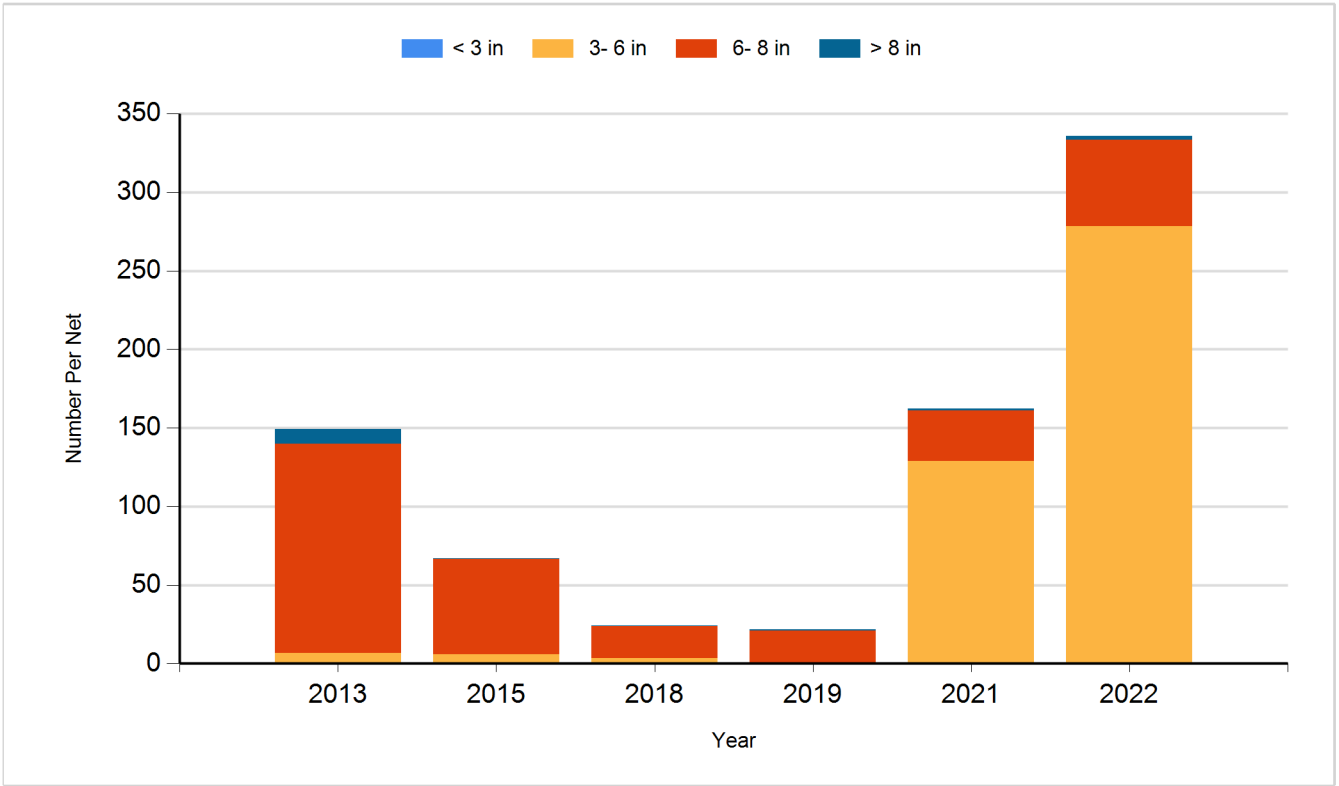
Species: Black Crappie
Gear: frame net (std 3/4 in)



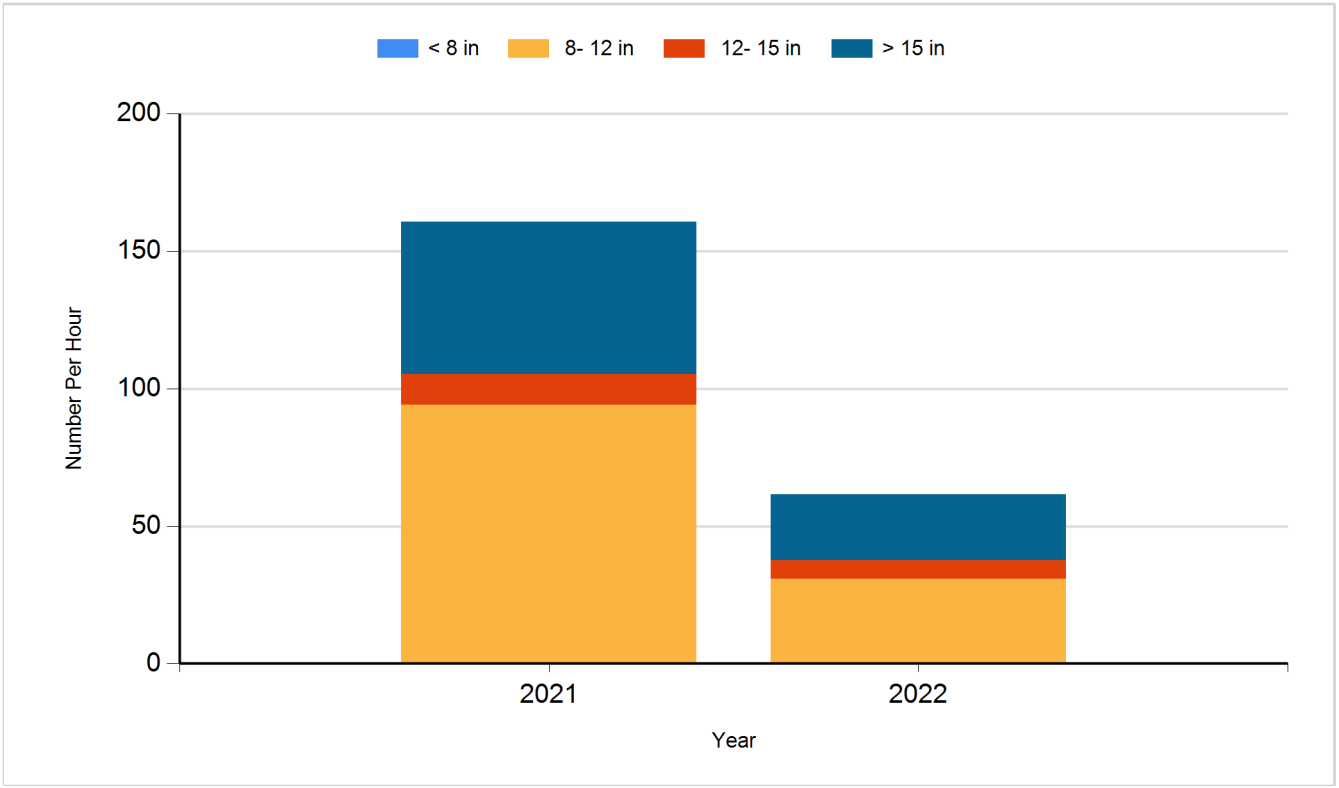
Species: Bluegill
Gear: AFS std frame net



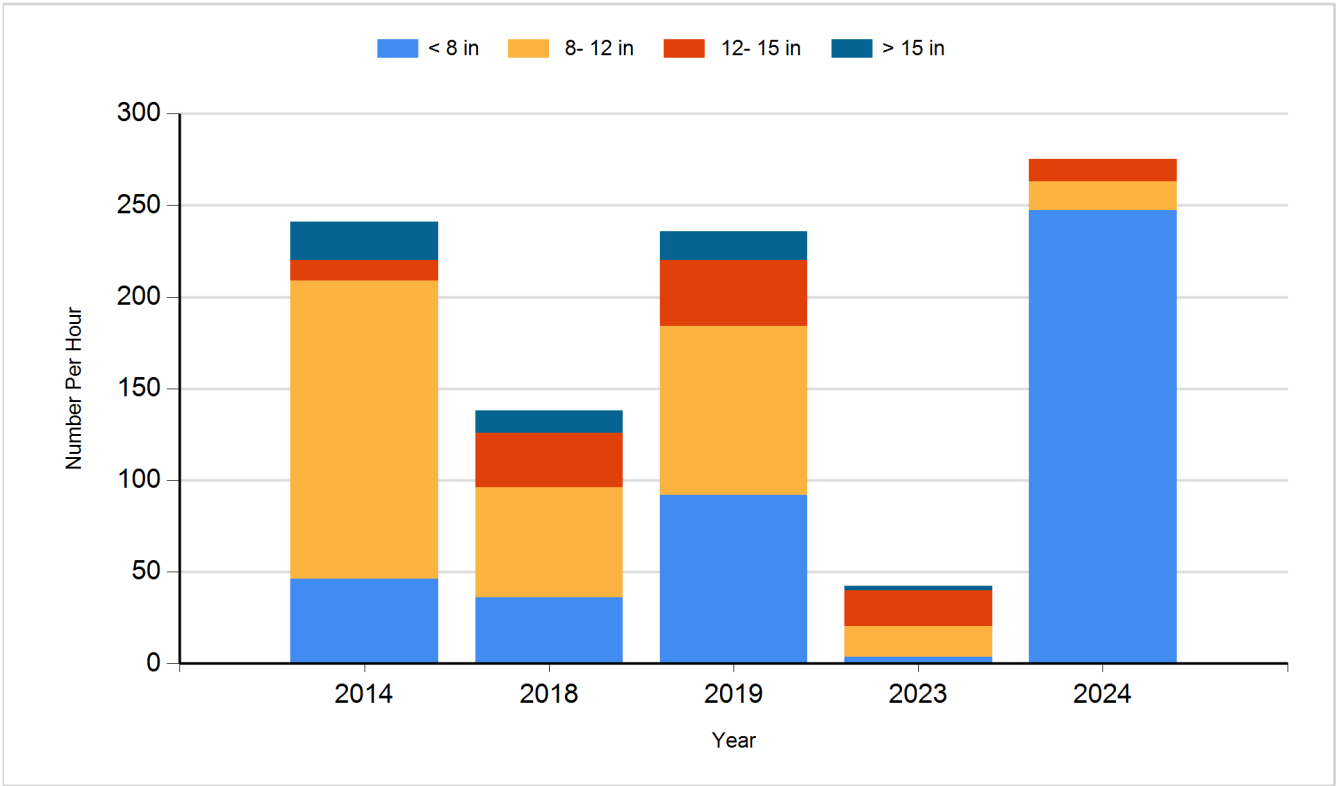
Species: Bluegill
Gear: frame net (std 3/4 in)



Species: Largemouth Bass
Gear: boat shocker (day)



Species: Largemouth Bass
Gear: boat shocker (night)



Fish Stocking

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

Year	Species	Size	Number
2014	Channel Catfish	Adult	143
2014	Yellow Perch	Adult	325
2015	Channel Catfish	Adult	100
2016	Channel Catfish	Adult	200
2017	Channel Catfish	Adult	137
2018	Channel Catfish	Adult	219
2018	Largemouth Bass	Juvenile	272
2019	Channel Catfish	Adult	200
2020	Yellow Perch	Adult	600
2021	Channel Catfish	Adult	300
2022	Channel Catfish	Juvenile	40
2023	Channel Catfish	Adult	150
2023	Largemouth Bass	Adult	191
2023	Yellow Perch		1,600
2024	Channel Catfish	Adult	202
2024	Yellow Perch	Adult	700