South Island Lake Survey Summary

South Island Lake, located 10 miles west of Colton, SD, is managed as a walleye and yellow perch fishery; other fish species (e.g., channel catfish, northern pike, black crappie, and smallmouth bass) are also present.

- **Walleye**. Walleye abundance decreased to a catch rate of 2.3 fish per gill net in 2024. A severe winterkill event, occurring the previous year (2023), dramatically reduced catch rates. This year's relative abundance was slightly higher, however, when including sub-stock length walleye (CPUE = 7.5 fish per net). Sampled fish ranged from 8.7 to 10.7 inches in length and likely originated from the fry stocking the previous year (2023). They should continue to grow quickly due to the current lack of competition in Island South Lake.

- **Yellow Perch**. Gill netting efforts failed to produce any yellow perch in 2024. Relative abundance has remained below 1.0 fish per net the past few sampling years. Approximately 900 adult yellow perch from Deerfield Reservoir in the Black Hills were stocked in May of 2023 in order to bolster yellow perch abundance after the severe winterkill, but results indicate overwinter survival was minimal. There is evidence that these Deerfield yellow perch did poorly in all southeastern South Dakota lakes where they were stocked (including Diamond Lake in Minnehaha County), however, reasons for their poor performance are unknown. Future yellow perch abundance in South Island will hopefully benefit from a subsequent stocking of yellow perch from nearby Long Lake in the fall of 2024.

For more detailed results see the computer-generated South Dakota Statewide Fisheries Survey for Island South Lake (below).

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Island South, Minnehaha County
LBS-Lake-213-001
2024

Lake Information

Name: Island South

County: Minnehaha

Surface Area: 125 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jul 18, 2024	4 net-nights

Common Fish Species Present

Common Carp

Black Bullhead

Walleye

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.

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

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

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.

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

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 (in)	Stock (cm)	Quality (in)	Quality (cm)	Preferred (in)	Preferred (cm)	Memorable (in)	Memorable (cm)	Trophy (in)	Trophy (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	CI-80
AFS std gill net	Black Bullhead	71	17.8	6.0	54	9	4			
	Common Carp	94	19.0	3.5	47	8	1			
	Smallmouth Bass	1	0.3	0.4	0		0		115	
	Walleye	29	2.3	1.4	0		0		83	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

Gear	Species	CPUE										Avg
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
AFS std frame net	Black Bullhead			7.6								7.60
	Black Crappie			2.4								2.40
	Bluegill			3.0								3.00
	Common Carp			3.0								3.00
	Golden Shiner			0.0								0.00
	Northern Pike			1.0								1.00
	Smallmouth Bass			0.2								0.20
	Walleye			1.6								1.60
	Yellow Perch			1.6								1.60
AFS std gill net	Black Bullhead			5.3	5.0	2.3			15.5		17.8	9.18
	Black Crappie			0.3	1.3	2.0			0.3		0.0	0.78
	Channel Catfish			0.0	0.0	0.0			1.8		0.0	0.36
	Common Carp			22.0	4.0	5.5			5.3		19.0	11.16
	Northern Pike			0.8	0.3	0.0			1.8		0.0	0.58
	Smallmouth Bass			0.0	0.0	0.0			0.3		0.3	0.12
	Walleye			6.3	13.3	15.3			8.8		2.3	9.20
	White Sucker			0.3	0.0	0.0			0.5		0.0	0.16
	Yellow Perch			2.8	2.5	4.0			0.8		0.0	2.02
frame net (std 3/4 in)	Black Bullhead				4.3	2.6						3.45
	Black Crappie				7.3	19.0						13.15
	Bluegill				1.5	1.6						1.55
	Common Carp				2.0	0.8						1.40
	Green Sunfish				0.0	0.2						0.10
	Northern Pike				1.3	0.2						0.75
	Sunfish Hybrid				0.0	0.0						0.00
	Walleye				0.5	3.0						1.75
	White Sucker				0.3	0.0						0.15
	Yellow Perch				1.3	1.4						1.35
std exp gill net	Black Bullhead	101.3	58.0									79.65
	Black Crappie	0.0	1.0									0.50
	Common Carp	5.3	2.7									4.00
	Golden Shiner	0.0	0.0									0.00
	Northern Pike	9.0	1.3									5.15
	Walleye	2.3	4.7									3.50

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
std exp gill net	White Sucker	0.0	0.3									0.15
	Yellow Perch	6.0	7.7									6.85

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std frame net	Black Bullhead	PSD			79							
		PSD-P			16							
	Common Carp	PSD			87							
		PSD-P			87							
	Smallmouth Bass	PSD			100							
		PSD-P			100							
		Wr			114							
	Walleye	PSD			63							
		PSD-P			0							
		Wr			96							
AFS std gill net	Black Bullhead	PSD				95	95	100			5	54
		PSD-P				19	15	0			2	4
	Common Carp	PSD				11	100	68			95	47
		PSD-P				10	6	5			14	1
	Smallmouth Bass	PSD									100	0
		PSD-P									100	0
		Wr									88	115
	Walleye	PSD				60	92	43			100	0
		PSD-P				36	19	10			40	0
		Wr				84	92	92			89	83
frame net (std 3/4 in)	Black Bullhead	PSD					82	92				
		PSD-P					24	23				
	Common Carp	PSD					100	75				
		PSD-P					75	75				
	Walleye	PSD					100	93				
		PSD-P					0	87				
		Wr					90	90				
std exp gill net	Black Bullhead	PSD	27	86								
		PSD-P	0	0								
	Common Carp	PSD	13	75								
		PSD-P	0	13								
	Walleye	PSD	100	57								

| Gear	Species	Index	Year									
			2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
std exp gill net	Walleye	PSD-P	86	36								
		Wr	96	83								

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)
Walleye Gill Net	2022	0		21	90 (1.6)	12	88 (1.4)	2	82 (2.8)
	2024	9	83 (1.2)	0		0		0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.
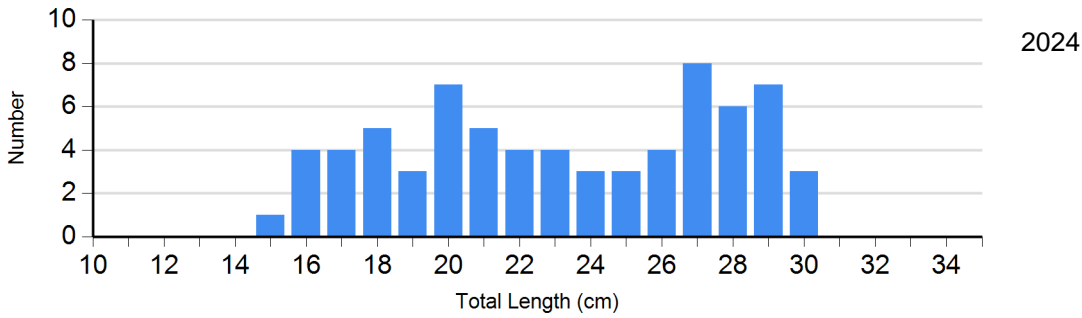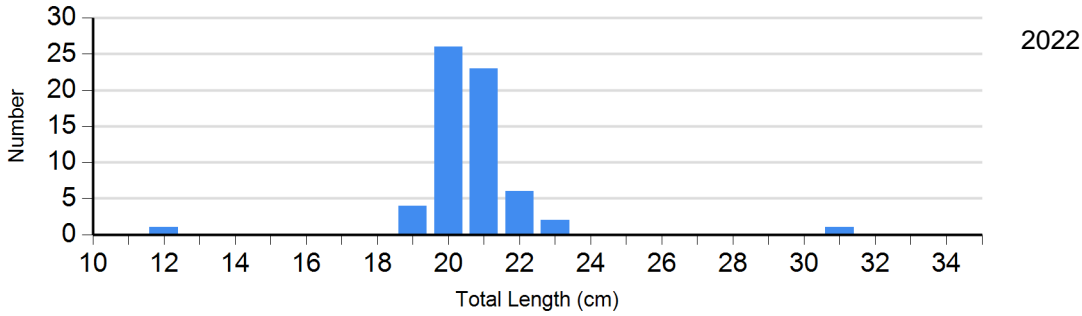
Species: Black Bullhead
Gear: AFS std gill net

2022

2024

Species: Common Carp
Gear: AFS std gill net

2019

2022

2024

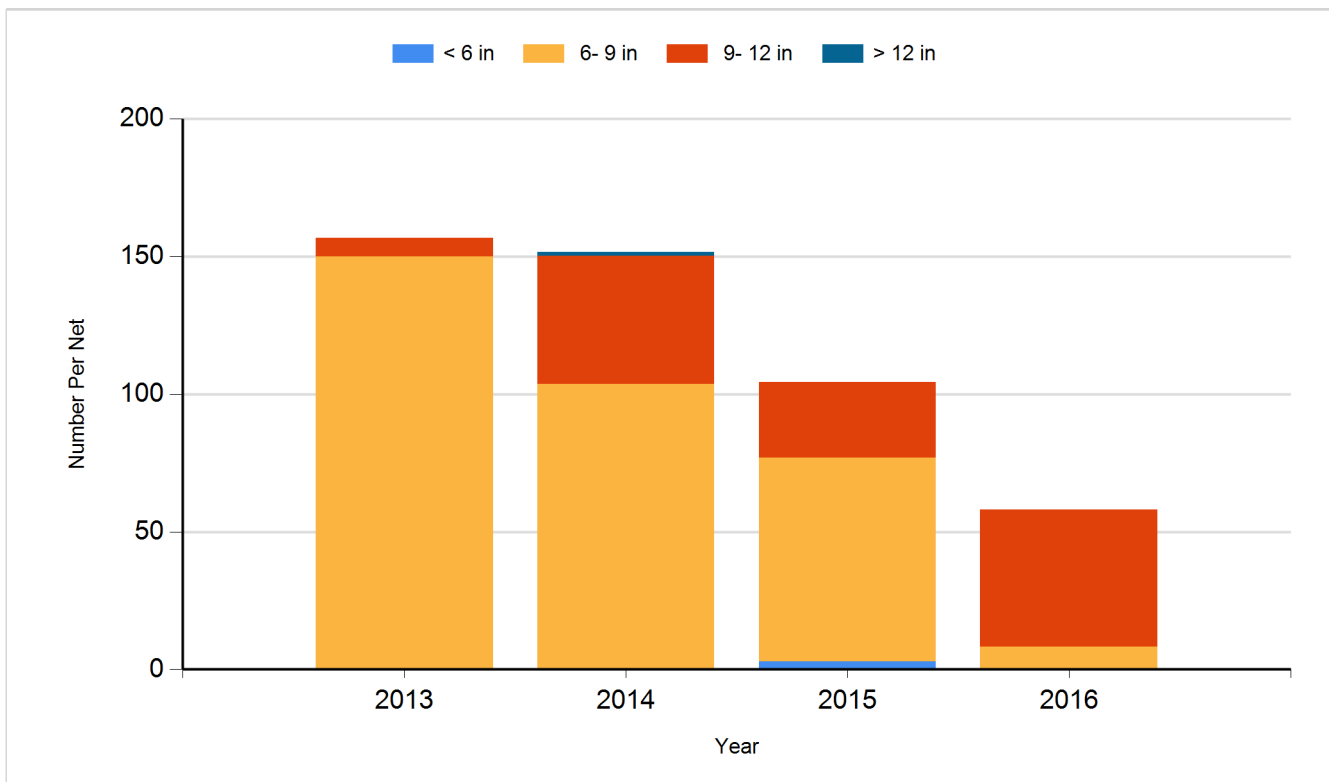Species: Walleye
Gear: AFS std gill net

2019

2022

2024
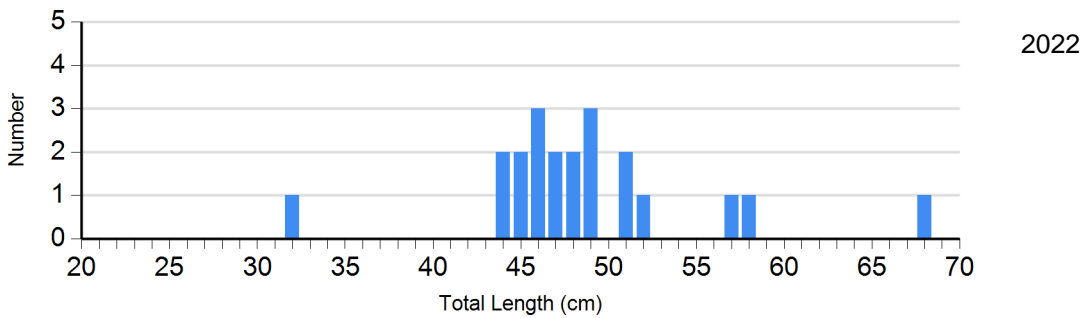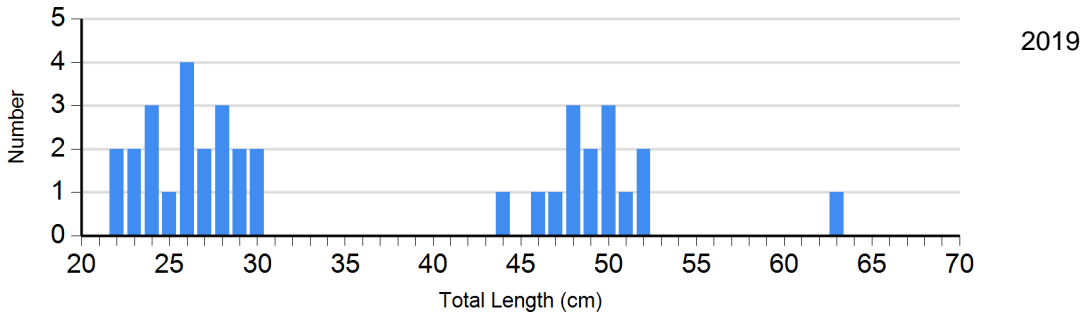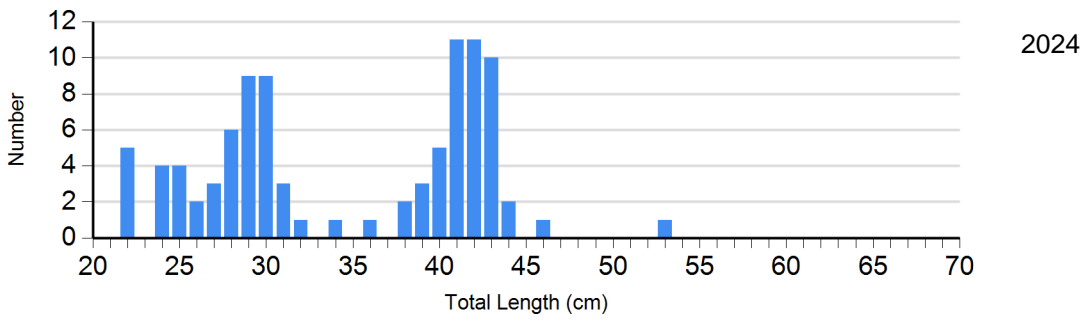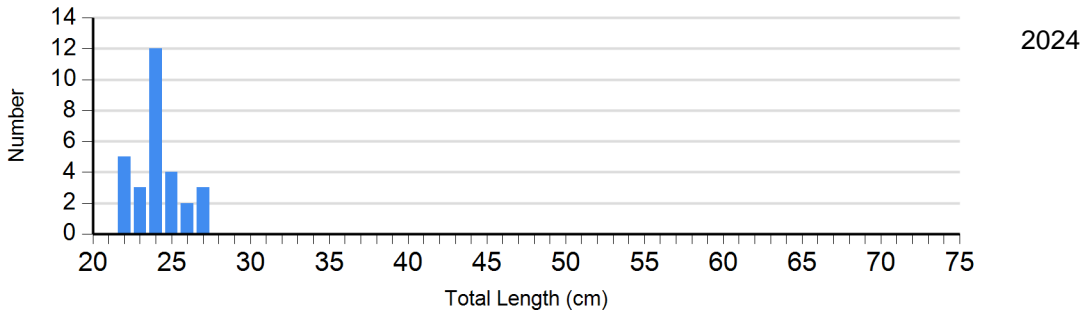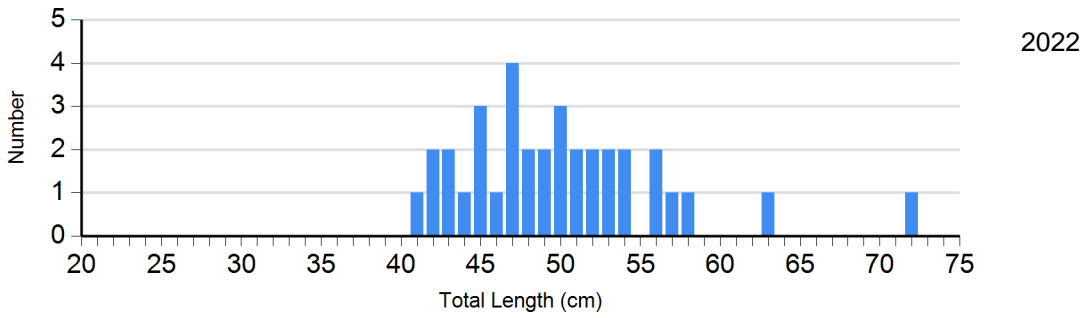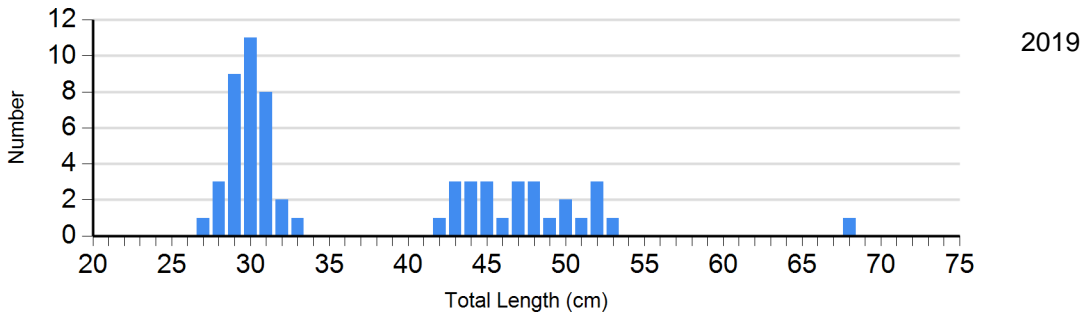
Historic Fish Sizes and Relative Abundance

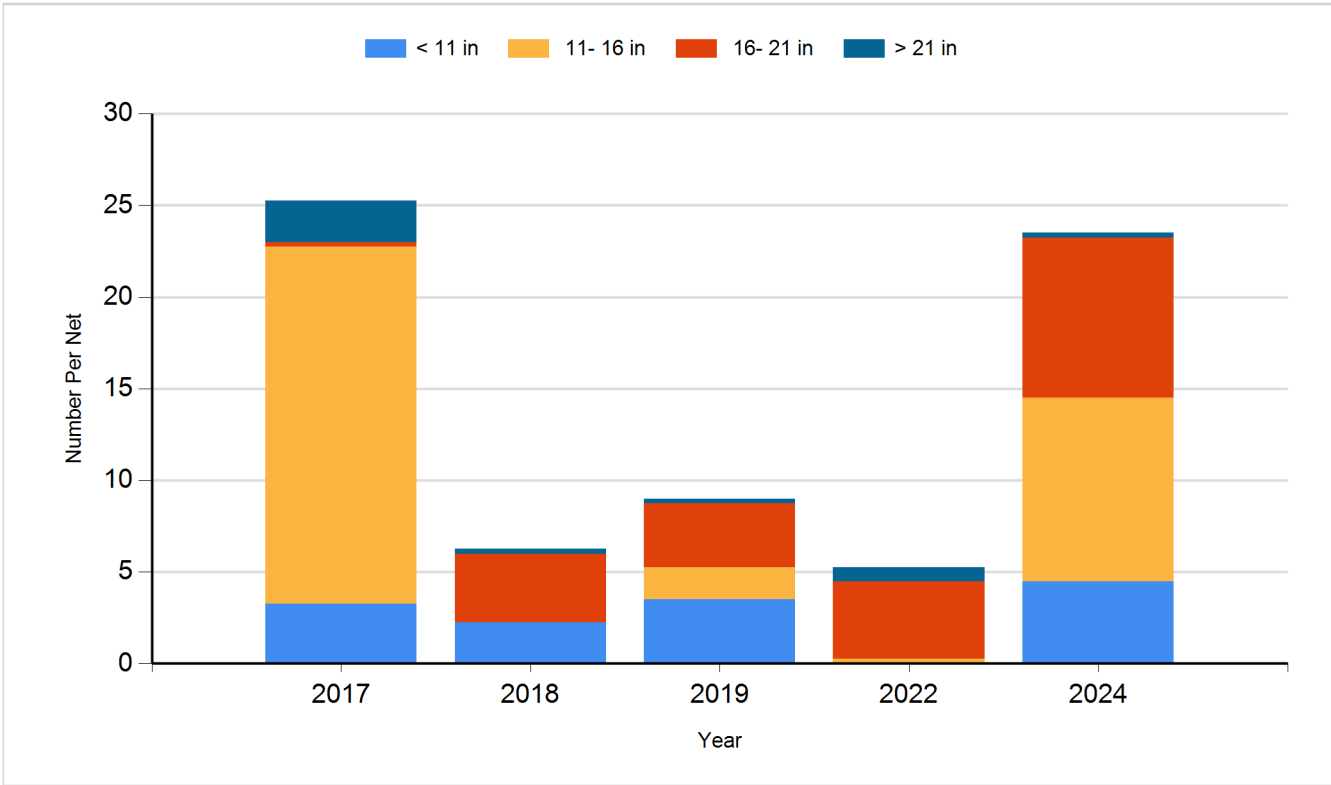Size distribution per net by color for species sampled by year.

Species: Black Bullhead
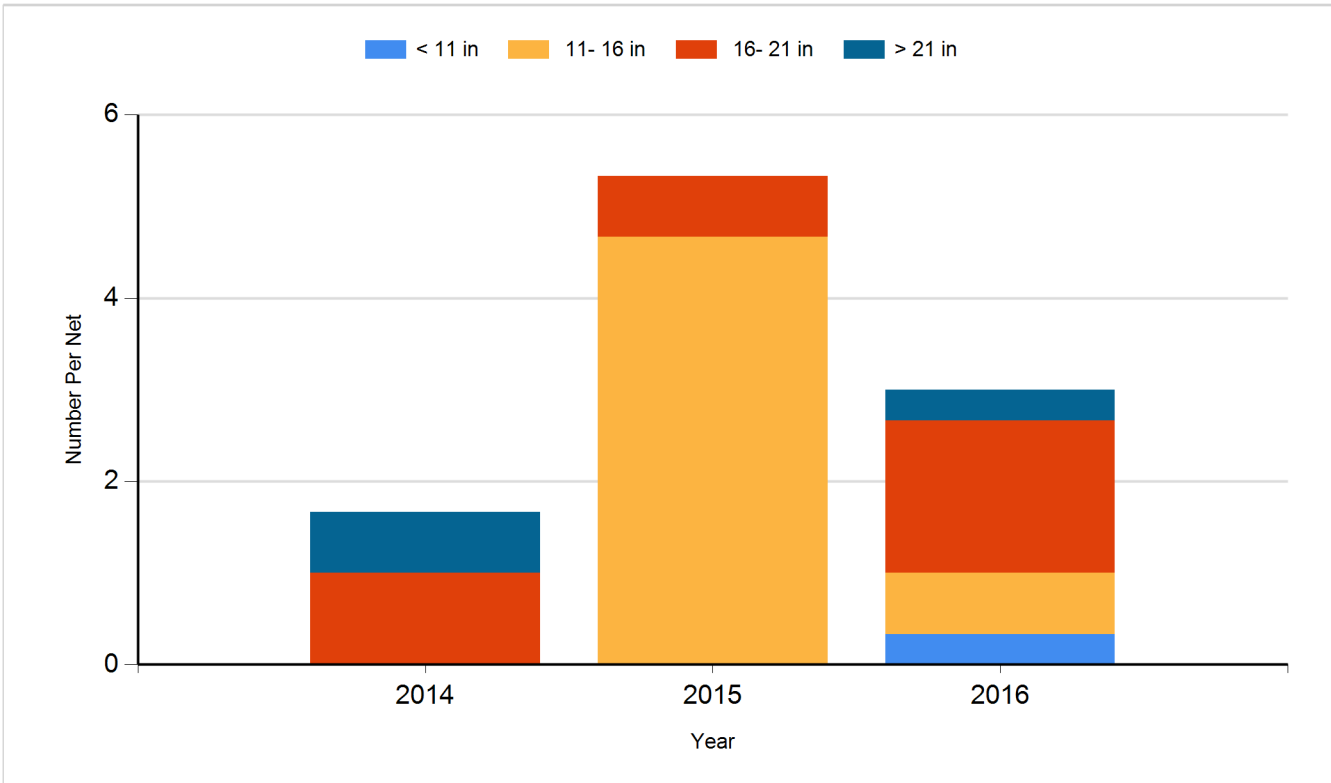Gear: AFS std gill net
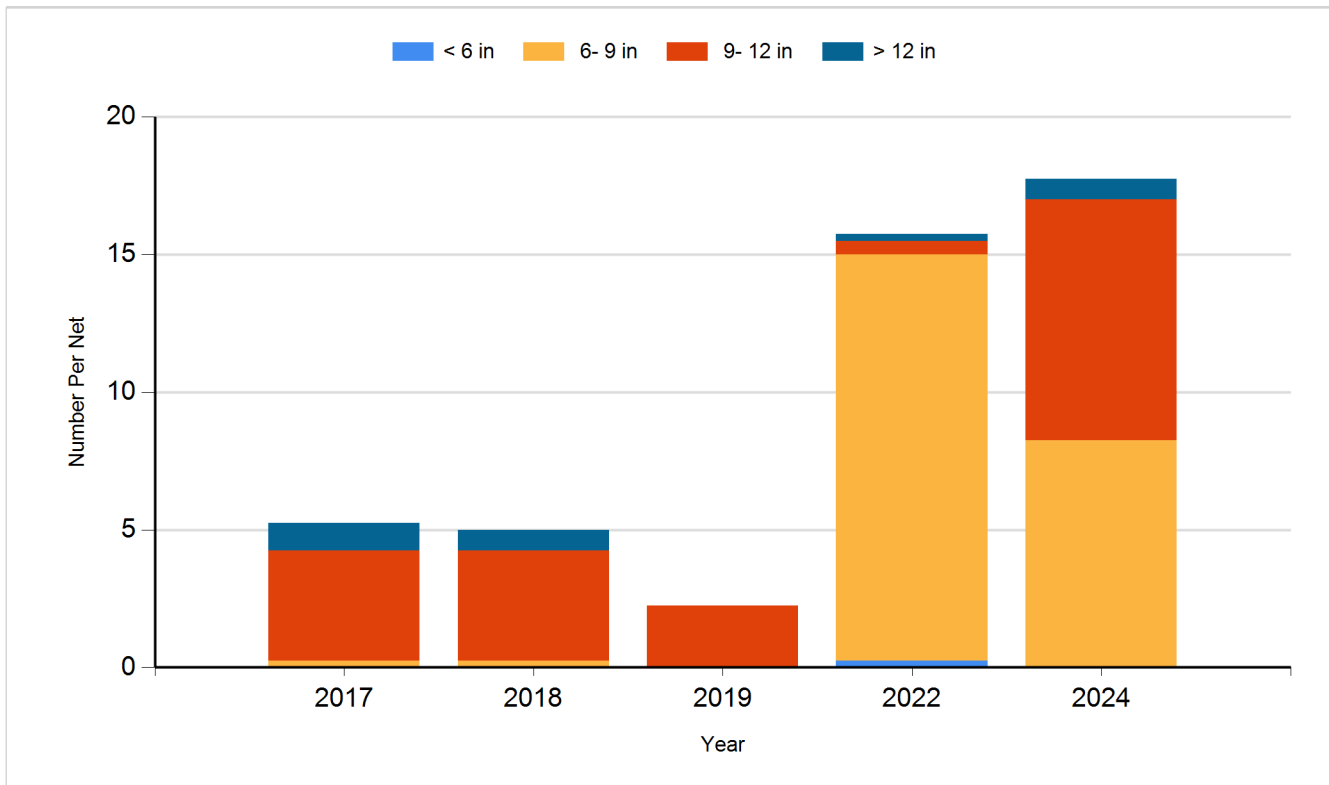
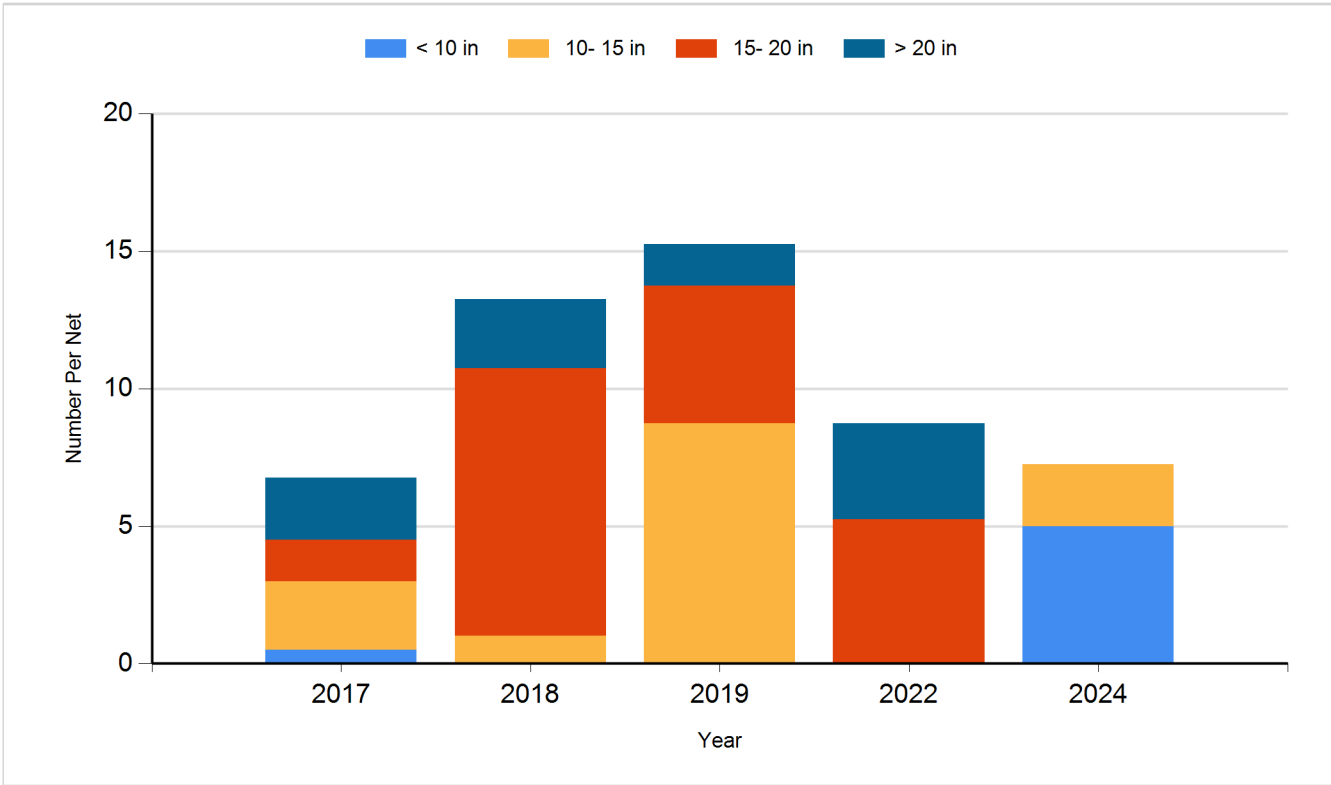Species: Black Bullhead
Gear: std exp gill net
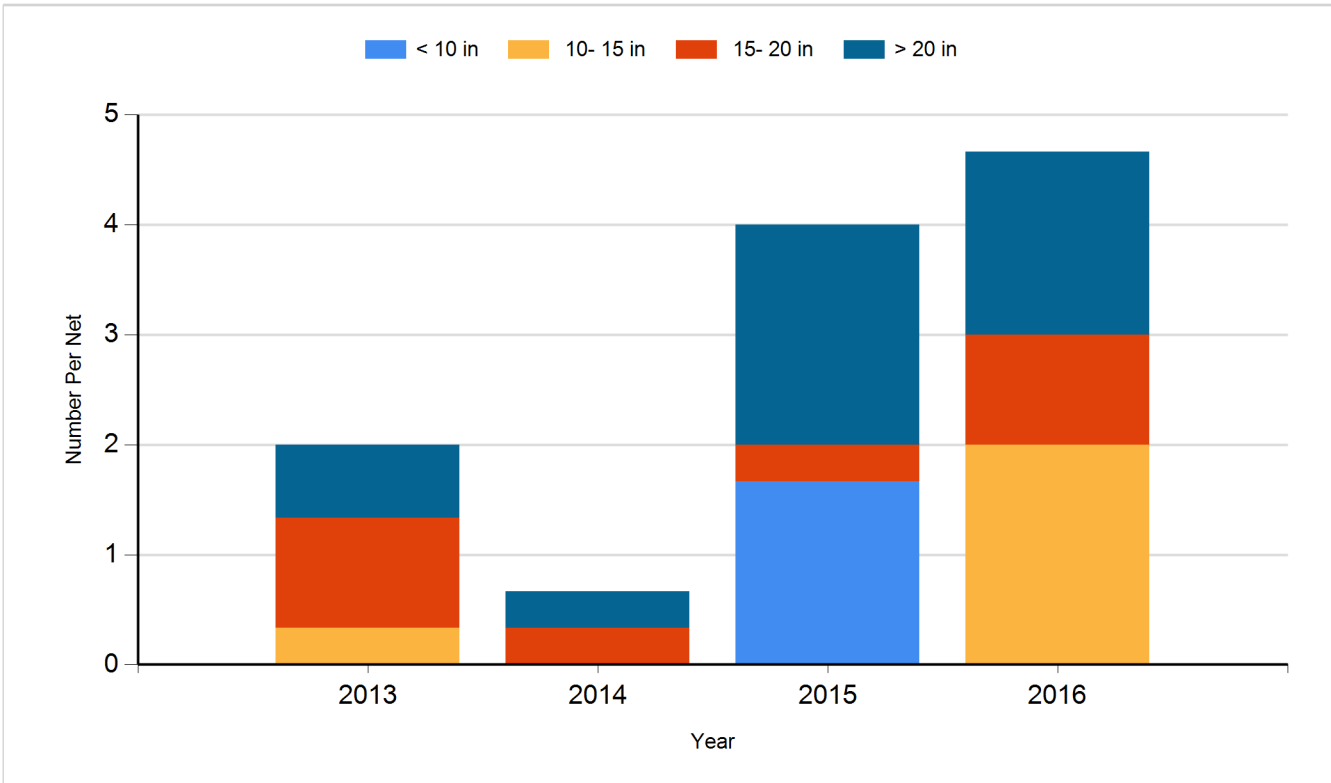
Species: Common Carp
Gear: AFS std gill net

Species: Common Carp
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
2013	Yellow Perch	Small Fingerling	138,250
2014	Walleye	Small Fingerling	14,300
2015	Walleye	Juvenile	666
2015	Walleye	Small Fingerling	5,082
2016	Walleye	Juvenile	703
2016	Walleye	Small Fingerling	5,670
2016	Yellow Perch	Adult	10,187
2017	Yellow Perch	Adult	3,362
2018	Yellow Perch	Adult	3,313
2020	Yellow Perch	Adult	1,454
2021	Walleye	Adult	1,074
2023	Walleye	Fry	150,000
2023	Yellow Perch	Adult	900
2024	Walleye	Juvenile	160
2024	Yellow Perch	Juvenile	1,282