SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Thompson, Kingsbury County
LKT-Lake-55-000
2022

Lake Information

Name: Thompson

County: Kingsbury

Legal Description: T110N-R55W-Sec.20-22, 28-33; T109N-R55W-Sec.4-9, 16-17;

Surface Area: 13,701 Acres

Maximum Depth: 26 Feet

Mean Depth: 15 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Aug 02, 2022	8 net-nights
AFS std gill net	Aug 03, 2022	5 net-nights
frame net (std 3/4 in)	Aug 02, 2022	5 net-nights
frame net (std 3/4 in)	Aug 03, 2022	4 net-nights

Common Fish Species Present

Walleye

Northern Pike

Black Crappie

Yellow Perch

White Bass

Smallmouth Bass

Common Carp

Bigmouth Buffalo

Black Bullhead

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	Bigmouth Buffalo	2	0.1	0.1	0		0			
	Black Bullhead	8	0.6	0.4	100		50			
	Black Crappie	23	1.8	0.8	100		100		105	2
	Common Carp	14	0.9	0.4	100		100			
	Northern Pike	21	1.6	0.6	81		10		76	2
	Walleye	62	4.7	0.8	59	9	16	7	83	1
	White Bass	24	1.8	0.7	100		100		94	1
	Yellow Perch	24	1.8	0.6	96		67	15	107	3
frame net (std 3/4 in)	Bigmouth Buffalo	6	0.7	0.9	100		33			
	Black Bullhead	5	0.6	0.5	100		60			
	Black Crappie	21	2.3	1.3	100		100		105	2
	Common Carp	3	0.3	0.3	100		100			
	Northern Pike	24	2.7	1.2	92		21	14	81	3
	Smallmouth Bass	12	1.0	0.8	33		11		104	3
	Walleye	16	1.4	0.9	77		8		83	2
	White Bass	5	0.6	0.4	100		100		88	4

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	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
AFS std gill net	Bigmouth Buffalo									0.1	0.1	0.10
	Black Bullhead									1.2	0.6	0.90
	Black Crappie									1.5	1.8	1.65
	Common Carp									1.0	0.9	0.95
	Northern Pike									1.9	1.6	1.75
	Smallmouth Bass									0.1	0.0	0.05
	Walleye									4.4	4.7	4.55
	White Bass									2.2	1.8	2.00
	White Sucker									0.1	0.0	0.05
	Yellow Perch									2.5	1.8	2.15
frame net (std 3/4 in)	Bigmouth Buffalo									27.8	0.7	14.25
	Black Bullhead									15.6	0.6	8.10
	Black Crappie									9.4	2.3	5.85
	Bluegill									0.1	0.0	0.05
	Common Carp									3.4	0.3	1.85
	Northern Pike									11.4	2.7	7.05
	Smallmouth Bass									1.4	1.0	1.20
	Walleye									5.9	1.4	3.65
	White Bass									2.4	0.6	1.50
	White Sucker									0.1	0.0	0.05

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	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AFS std gill net	Bigmouth Buffalo	PSD									100	0
		PSD-P									0	0
	Black Bullhead	PSD									67	100
		PSD-P									27	50
	Black Crappie	PSD									95	100
		PSD-P									70	100
		Wr									111	105
	Common Carp	PSD									92	100
		PSD-P									46	100
	Northern Pike	PSD									88	81
		PSD-P									4	10
		Wr									78	76
	Smallmouth Bass	PSD									100	
		PSD-P									100	
		Wr									100	
	Walleye	PSD									28	59
		PSD-P									11	16
		Wr									86	83
	White Bass	PSD									100	100
		PSD-P									100	100
		Wr									94	94
	Yellow Perch	PSD									91	96
		PSD-P									47	67
		Wr									114	107
frame net (std 3/4 in)	Bigmouth Buffalo	PSD									96	100
		PSD-P									4	33
	Black Bullhead	PSD									33	100
		PSD-P									4	60
	Black Crappie	PSD									95	100
		PSD-P									53	100
		Wr									115	105
	Common Carp	PSD									93	100
		PSD-P									74	100

			Year									
Gear	Species	Index	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
frame net (std 3/4 in)	Northern Pike	PSD									70	92
		PSD-P									11	21
		Wr									77	81
	Smallmouth Bass	PSD									45	33
		PSD-P									18	11
		Wr									138	104
	Walleye	PSD									17	77
		PSD-P									11	8
		Wr									88	83
	White Bass	PSD									100	100
		PSD-P									84	100
		Wr									95	88

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+
2022	62	212 (1)	300 (3)	350 (21)	420 (20)	458 (3)		525 (8)	555 (5)		605 (1)
2021	59	251 (2)	306 (28)	369 (18)	431 (1)	443 (1)	491 (4)	574 (1)	459 (2)		637 (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	24		227 (6)	269 (13)	279 (5)						
2021	32	140 (1)	230 (13)	256 (18)							

Fish Condition

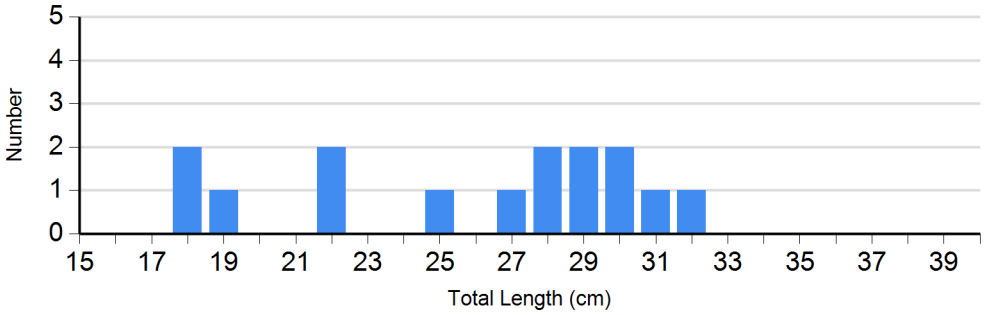
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	4	114	31	119 (1.3)	36	112 (1.0)	4	106 (5.2)
	2022	0		0		16	107 (1.4)	5	102 (2.6)
Northern Pike Gill Net	2021	3	79 (7.7)	21	78 (1.4)	0		1	83
	2022	4	72 (0.8)	15	76 (1.6)	2	81 (13.4)	0	
Walleye Gill Net	2021	41	86 (1.0)	10	90 (2.1)	5	84 (2.5)	1	90
	2022	25	80 (1.1)	26	83 (1.2)	10	91 (2.2)	0	
White Bass Gill Net	2021	0		0		12	95 (1.3)	17	93 (1.0)
	2022	0		0		10	95 (1.4)	14	93 (1.6)
Yellow Perch Gill Net	2021	3	105 (1.2)	14	113 (2.8)	15	117 (2.6)	0	
	2022	1	105	7	107 (4.1)	16	107 (2.4)	0	

Length Frequency Distribution

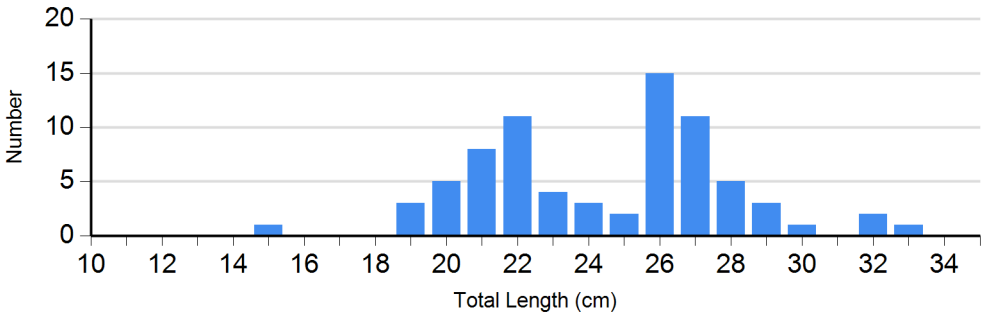
Length frequency histogram of species sampled by year.

Species: Black Bullhead
Gear: AFS std gill net

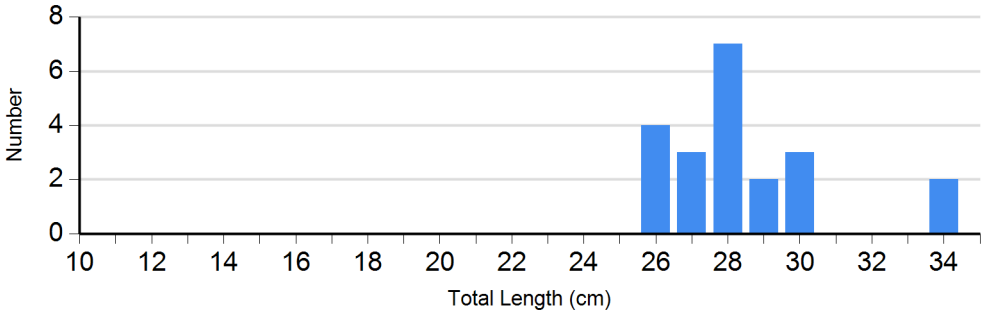


2021

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

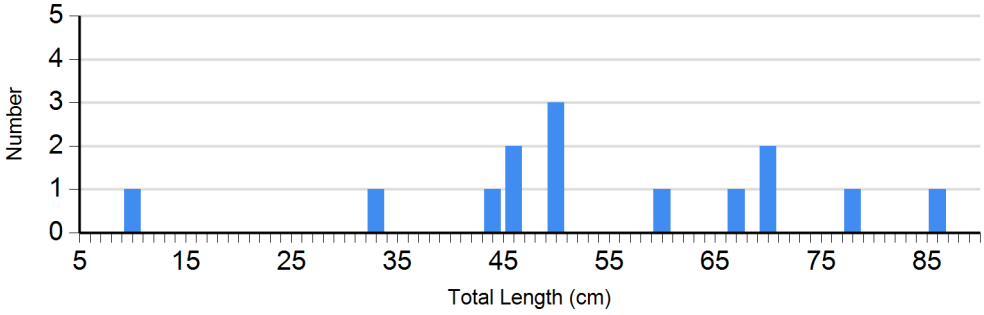


2021

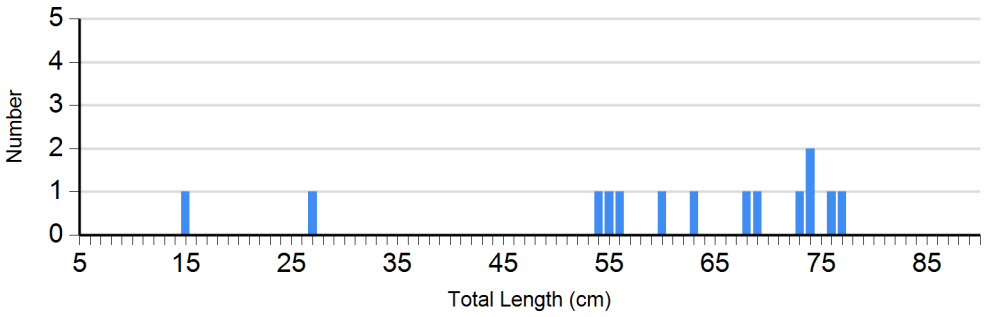


2022

Species: Common Carp
Gear: AFS std gill net

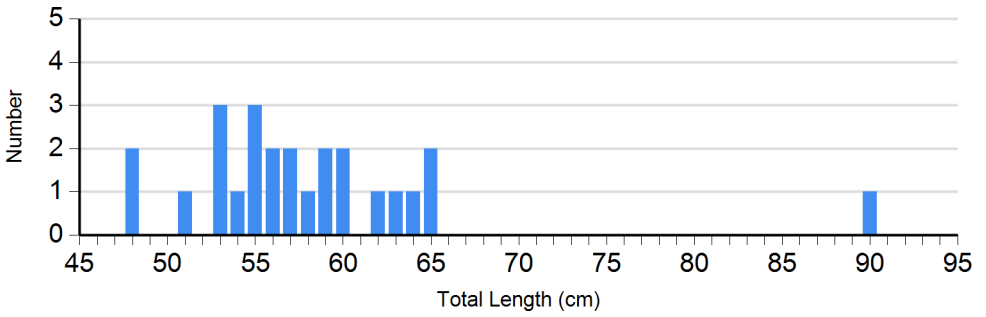


2021

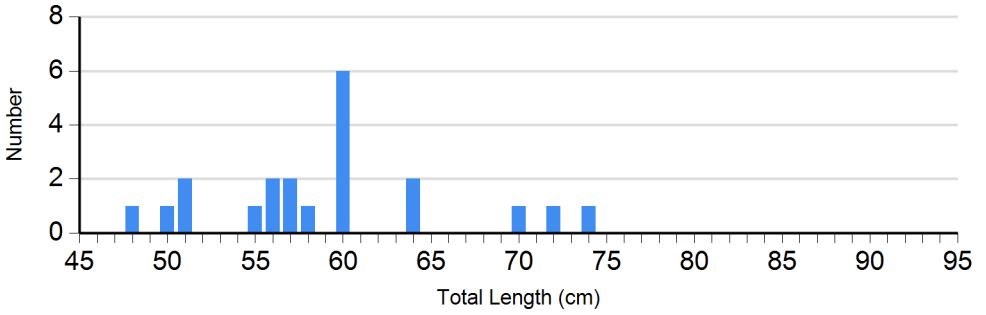


2022

Species: Northern Pike
Gear: AFS std gill net

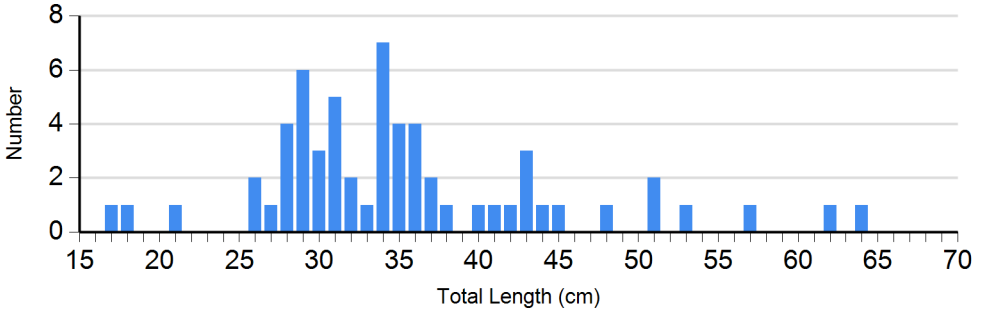


2021

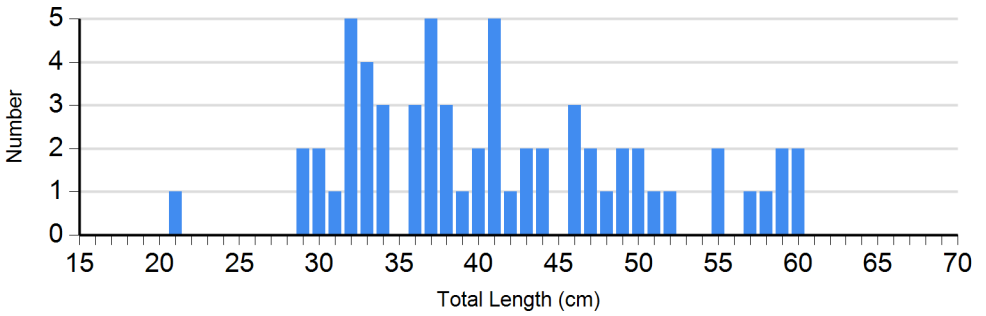


2022

Species: Walleye
Gear: AFS std gill net

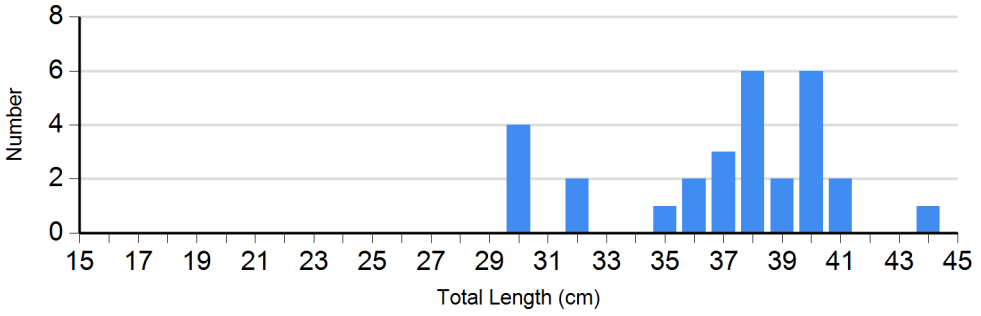


2021

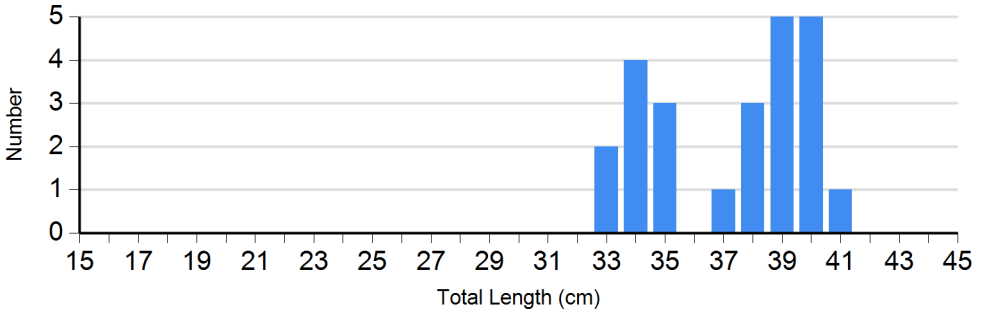


2022

Species: White Bass
Gear: AFS std gill net

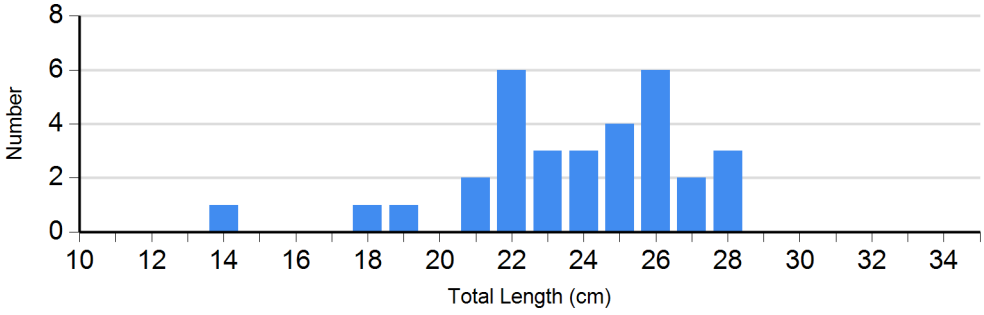


2021

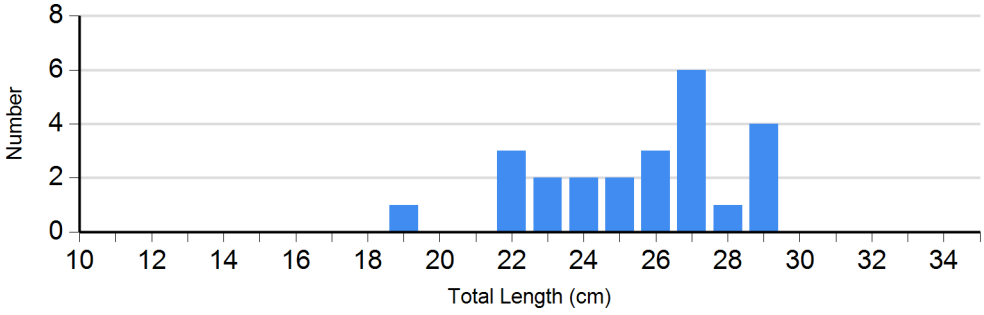


2022

Species: Yellow Perch
Gear: AFS std gill net



2021

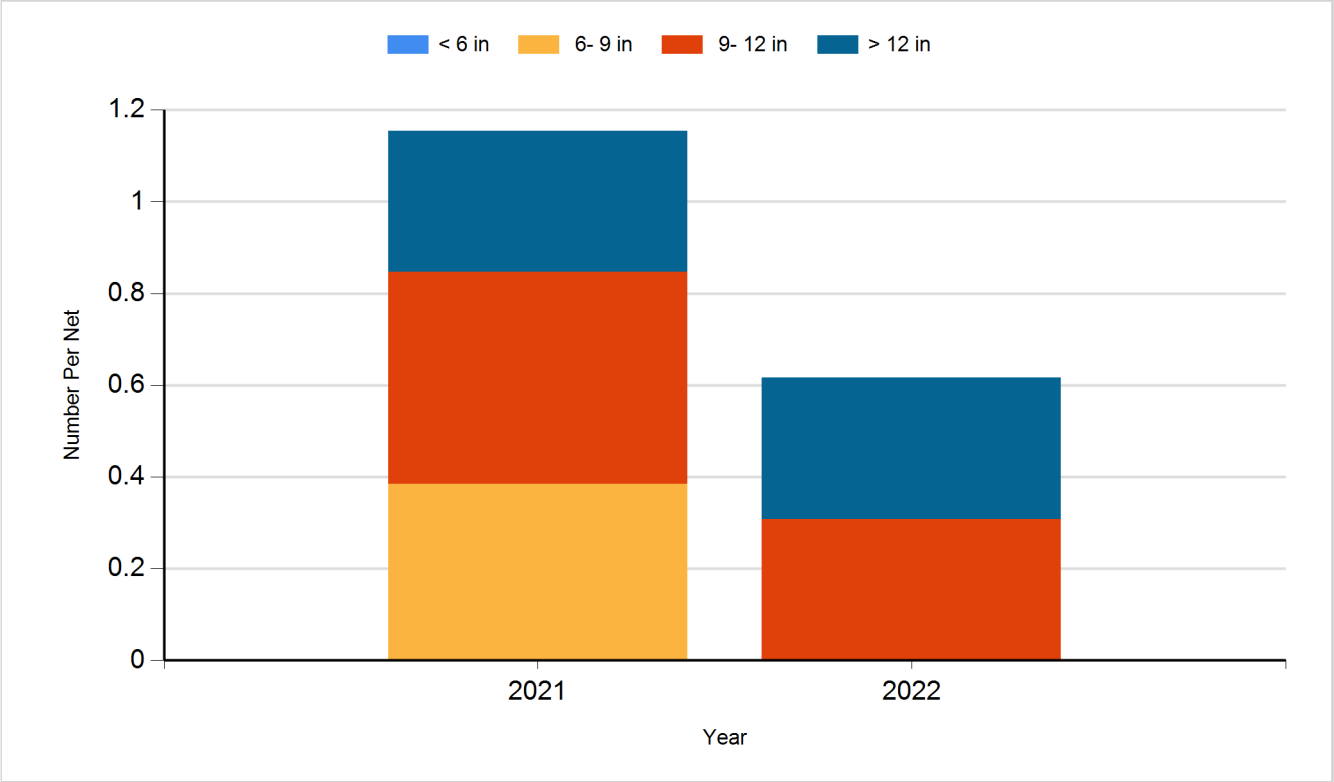


2022

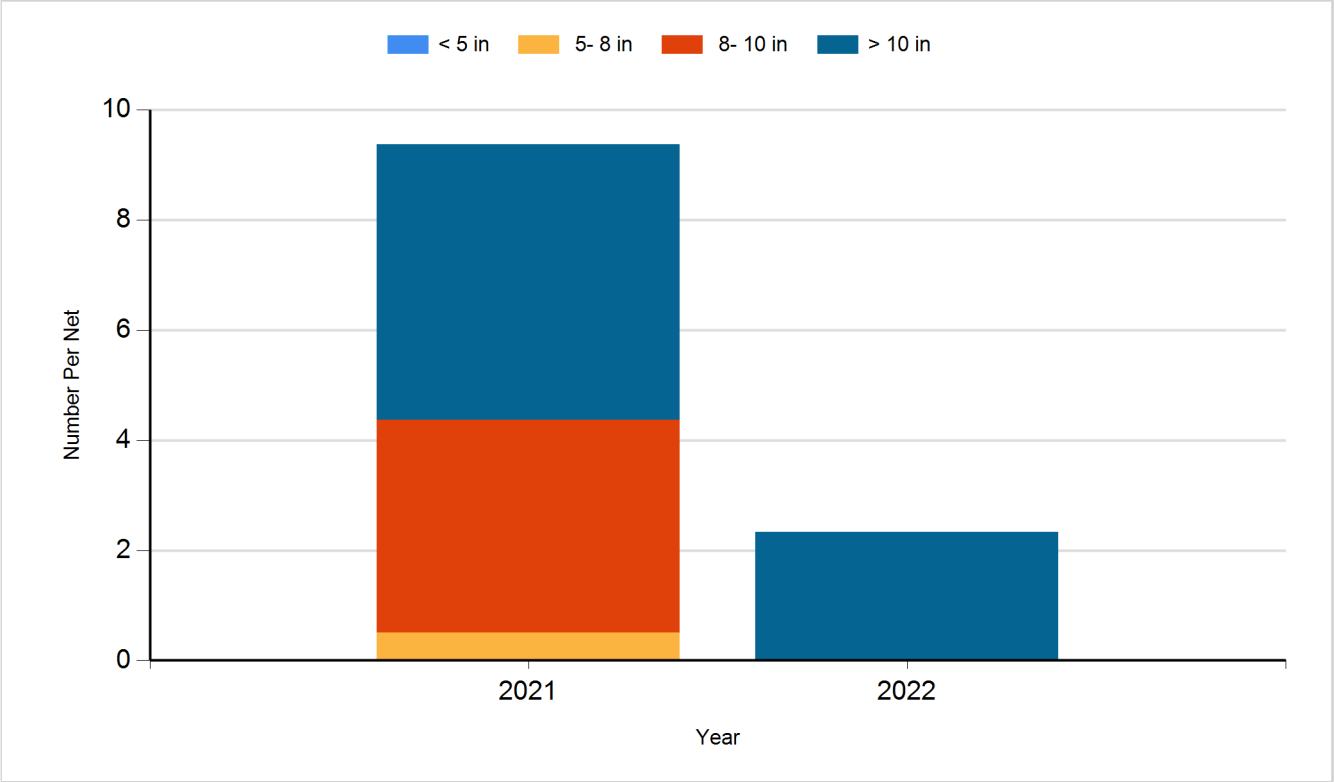
Historic Fish Sizes and Relative Abundance

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

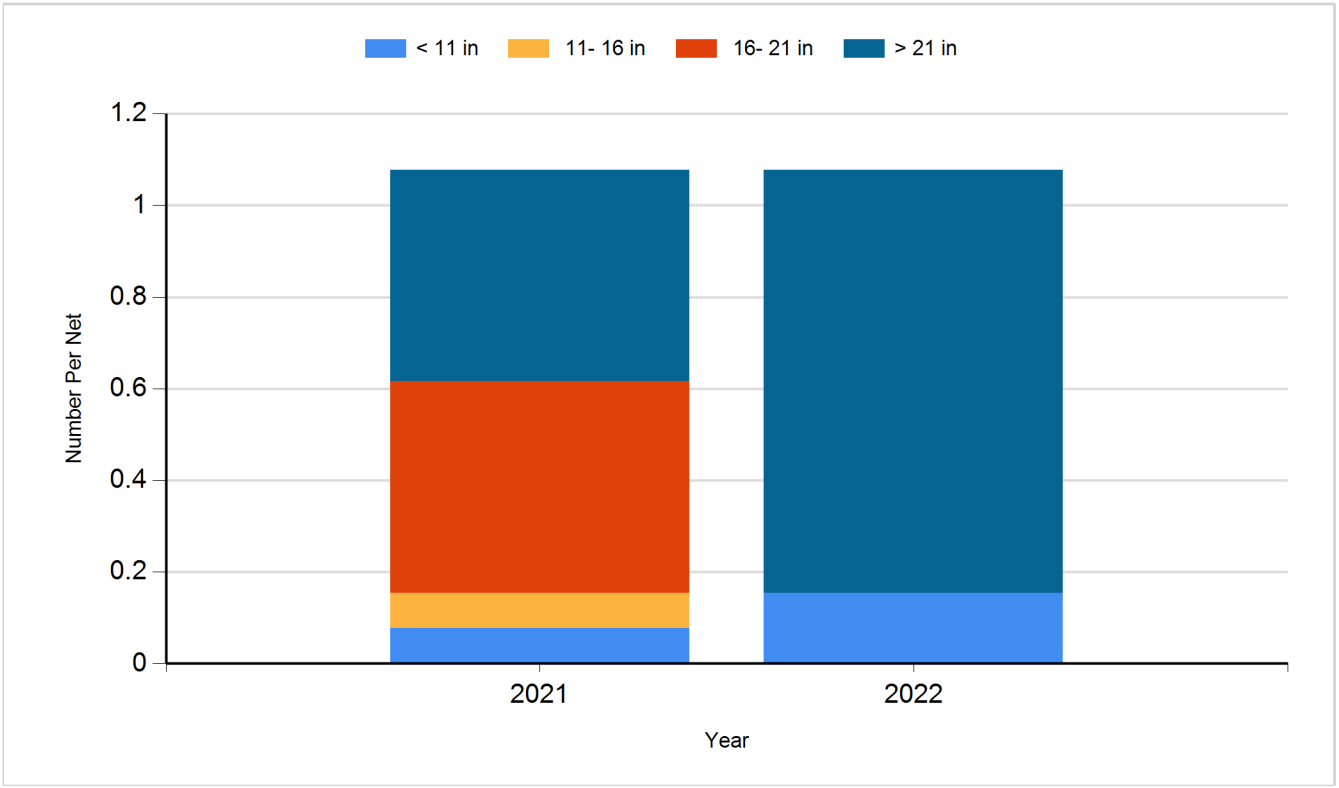
Species: Black Bullhead
Gear: AFS std gill net



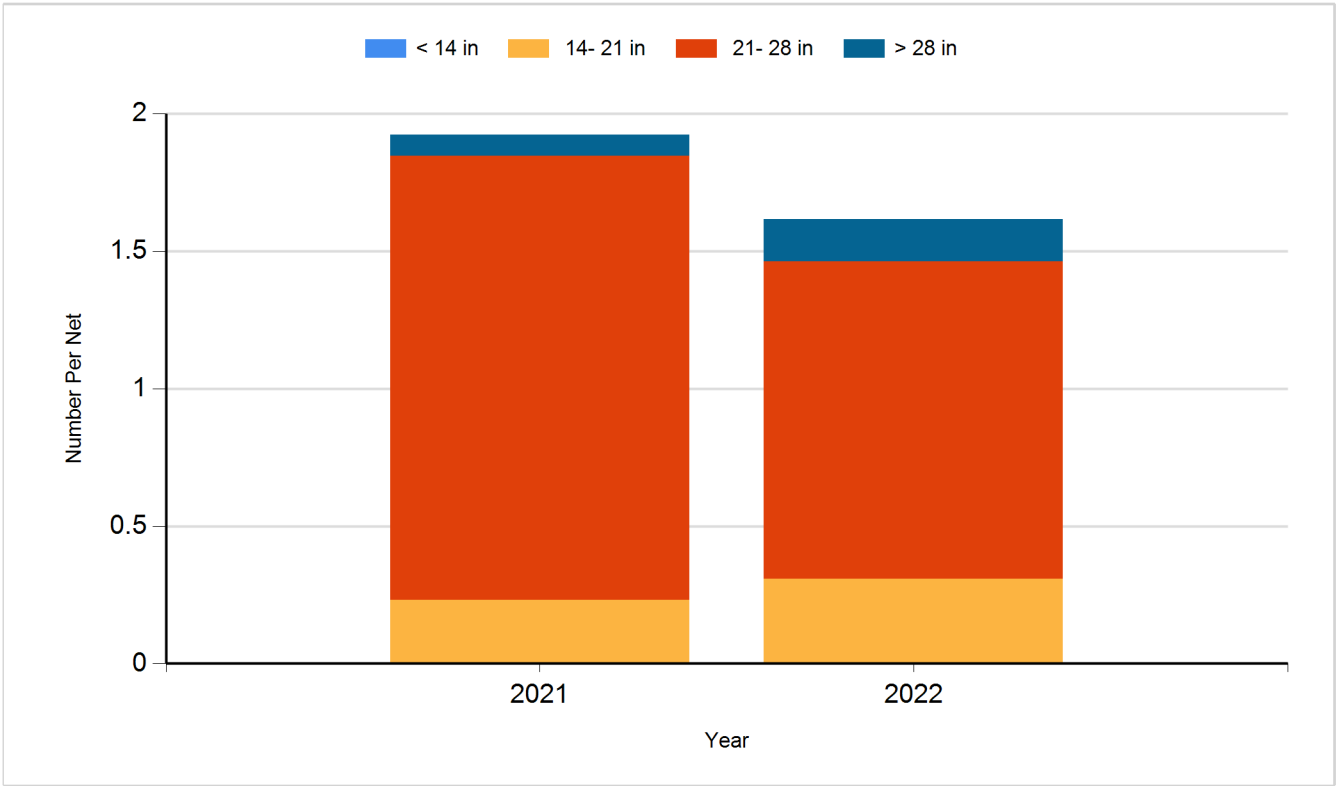
Species: Black Crappie
Gear: frame net (std 3/4 in)



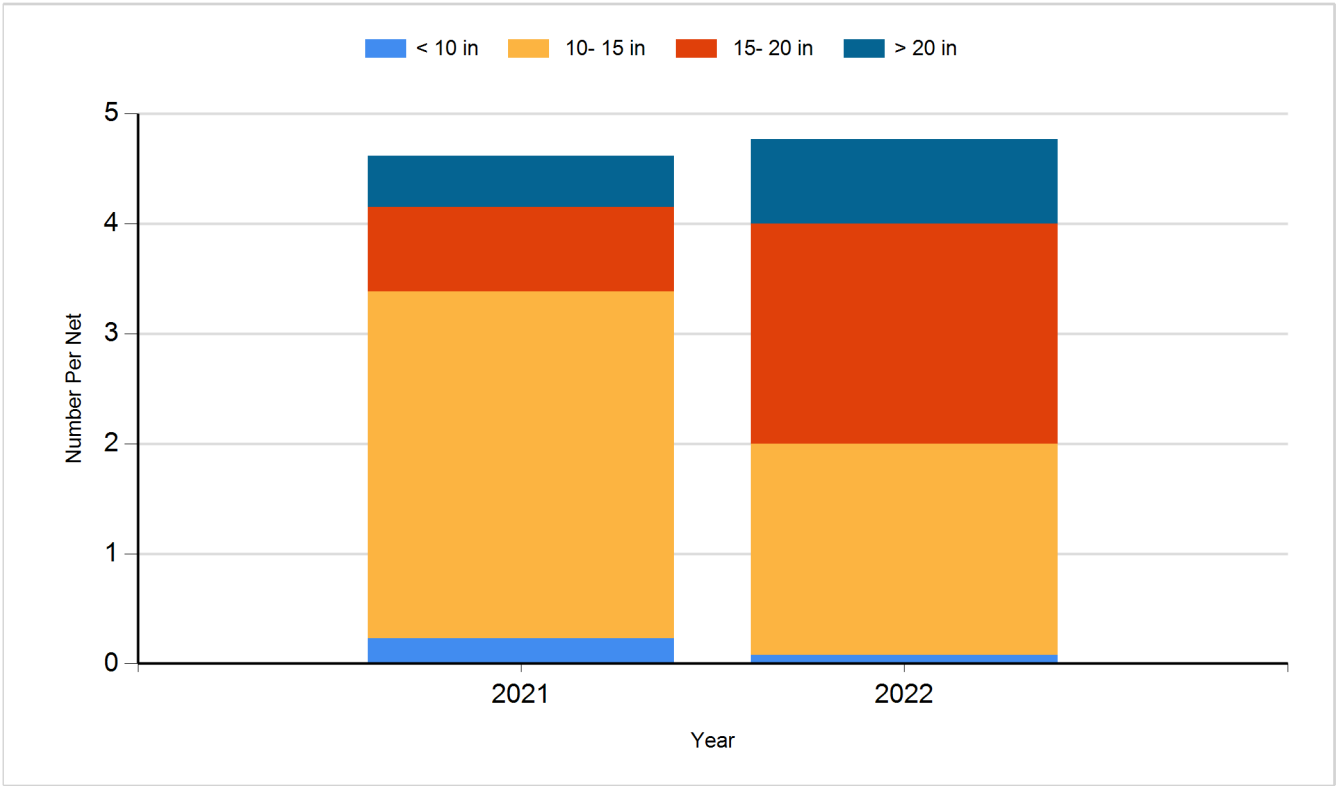
Species: Common Carp
Gear: AFS std gill net



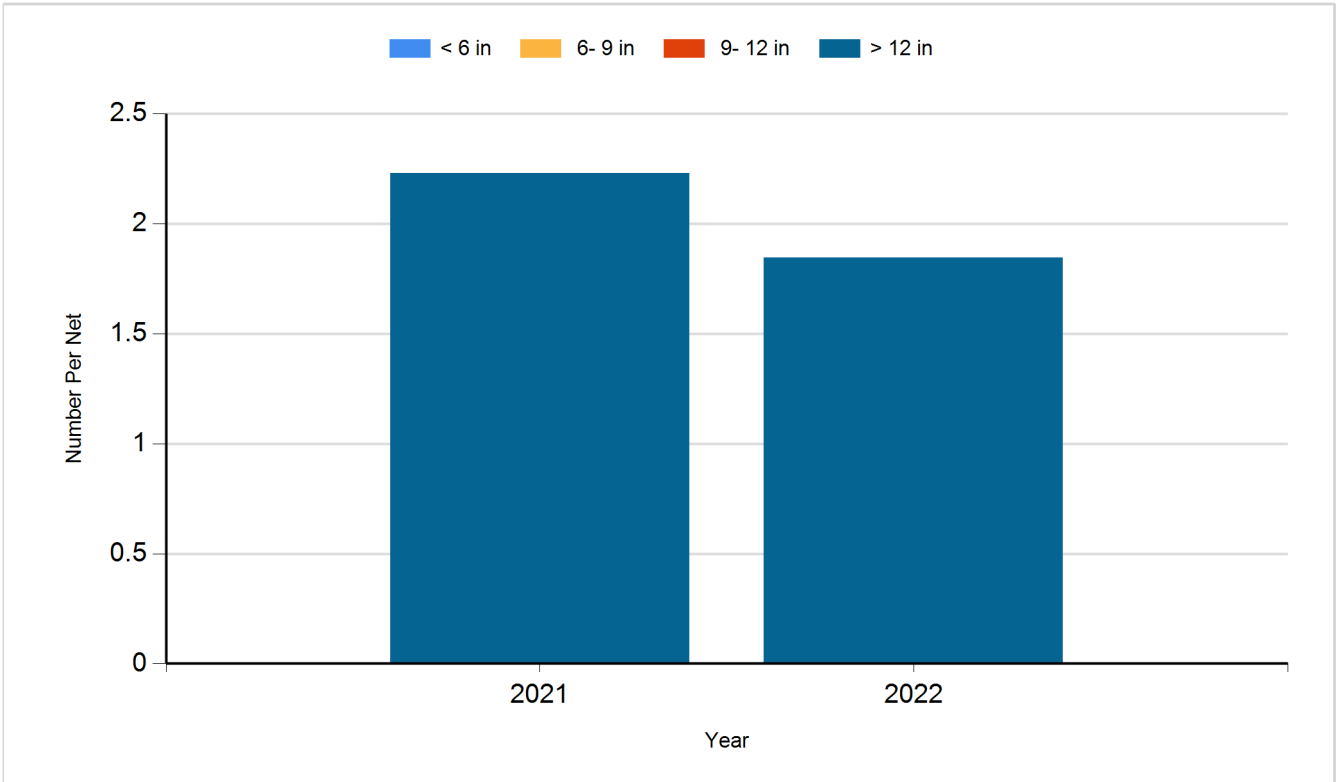
Species: Northern Pike
Gear: AFS std gill net



Species: Walleye
Gear: AFS std gill net



Species: White Bass
Gear: AFS std gill net



Species: Yellow Perch
Gear: AFS std gill net