Lake Thompson Survey Summary

Lake Thompson, located 6 miles south and 4 miles east of DeSmet, SD, is managed as a walleye, yellow perch, and black crappie fishery but other fish species (e.g., northern pike, white bass) are also present.

- **Walleye**. Walleye abundance decreased to a catch rate of 3.1 fish per gill net in 2023. Relative abundance was slightly lower than the previous year (4.7 fish per net) and the long term mean (4.1 fish per net). Netted fish measured from 7.1 to 27.2 inches with approximately 76% of sampled fish measuring >15 inches and 18% measuring >20 inches. At least ten different year classes of fish were represented in the sample with the age 1 and age 4 cohorts dominating the catch (21% and 36% of the catch, respectively). These two year classes of fish (2022 and 2019) happen to coincide with the last two walleye stockings to occur in Lake Thompson. Despite the slightly lower catch rates this year, Lake Thompson remains an excellent option for any angler targeting walleye.

- **Yellow Perch**. Sampling efforts produced 5.0 yellow perch per gill net in 2023 which is higher than the previous year (1.8 fish per net in 2022) and the long term mean (3.1 fish per net). Measured fish ranged from 4.7 to 12.6 inches in length with a substantial proportion measuring >10 inches (54%). In fact, no other lake in the southeast region produced more of these preferred and larger sized (>10 inches) fish. Most of these larger fish were 4 or 5 years old in age and produced during high water conditions present a few years ago (2019). They are exhibiting excellent growth achieving a mean length of 11.3 inches by age 4. Lake Thompson is definitely worth a look for any angler targeting large yellow perch.

- **Black Crappie**. Black crappie abundance increased to 4.0 fish per trap net in 2023. Relative abundance was higher than the previous year (2.3 fish per net in 2022) but slightly below the long term mean (5.2 fish per net). Sampled fish ranged from 10.2 to 13.4 inches long with a substantial proportion measuring >12 inches (45%). No other lake in the southeast region produced more of these memorable (>12 inches) sized fish. A high relative weight value (Wr = 109) also indicates that these fish were quite “plump” and healthy. Lake Thompson remains a premier destination for any angler targeting large black crappie.

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

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Thompson, Kingsbury County
LKT-Lake-55-000
2023

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	Jul 25, 2023	12 net-nights
AFS std gill net	Jul 26, 2023	12 net-nights
frame net (std 3/4 in)	Jul 25, 2023	5 net-nights
frame net (std 3/4 in)	Jul 26, 2023	5 net-nights

Common Fish Species Present

Walleye

Northern Pike

Yellow Perch

Black Crappie

White Bass

Common Carp

Smallmouth Bass

Bigmouth Buffalo

White Sucker

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 Crappie	23	1.0	0.4	100		96		117	7
	Common Carp	1	0.0	0.1	100		100		88	
	Northern Pike	28	1.2	0.2	82	12	21	12	74	3
	Walleye	95	3.1	0.6	69	8	23	7	85	1
	White Bass	86	3.6	1.2	99		99		93	1
	White Sucker	2	0.1	0.1	100		100			
	Yellow Perch	122	5.0	1.3	60	6	55	6	119	3
frame net (std 3/4 in)	Bigmouth Buffalo	6	0.6	0.4	100		17			
	Black Crappie	40	4.0	1.4	100		100		109	2
	Common Carp	14	1.4	0.8	100		93		92	2
	Northern Pike	84	8.4	4.8	92	5	7	4	74	1
	Smallmouth Bass	9	0.9	0.4	56		33		98	4
	Walleye	32	2.6	1.7	77	13	58	15	80	2
	White Bass	9	0.9	0.6	100		100		93	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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Avg
AFS std gill net	Bigmouth Buffalo								0.1	0.1	0.0	0.07
	Black Bullhead								1.2	0.6	0.0	0.60
	Black Crappie								1.5	1.8	1.0	1.43
	Common Carp								1.0	0.9	0.0	0.63
	Northern Pike								1.9	1.6	1.2	1.57
	Smallmouth Bass								0.1	0.0	0.0	0.03
	Walleye								4.4	4.7	3.1	4.07
	White Bass								2.2	1.8	3.6	2.53
	White Sucker								0.1	0.0	0.1	0.07
	Yellow Perch								2.5	1.8	5.0	3.10
frame net (std 3/4 in)	Bigmouth Buffalo								27.8	0.7	0.6	9.70
	Black Bullhead								15.6	0.6	0.0	5.40
	Black Crappie								9.4	2.3	4.0	5.23
	Bluegill								0.1	0.0	0.0	0.03
	Common Carp								3.4	0.3	1.4	1.70
	Northern Pike								11.4	2.7	8.4	7.50
	Smallmouth Bass								1.4	1.0	0.9	1.10
	Walleye								5.9	1.4	2.6	3.30
	White Bass								2.4	0.6	0.9	1.30
	White Sucker								0.1	0.0	0.0	0.03

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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AFS std gill net	Bigmouth Buffalo	PSD								100	0	
		PSD-P								0	0	
	Black Crappie	PSD								95	100	100
		PSD-P								70	100	96
		Wr								111	105	117
	Common Carp	PSD								92	100	100
		PSD-P								46	100	100
		Wr										88
	Northern Pike	PSD								88	81	82
		PSD-P								4	10	21
		Wr								78	76	74
	Smallmouth Bass	PSD								100		
		PSD-P								100		
		Wr								100		
	Walleye	PSD								28	59	69
		PSD-P								11	16	23
		Wr								86	83	85
	White Bass	PSD								100	100	99
		PSD-P								100	100	99
		Wr								94	94	93
	White Sucker	PSD								100		100
		PSD-P								100		100
	Yellow Perch	PSD								91	96	60
		PSD-P								47	67	55
		Wr								114	107	119
frame net (std 3/4 in)	Bigmouth Buffalo	PSD								96	100	100
		PSD-P								4	33	17
	Black Crappie	PSD								95	100	100
		PSD-P								53	100	100
		Wr								115	105	109
	Common Carp	PSD								93	100	100
		PSD-P								74	100	93
		Wr										92

			Year									
Gear	Species	Index	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
frame net (std 3/4 in)	Northern Pike	PSD								70	92	92
		PSD-P								11	21	7
		Wr								77	81	74
	Smallmouth Bass	PSD								45	33	56
		PSD-P								18	11	33
		Wr								138	104	98
	Walleye	PSD								17	77	77
		PSD-P								11	8	58
		Wr								88	83	80
	White Bass	PSD								100	100	100
		PSD-P								84	100	100
		Wr								95	88	93
	White Sucker	PSD								100		
		PSD-P								100		

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+
2023	95	196 (20)	283 (5)	373 (7)	396 (34)	452 (11)	492 (3)	614 (1)	533 (8)	516 (3)	608 (4)
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+
2023	122	152 (49)	233 (6)	274 (12)	288 (28)	287 (28)		321 (1)			
2022	24		227 (6)	269 (13)	279 (5)						
2021	32	140 (1)	230 (13)	256 (18)							

Fish Condition

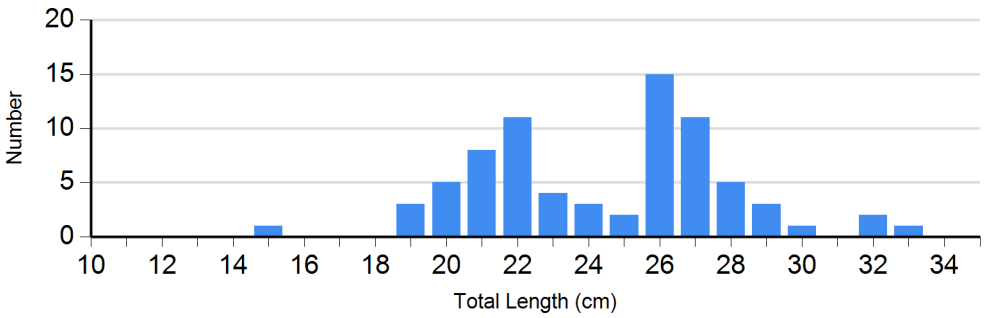
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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)
	2023	0		0		22	111 (1.7)	18	106 (1.6)
Common Carp Gill Net	2023	0		0		0		1	88
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	
	2023	5	70 (2.1)	17	71 (2.5)	4	88 (4.7)	2	85 (6.7)
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	
	2023	23	86 (1.0)	35	84 (1.2)	16	87 (2.1)	1	80
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)
	2023	1		0		30	97 (1.2)	55	90 (0.8)
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	
	2023	48	134 (4.7)	7	114 (3.0)	51	112 (1.3)	15	107 (2.1)

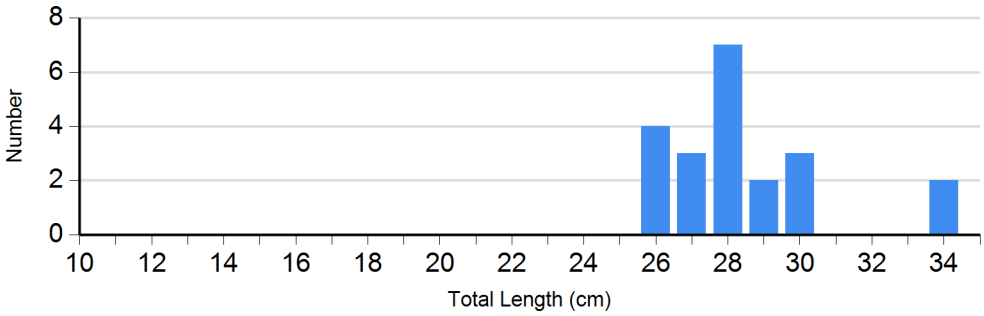
Length Frequency Distribution

Length frequency histogram of species sampled by year.

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



2021



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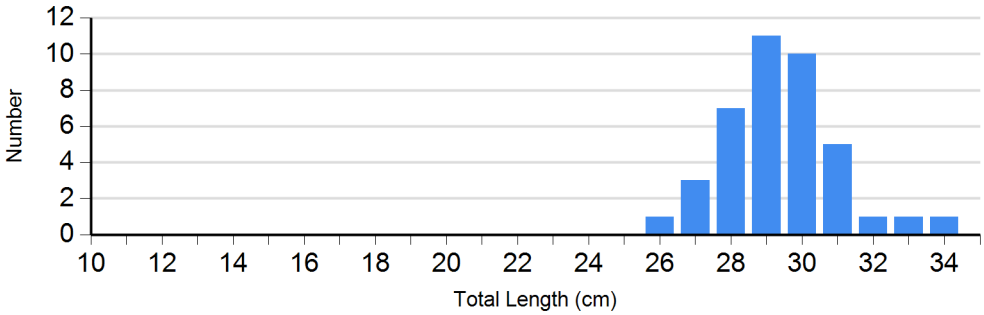
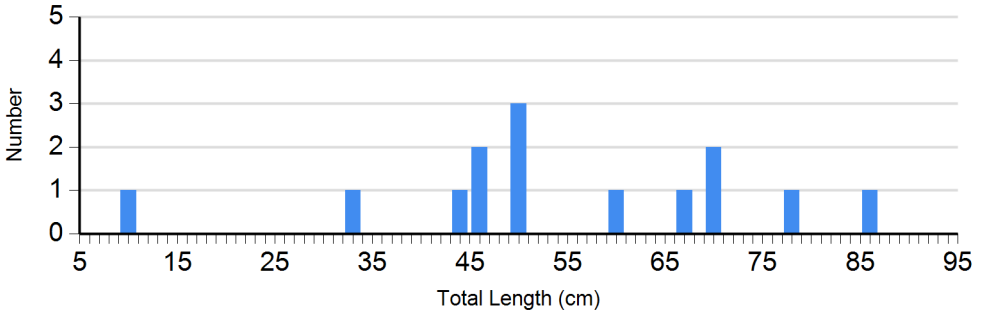
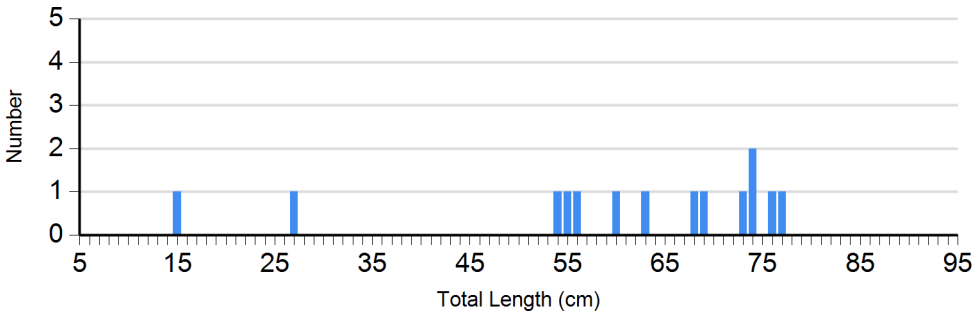


2023

Species: Common Carp
Gear: AFS std gill net

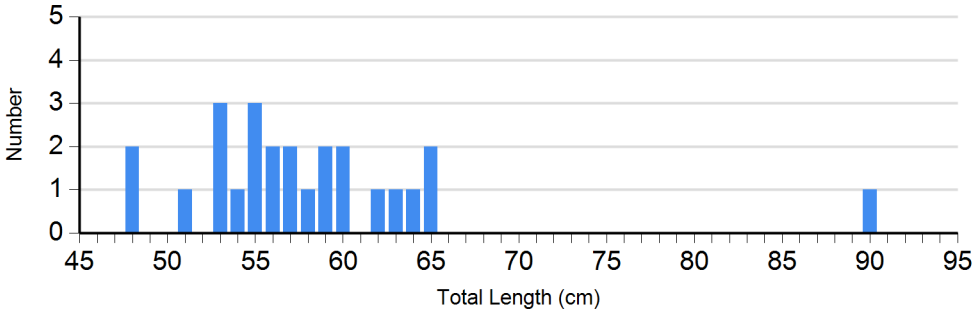


2021



2022

Species: Northern Pike
Gear: AFS std gill net



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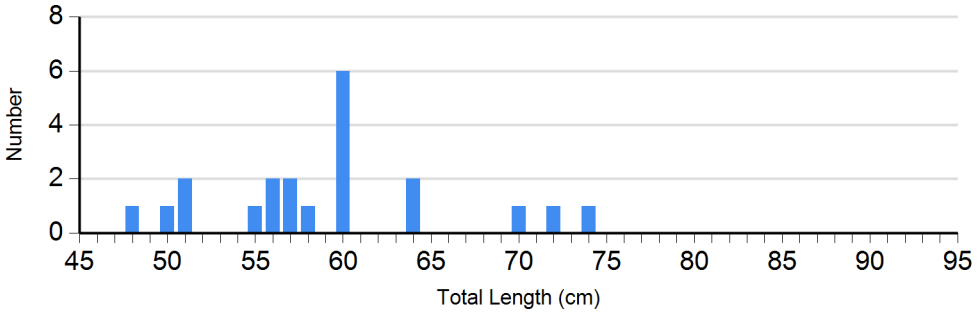

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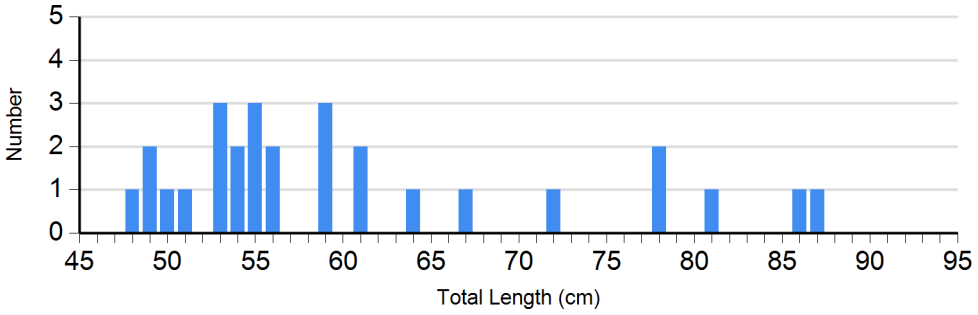
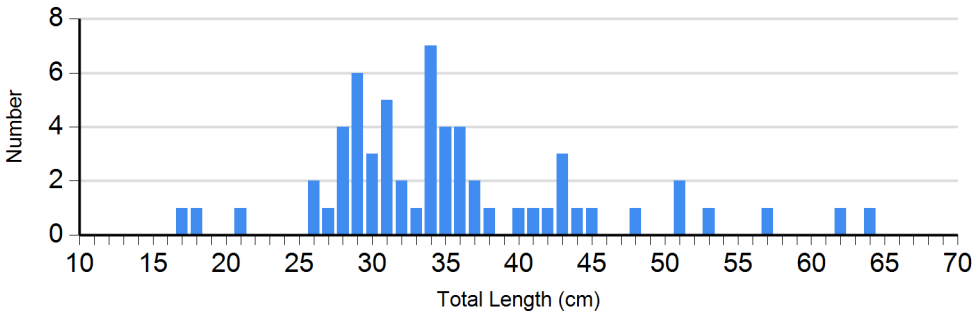
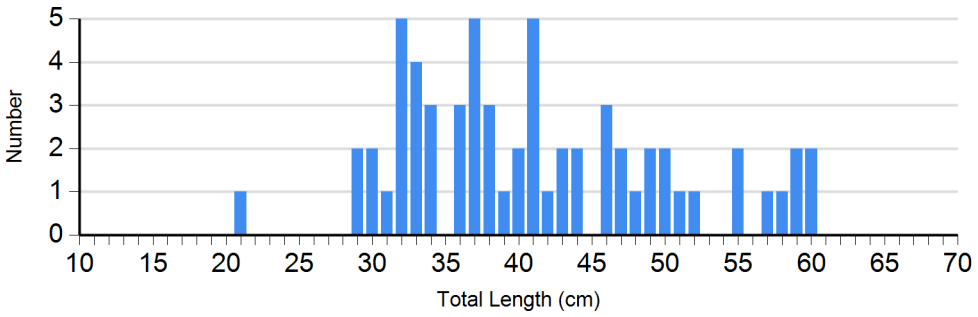


2023

Species: Walleye
Gear: AFS std gill net



2021



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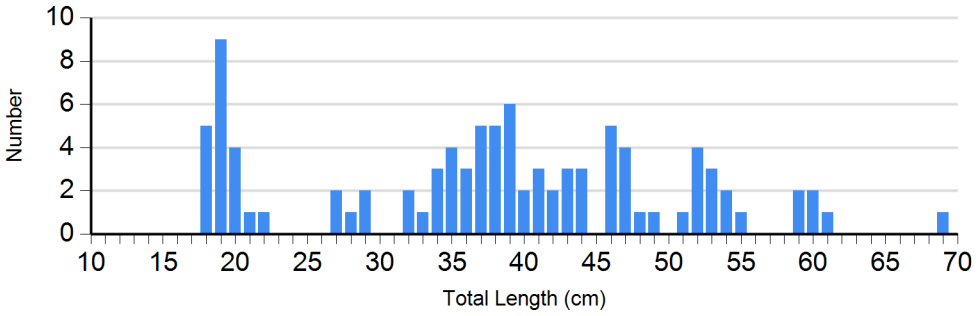
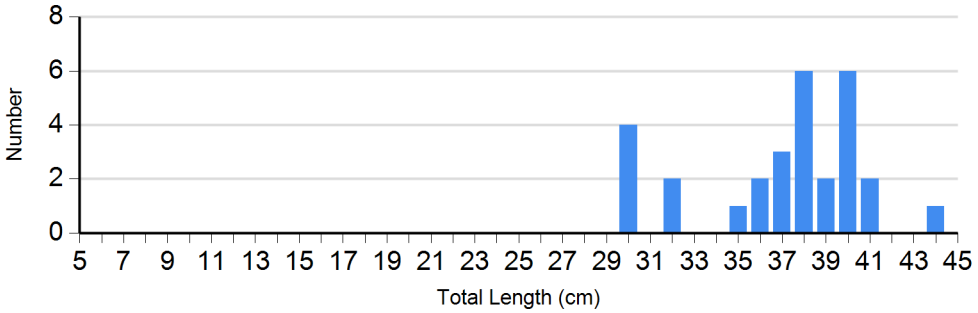
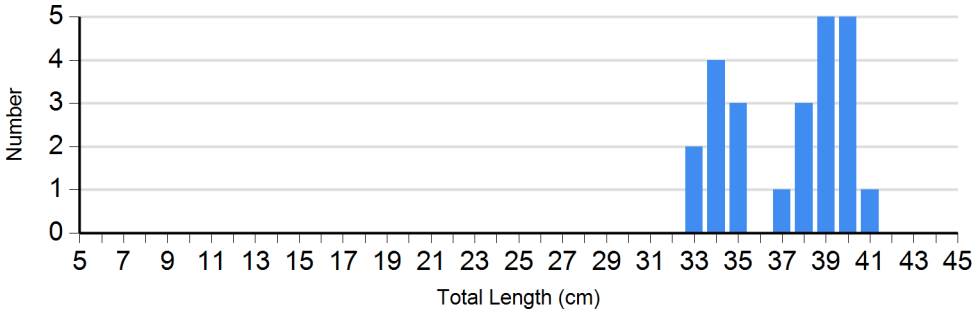


2023

Species: White Bass
Gear: AFS std gill net



2021



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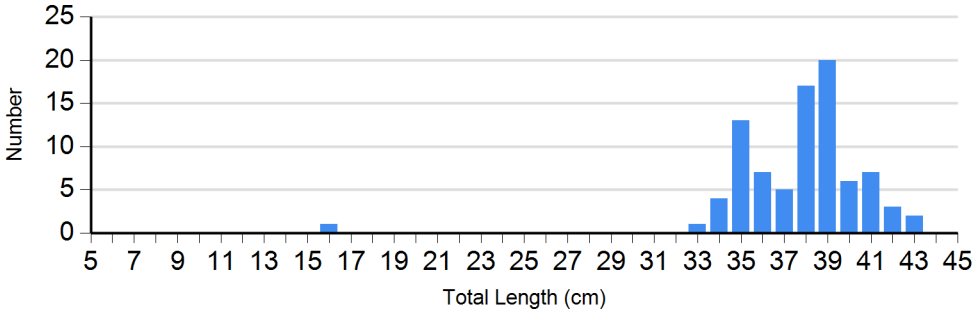
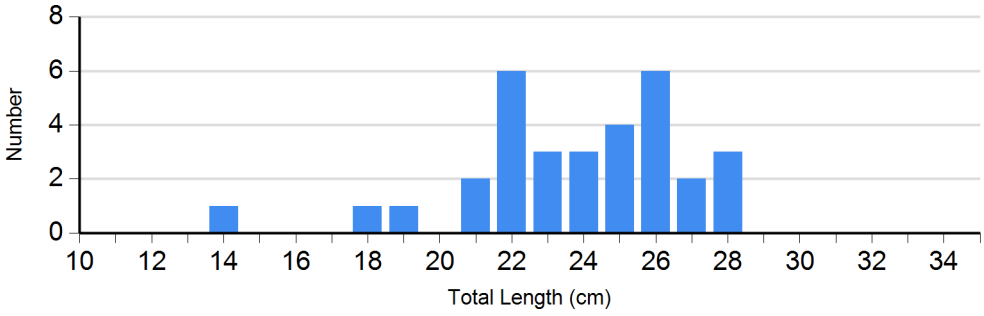


2023

Species: Yellow Perch
Gear: AFS std gill net



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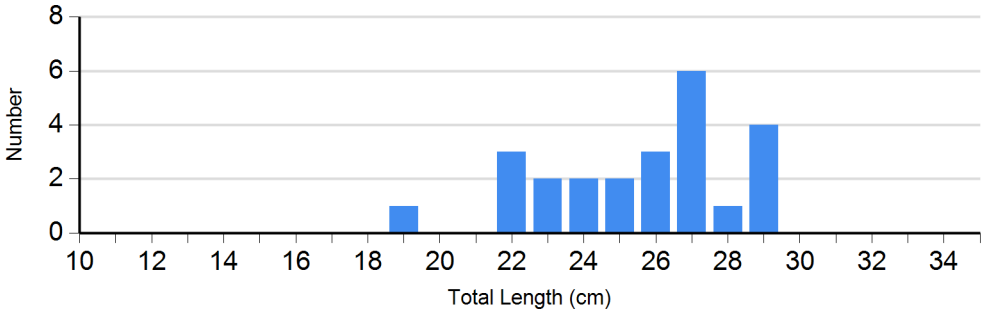
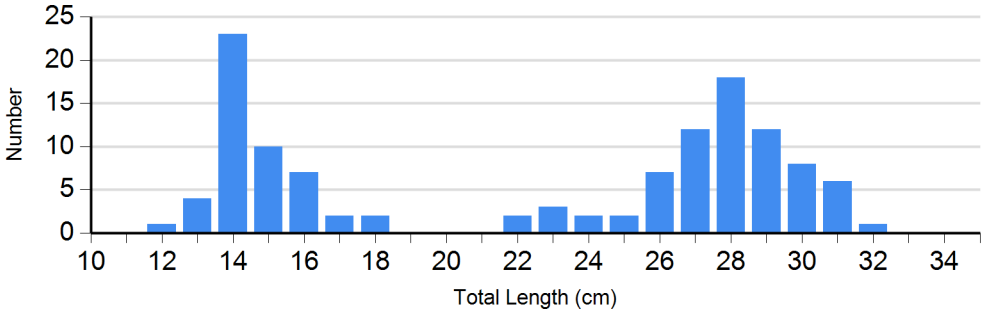


2022

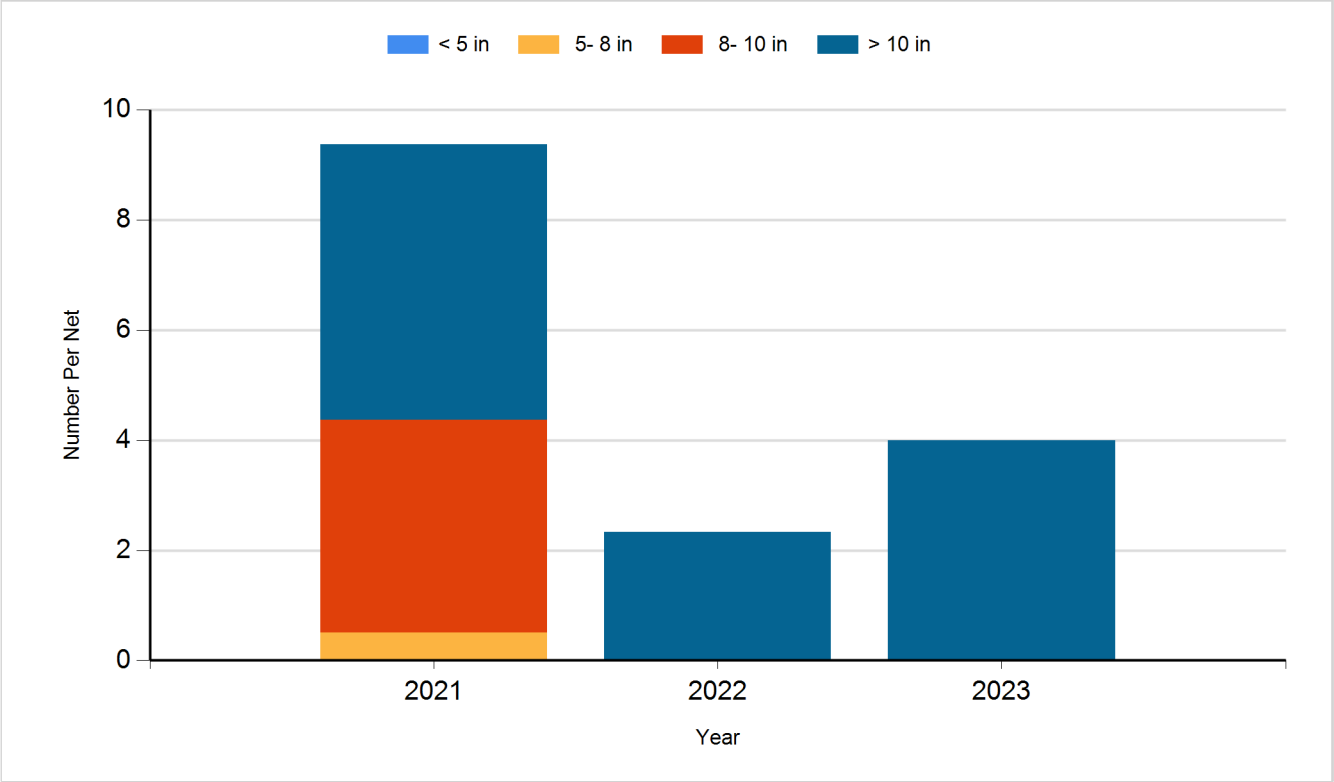


2023

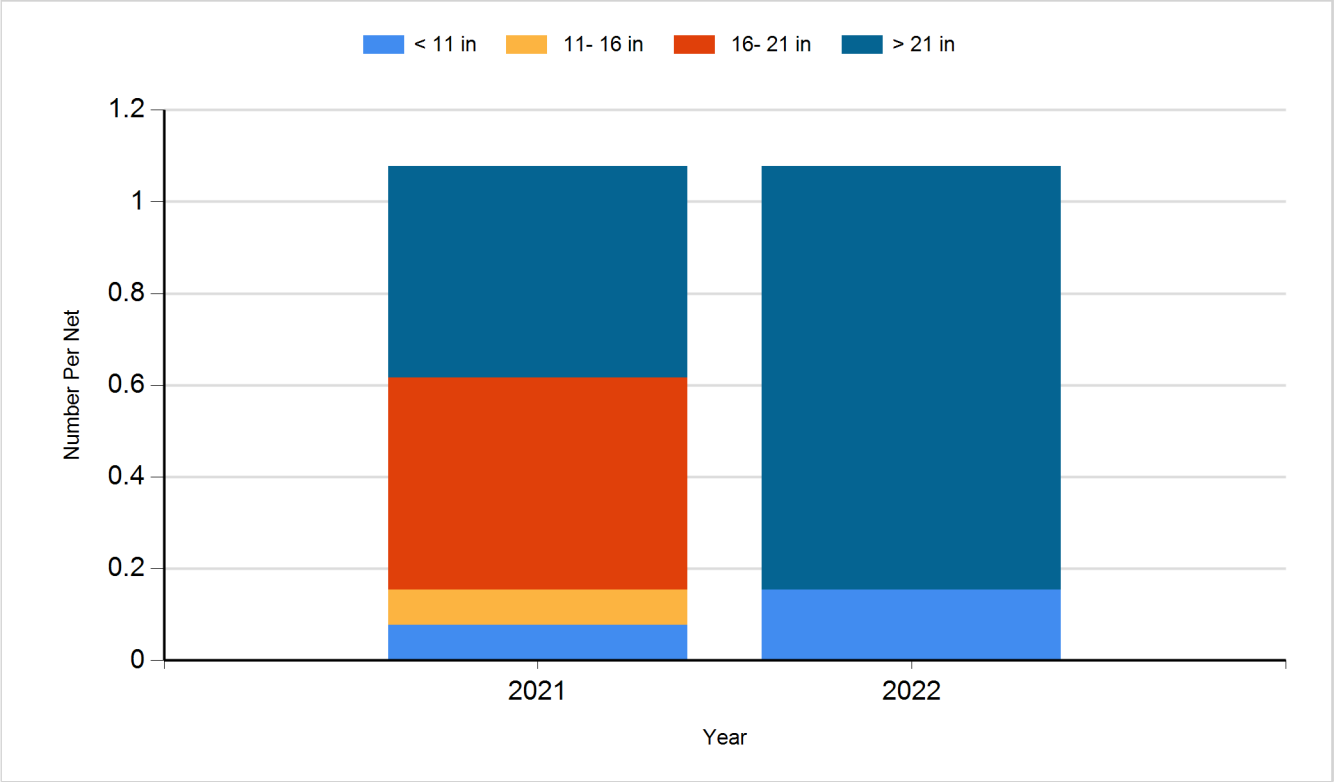
Historic Fish Sizes and Relative Abundance

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

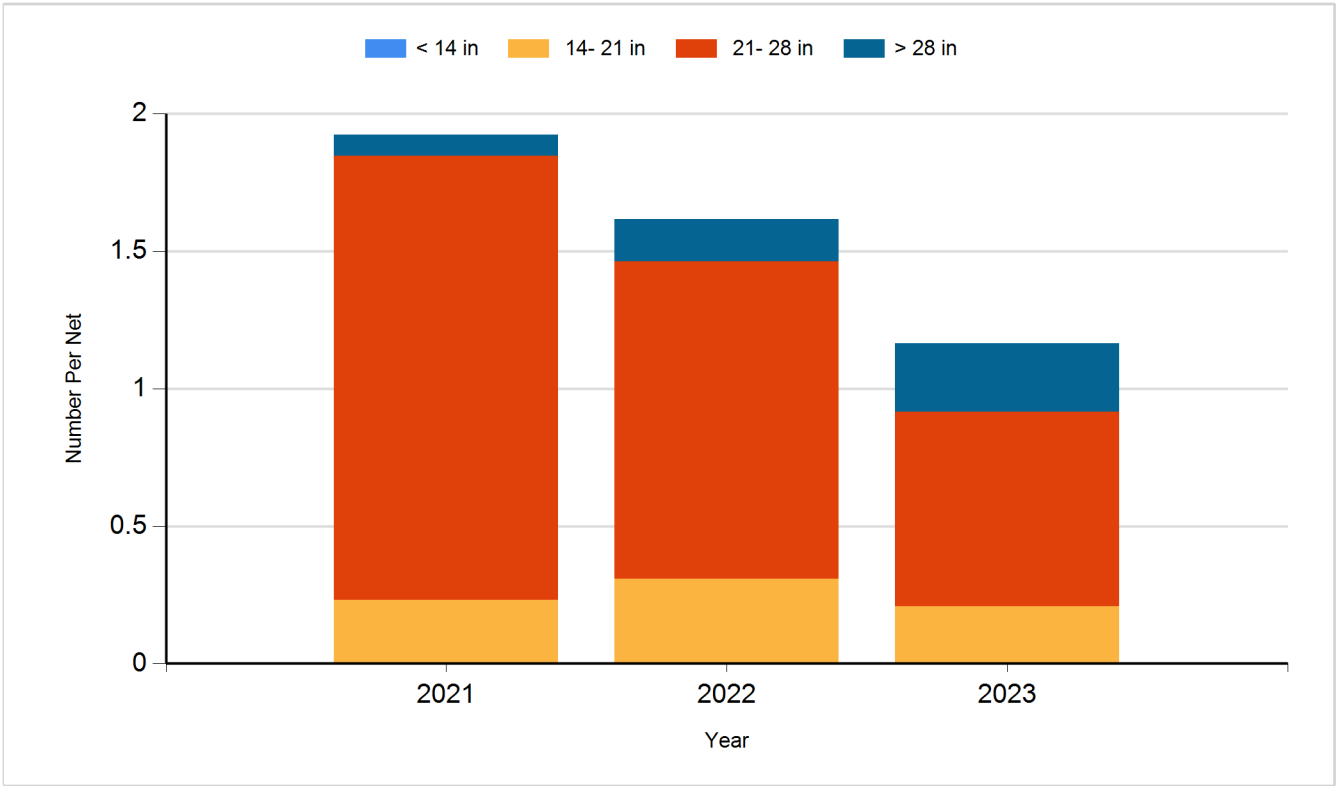
Species: Black Crappie
Gear: frame net (std 3/4 in)



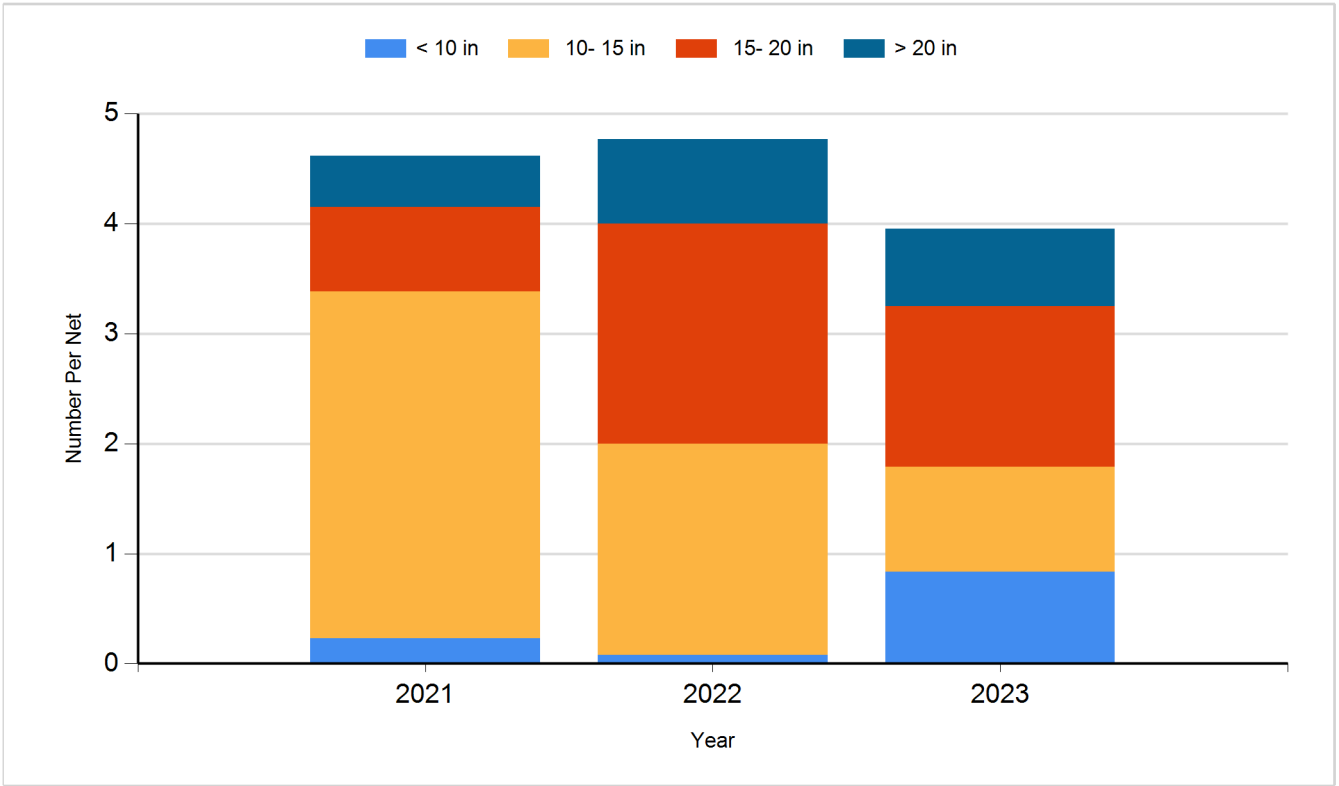
Species: Common Carp
Gear: AFS std gill net



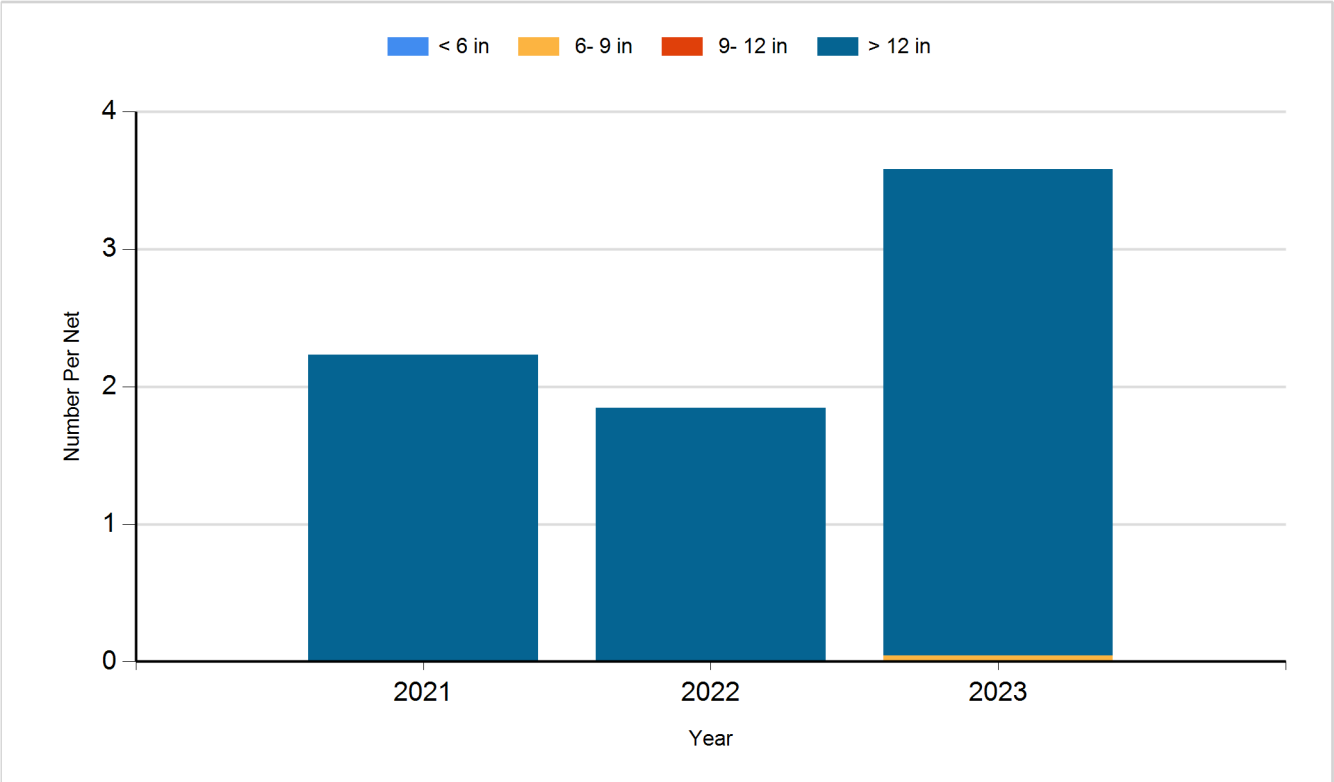
Species: Northern Pike
Gear: AFS std gill net



Species: Walleye
Gear: AFS std gill net



Species: White Bass
Gear: AFS std gill net



Species: Yellow Perch
Gear: AFS std gill net