West Stink Survey Summary

West Stink Lake, located 3.0 miles north of Eden, is managed as a walleye and yellow perch fishery. Other fish species (e.g., black bullhead) are present and may contribute to the fishery.

- **Walleye.** More walleyes were sampled in 2023 than in 2020. At 10.3/gill net, relative abundance was considered moderate to high for West Stink Lake. Sampled walleyes ranged in length from 7.1 to 28.3 inches; of those that were at least 10.0 inches 85% were ≥15.0 inches and 18% were 20.0 inches or longer. Eleven year classes produced between 2008 and 2022 were represented in the gill net catch. Fish from the 2019 (age-4) cohort, which coincided with a fry stocking, were the most abundant accounting for 73% of walleyes in the sample. The 2023 sample suggested good walleye growth with a mean length at capture at age 4 of 16.0 inches.

- **Yellow Perch**. Yellow perch numbers were considerably lower in 2023 than in 2020. Relative abundance was considered low (2.9/gill net). Sampled yellow perch ranged in length from 5.5 to 10.2 inches, 20% were ≥8.0 inches and 3% were 10.0 inches or longer. Four consecutive year classes (2018 – 2021) contributed to the catch. Individuals from the 2021 (age-2) cohort, which had mean length at capture of 6.5 inches, were the most abundant accounting for 76% of yellow perch in the sample.

For more detailed results see the computer generated South Dakota Statewide Fisheries Survey for Stink West (Marshall; below)

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SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Stink West, Marshall County
UJA-Lake-782-000
2023

Lake Information

Name: Stink West

County: Marshall

Surface Area: 797 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 06, 2023	4 net-nights
AFS std gill net	Jun 07, 2023	4 net-nights
AFS std gill net	Jun 08, 2023	4 net-nights

Common Fish Species Present

Yellow Perch

Northern Pike

Walleye

White Sucker

Black Bullhead

Common Carp

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	6	0.5	0.6	83		83		103	5
	Common Carp	2	0.2	0.2	100		50		108	0
	Walleye	127	10.3	2.7	85	5	18	5	84	1
	White Sucker	53	4.4	0.8	100		100		105	2
	Yellow Perch	35	2.9	2.1	20	11	3		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	Black Bullhead				0.4			0.0			0.5	0.30
	Common Carp				0.0			0.2			0.2	0.13
	Walleye				10.5			5.3			10.3	8.70
	White Sucker				0.9			0.2			4.4	1.83
	Yellow Perch				3.8			43.2			2.9	16.63
std exp gill net	Black Bullhead	0.7										0.70
	Walleye	57.3										57.30
	White Sucker	0.7										0.70
	Yellow Perch	3.0										3.00

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	Walleye	PSD				83			66			85
		PSD-P				29			53			18
		Wr				90			90			84
	Yellow Perch	PSD				22			24			20
		PSD-P				15			1			3
		Wr				102			105			93
std exp gill net	Walleye	PSD	87									
		PSD-P	11									
		Wr	91									
	Yellow Perch	PSD	67									
		PSD-P	67									
		Wr	97									

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	127	192 (3)	345 (4)	375 (5)	407 (93)		522 (1)		644 (1)	641 (5)	636 (15)
2020	33	178 (1)	280 (1)	365 (12)	393 (1)	530 (2)	520 (4)			583 (5)	601 (7)
2017	127	185 (1)	324 (7)	386 (42)	465 (6)		505 (47)	516 (8)	563 (9)	559 (6)	581 (1)
2014	173	191 (1)	313 (2)	395 (124)	461 (18)	511 (17)	538 (9)			533 (1)	

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	34		165 (26)	196 (1)	229 (6)	260 (1)					
2020	259	131 (1)	147 (8)	187 (246)	237 (2)	270 (2)					
2017	46		163 (37)	236 (2)	299 (5)					357 (2)	
2014	40	103 (32)	170 (2)		291 (4)		347 (2)				

Fish Condition

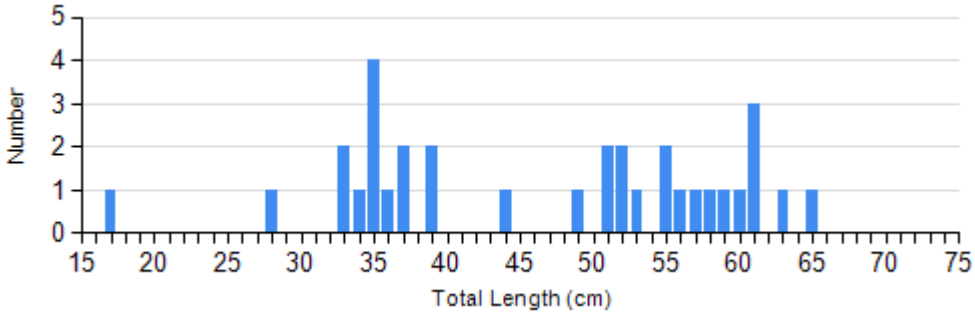
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2020	11	87 (1.6)	4	97 (3.5)	15	91 (2.7)	2	94 (0.8)
	2023	19	86 (1.2)	83	84 (0.6)	7	84 (2.0)	15	80 (1.1)
Yellow Perch Gill Net	2020	198	105 (0.5)	59	104 (1.0)	2	91 (1.4)	0	
	2023	28	95 (1.2)	6	82 (2.0)	1	93	0	

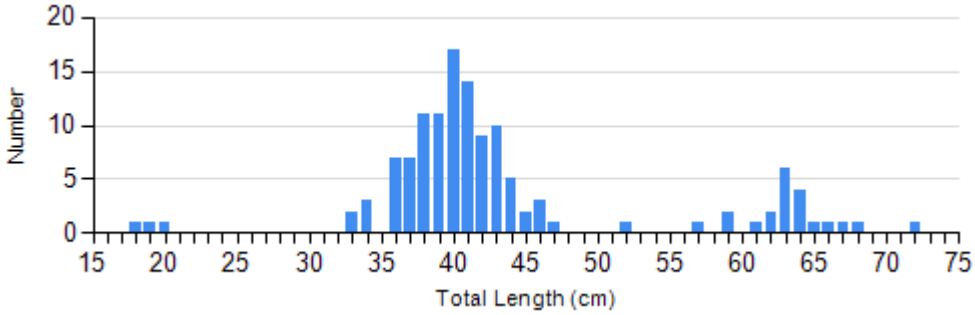
Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Walleye
Gear: AFS std gill net

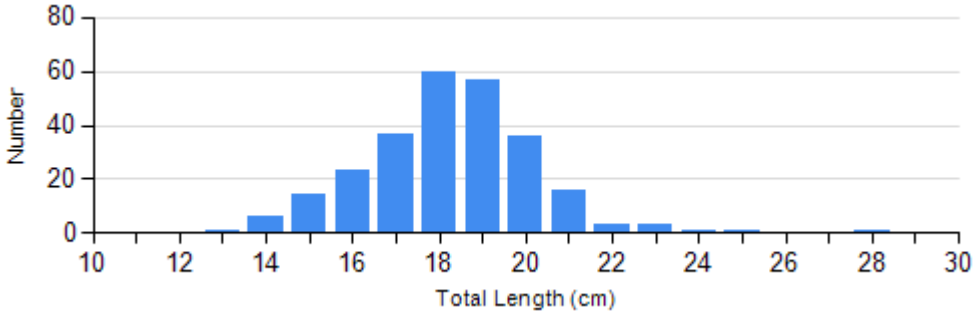


2020

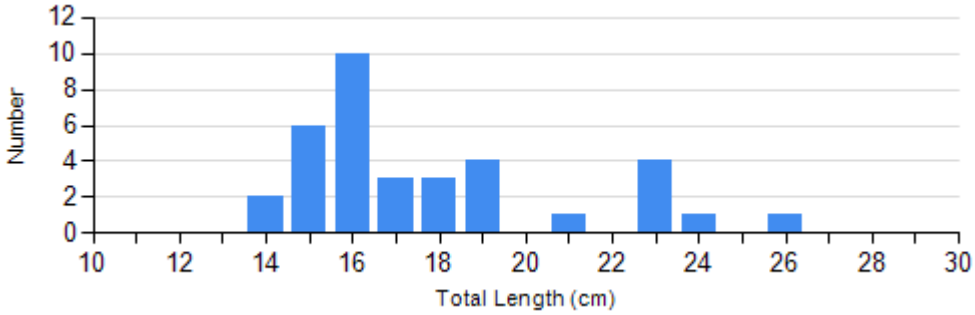


2023

Species: Yellow Perch
Gear: AFS std gill net



2020

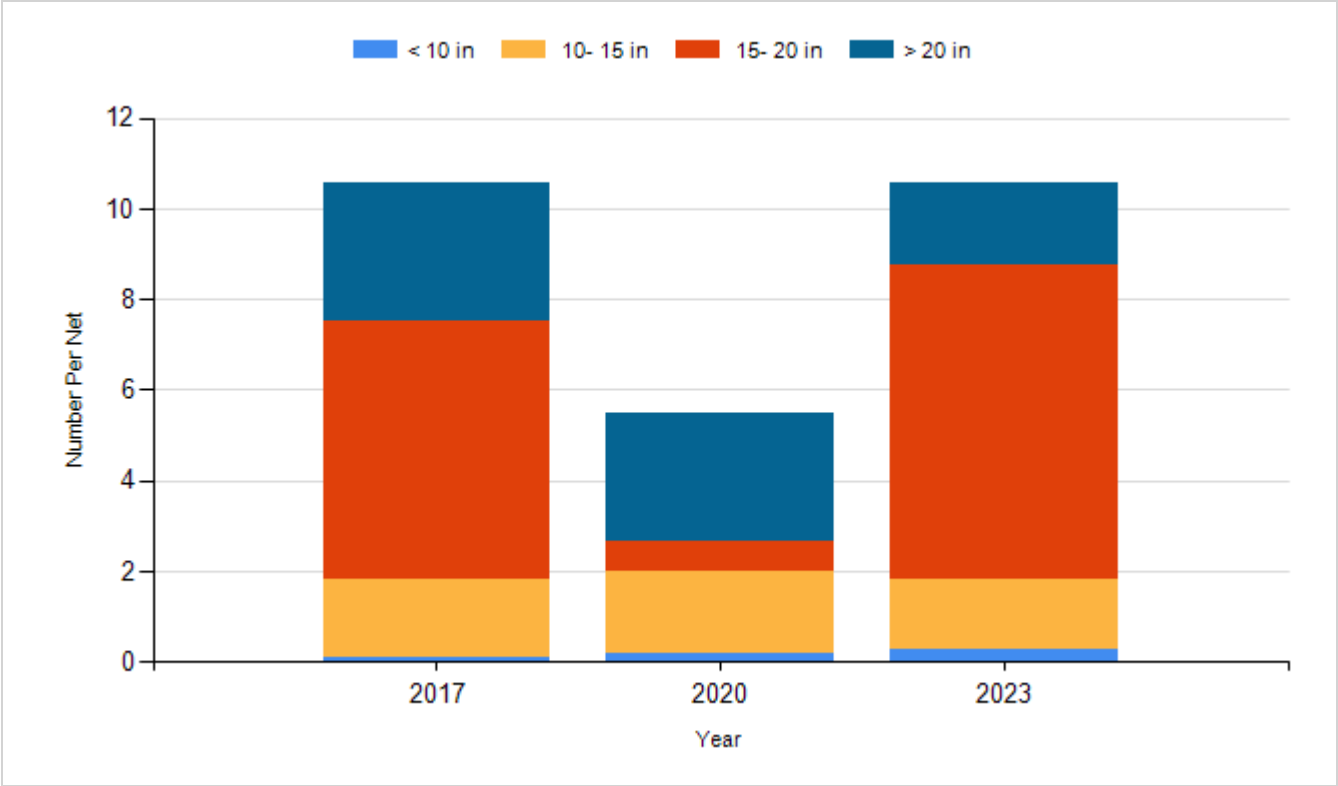


2023

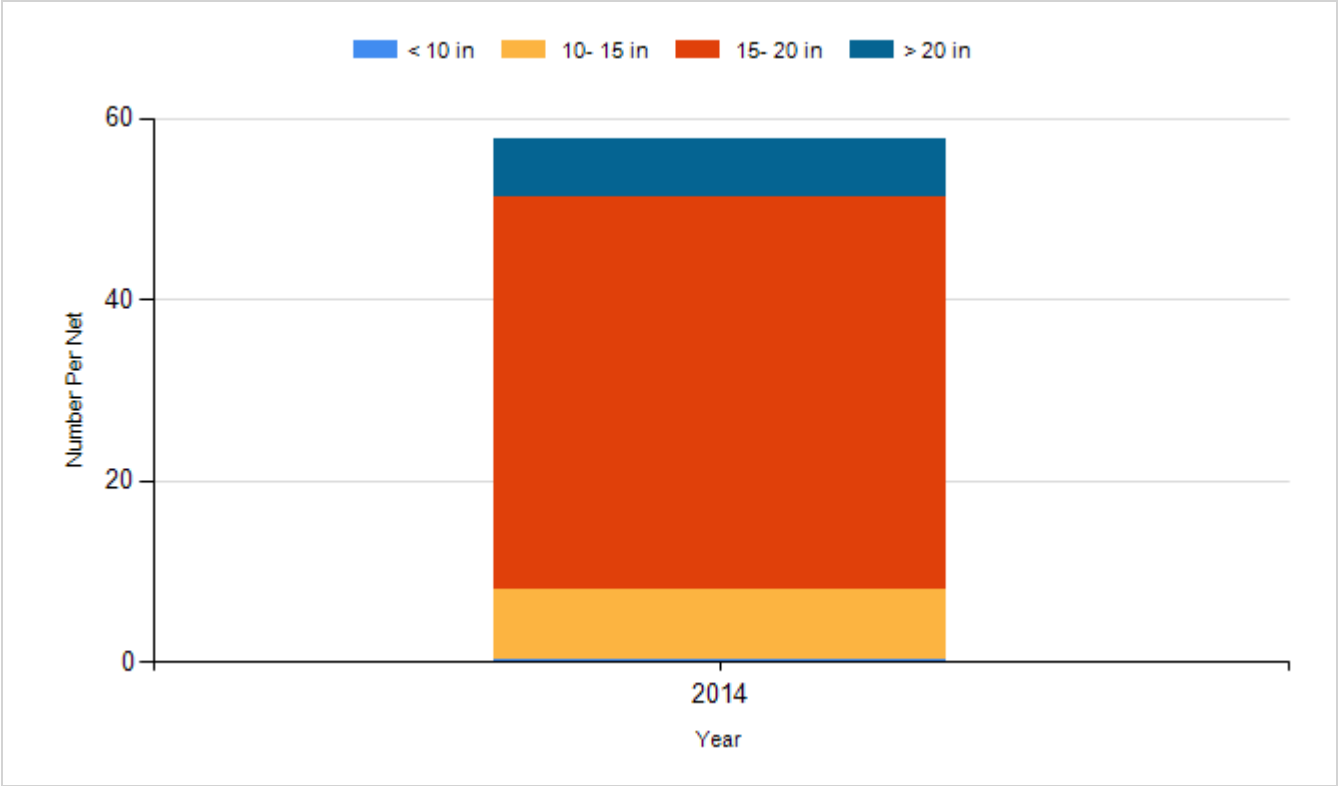
Historic Fish Sizes and Relative Abundance

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

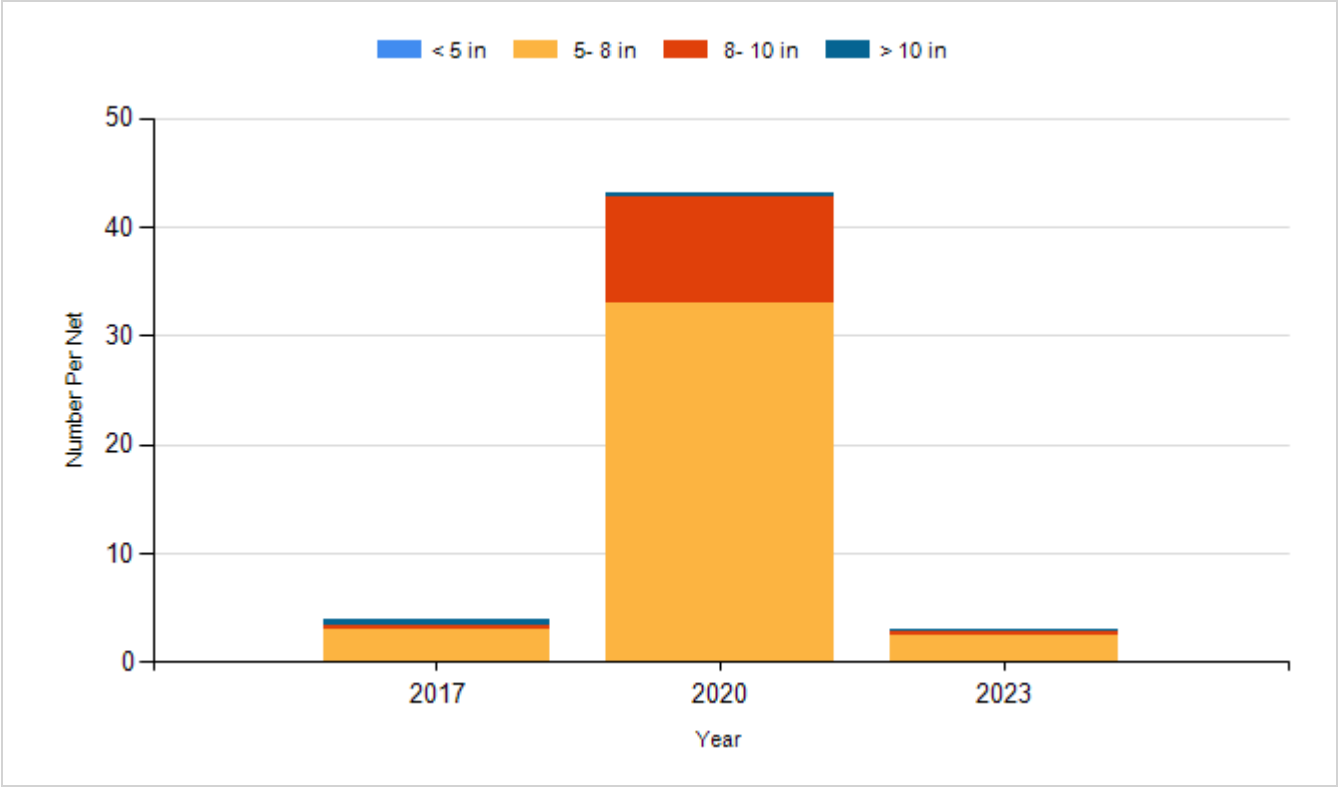
Species: Walleye
Gear: AFS std gill net



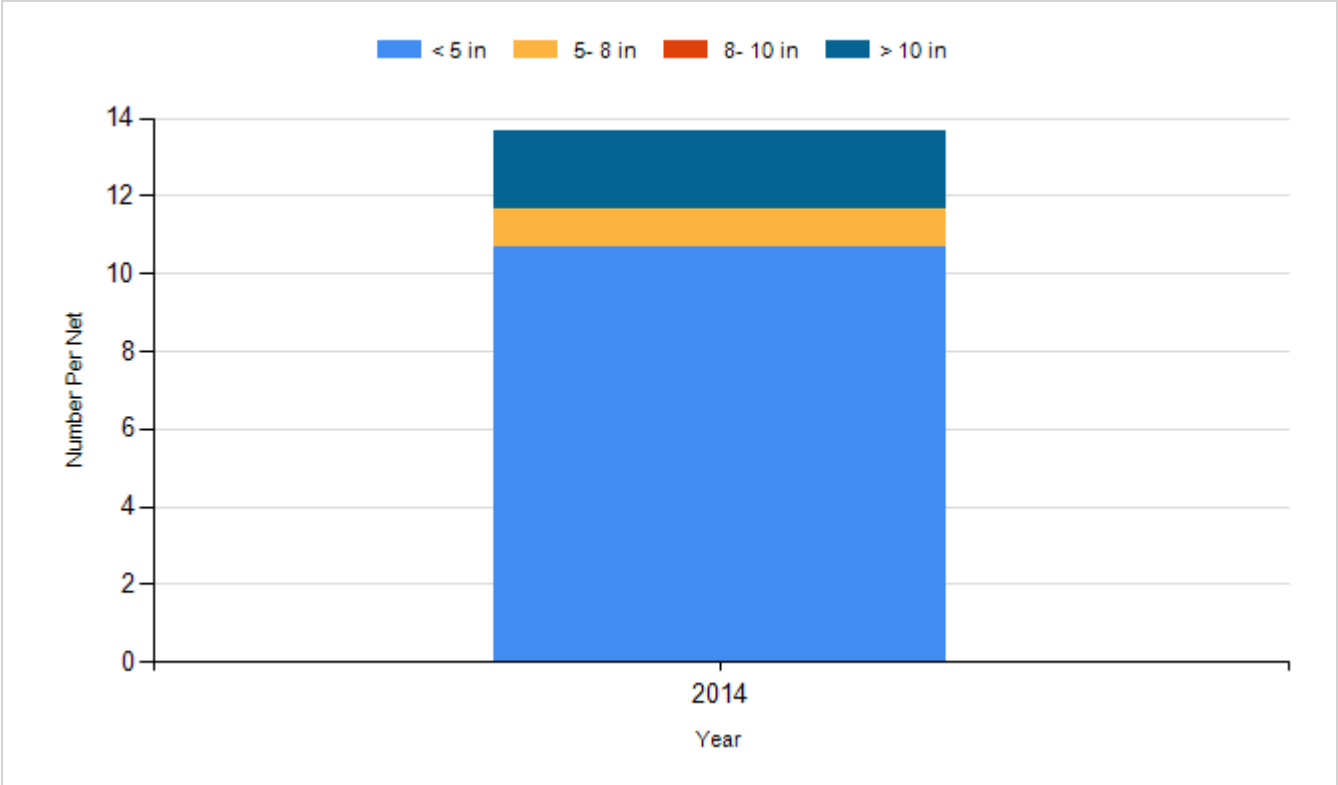
Species: Walleye
Gear: std exp gill net



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
2013	Walleye	Fry	300,000
2015	Walleye	Fry	250,000
2017	Walleye	Fry	300,000
2019	Walleye	Fry	300,000
2021	Walleye	Fry	300,000
2023	Walleye	Fry	300,000

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Stink West, Marshall County
UJA-Lake-782-000
2023

Lake Information

Name: Stink West

County: Marshall

Surface Area: 797 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 06, 2023	4 net-nights
AFS std gill net	Jun 07, 2023	4 net-nights
AFS std gill net	Jun 08, 2023	4 net-nights

Common Fish Species Present

Yellow Perch

Northern Pike

Walleye

White Sucker

Black Bullhead

Common Carp

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	6	0.5	0.6	83		83		103	5
	Common Carp	2	0.2	0.2	100		50		108	0
	Walleye	127	10.3	2.7	85	5	18	5	84	1
	White Sucker	53	4.4	0.8	100		100		105	2
	Yellow Perch	35	2.9	2.1	20	11	3		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	Black Bullhead				0.4			0.0			0.5	0.30
	Common Carp				0.0			0.2			0.2	0.13
	Walleye				10.5			5.3			10.3	8.70
	White Sucker				0.9			0.2			4.4	1.83
	Yellow Perch				3.8			43.2			2.9	16.63
std exp gill net	Black Bullhead	0.7										0.70
	Walleye	57.3										57.30
	White Sucker	0.7										0.70
	Yellow Perch	3.0										3.00

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	Black Bullhead	PSD				100						83
		PSD-P				100						83
		Wr				142						103
	Common Carp	PSD							100			100
		PSD-P							100			50
		Wr							101			108
	Walleye	PSD				83			66			85
		PSD-P				29			53			18
		Wr				90			90			84
	White Sucker	PSD				100			100			100
		PSD-P				100			100			100
		Wr				108			112			105
	Yellow Perch	PSD				22			24			20
		PSD-P				15			1			3
		Wr				102			105			93
std exp gill net	Black Bullhead	PSD	50									
		PSD-P	50									
		Wr	94									
	Walleye	PSD	87									
		PSD-P	11									
		Wr	91									
	White Sucker	PSD	100									
		PSD-P	100									
		Wr	114									
	Yellow Perch	PSD	67									
		PSD-P	67									
		Wr	97									

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	127	192 (3)	345 (4)	375 (5)	407 (93)		522 (1)		644 (1)	641 (5)	636 (15)
2020	33	178 (1)	280 (1)	365 (12)	393 (1)	530 (2)	520 (4)			583 (5)	601 (7)
2017	127	185 (1)	324 (7)	386 (42)	465 (6)		505 (47)	516 (8)	563 (9)	559 (6)	581 (1)
2014	173	191 (1)	313 (2)	395 (124)	461 (18)	511 (17)	538 (9)			533 (1)	

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	34		165 (26)	196 (1)	229 (6)	260 (1)					
2020	259	131 (1)	147 (8)	187 (246)	237 (2)	270 (2)					
2017	46		163 (37)	236 (2)	299 (5)					357 (2)	
2014	40	103 (32)	170 (2)		291 (4)		347 (2)				

Fish Condition

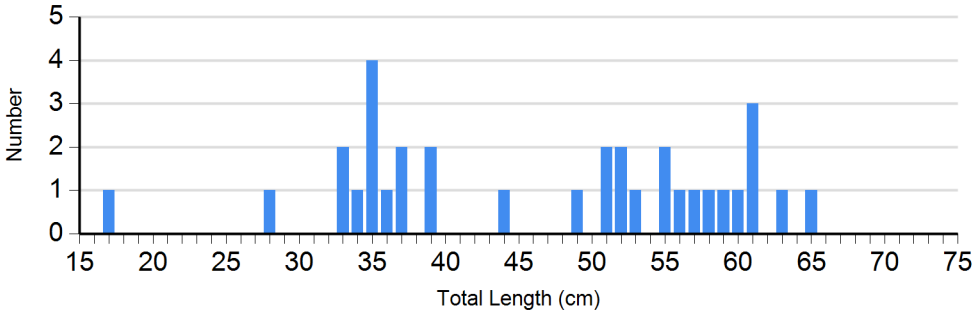
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Bullhead Gill Net	2023	1	107	0		4	106 (3.7)	1	86
Common Carp Gill Net	2020	0		0		1	101	0	
	2023	0		1	108	1	108	0	
Walleye Gill Net	2020	11	87 (1.6)	4	97 (3.5)	15	91 (2.7)	2	94 (0.8)
	2023	19	86 (1.2)	83	84 (0.6)	7	84 (2.0)	15	80 (1.1)
White Sucker Gill Net	2020	0		0		0		1	112
	2023	0		0		0		53	105 (1.5)
Yellow Perch Gill Net	2020	198	105 (0.5)	59	104 (1.0)	2	91 (1.4)	0	
	2023	28	95 (1.2)	6	82 (2.0)	1	93	0	

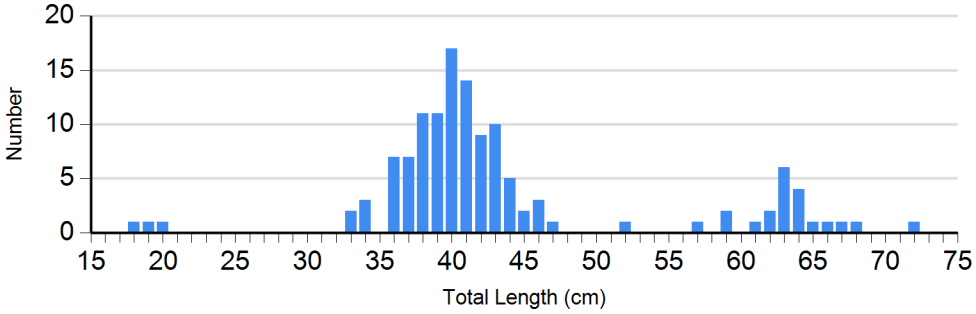
Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Walleye
Gear: AFS std gill net

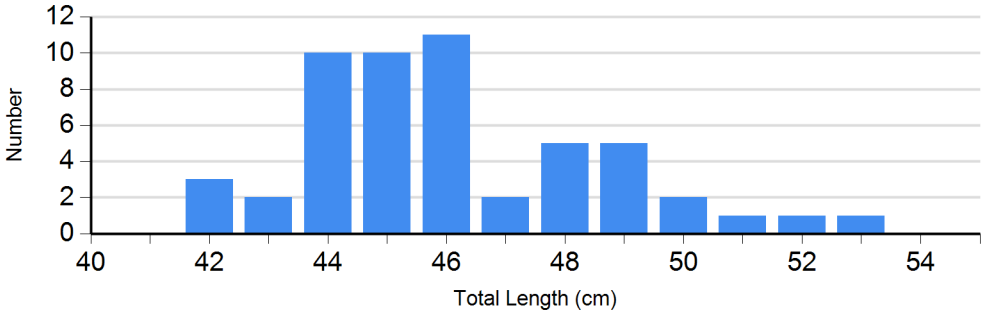


2020



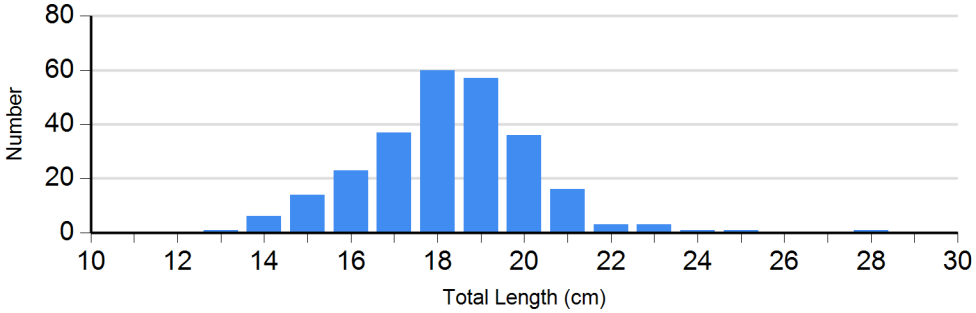
2023

Species: White Sucker
Gear: AFS std gill net

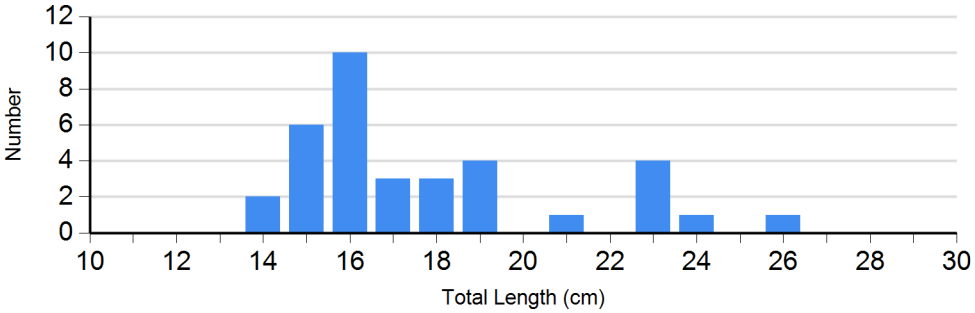


2023

Species: Yellow Perch
Gear: AFS std gill net



2020

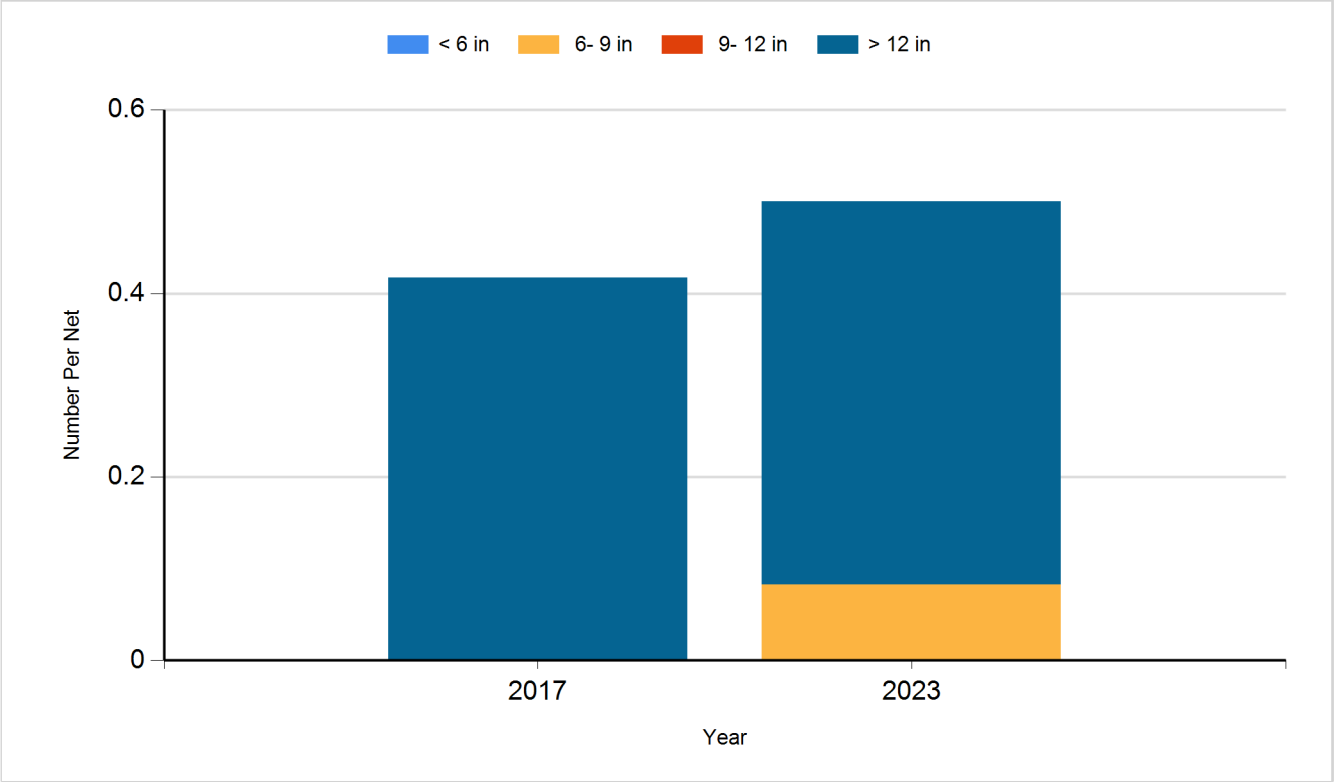

12
10
8
6
4
2
0
Number
10
12
14
16
18
20
22
24
26
28
30
Total Length (cm)

2023

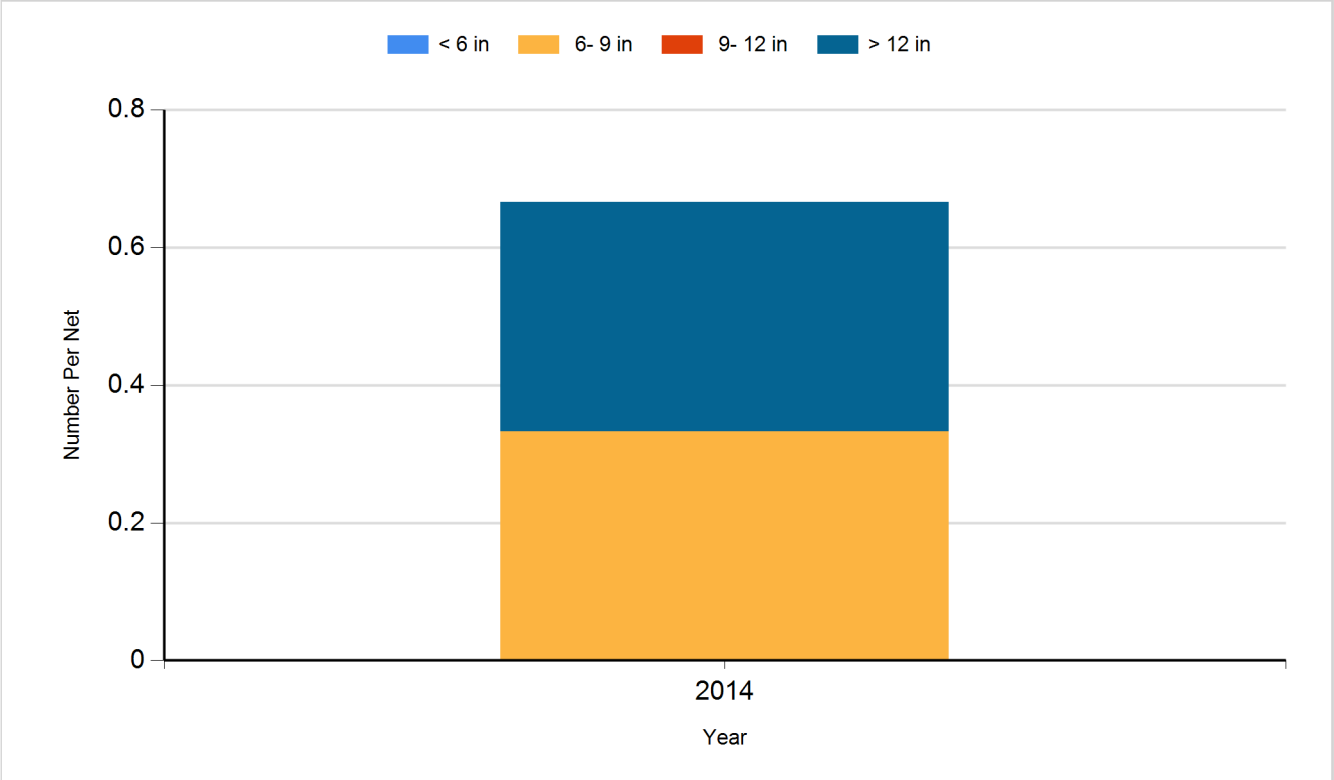
Historic Fish Sizes and Relative Abundance

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

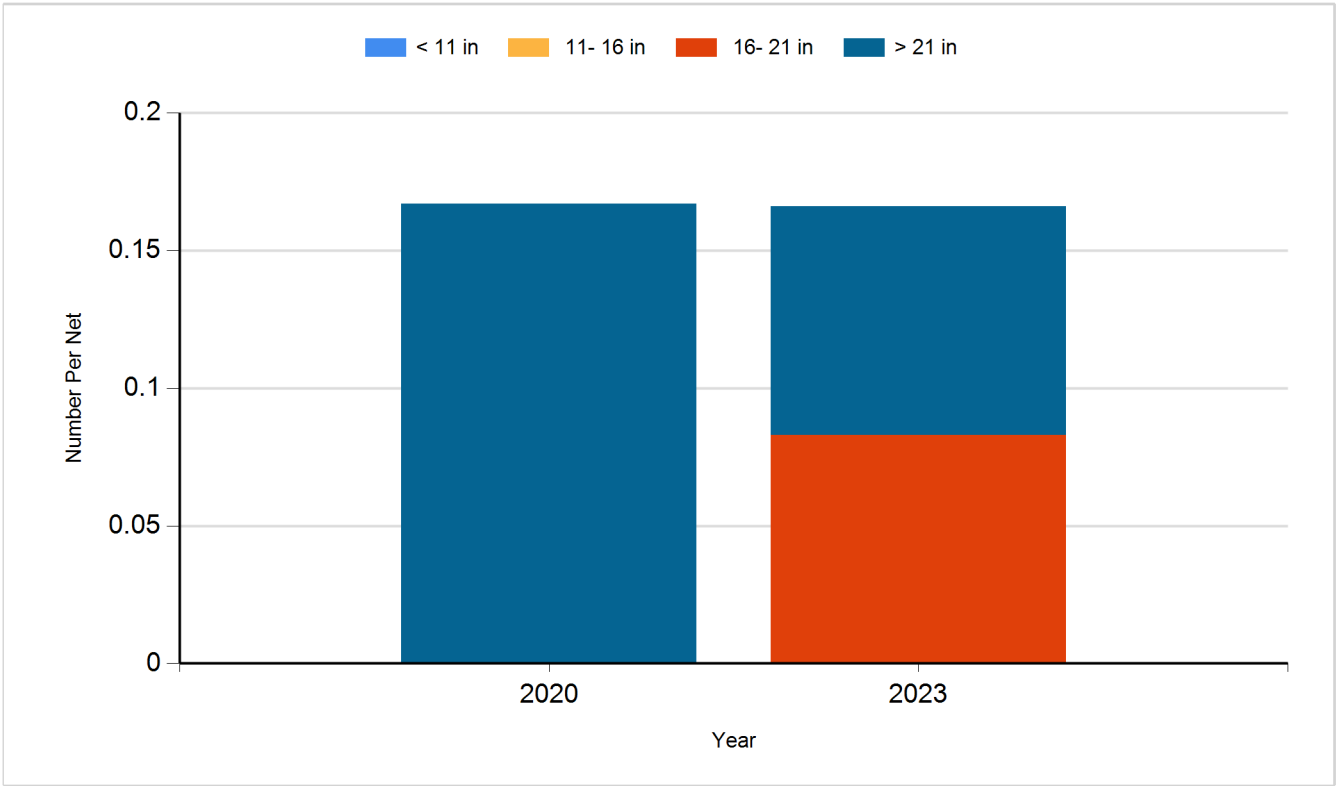
Species: Black Bullhead
Gear: AFS std gill net



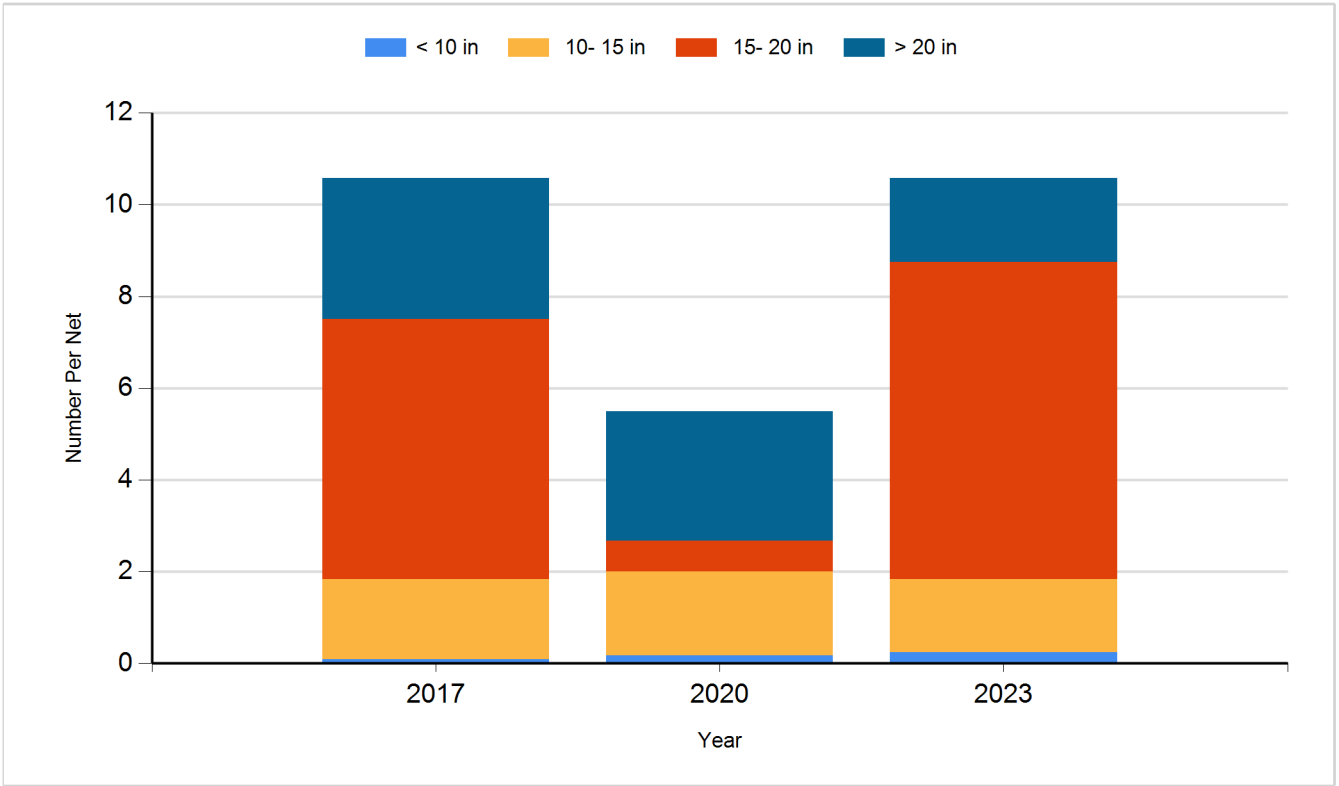
Species: Black Bullhead
Gear: std exp gill net



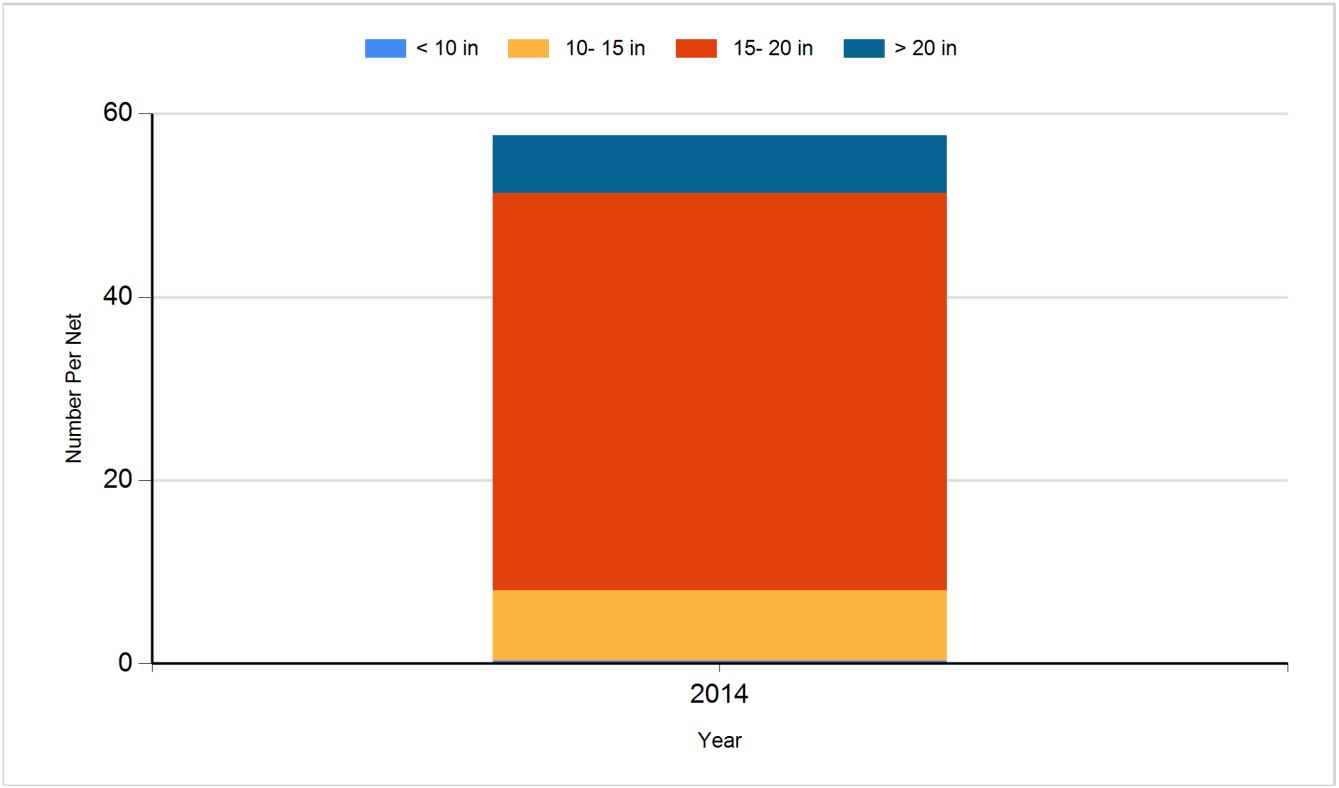
Species: Common Carp
Gear: AFS std gill net



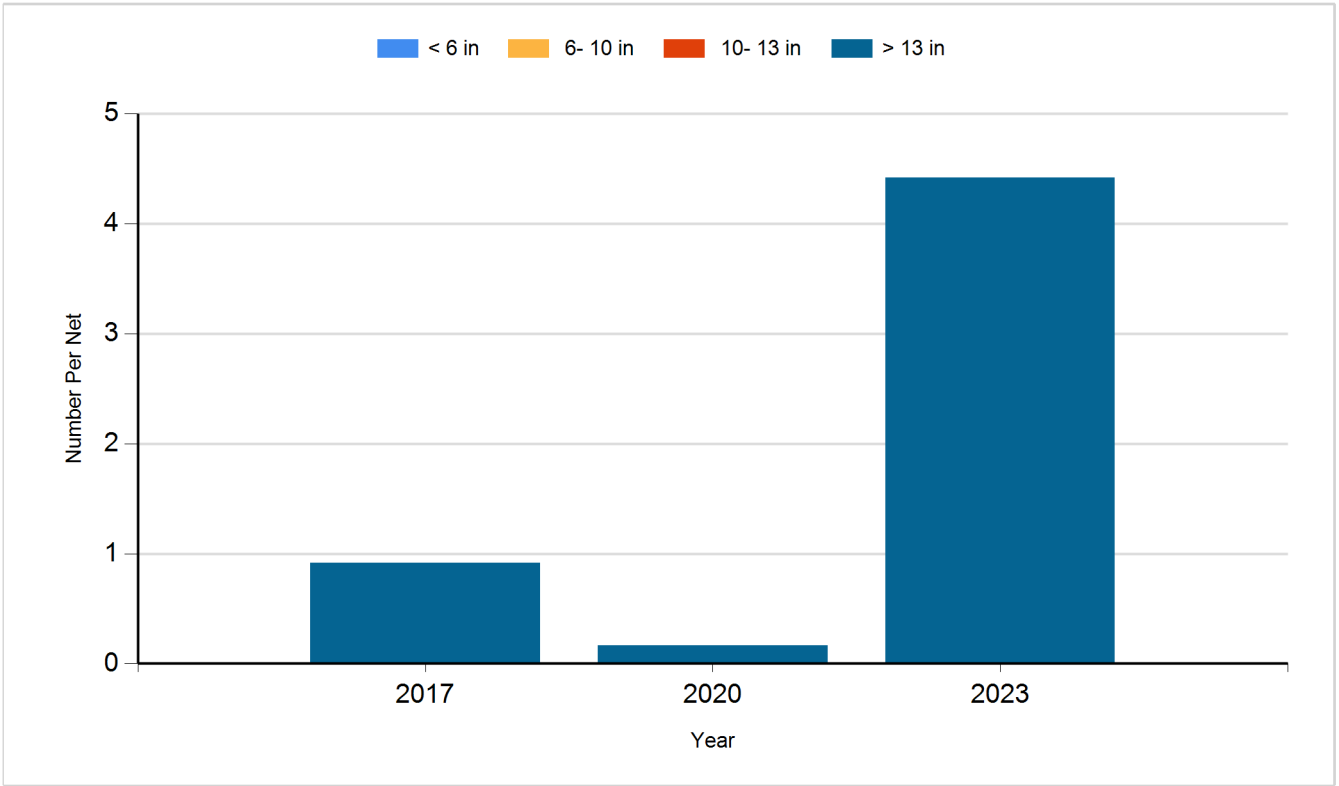
Species: Walleye
Gear: AFS std gill net



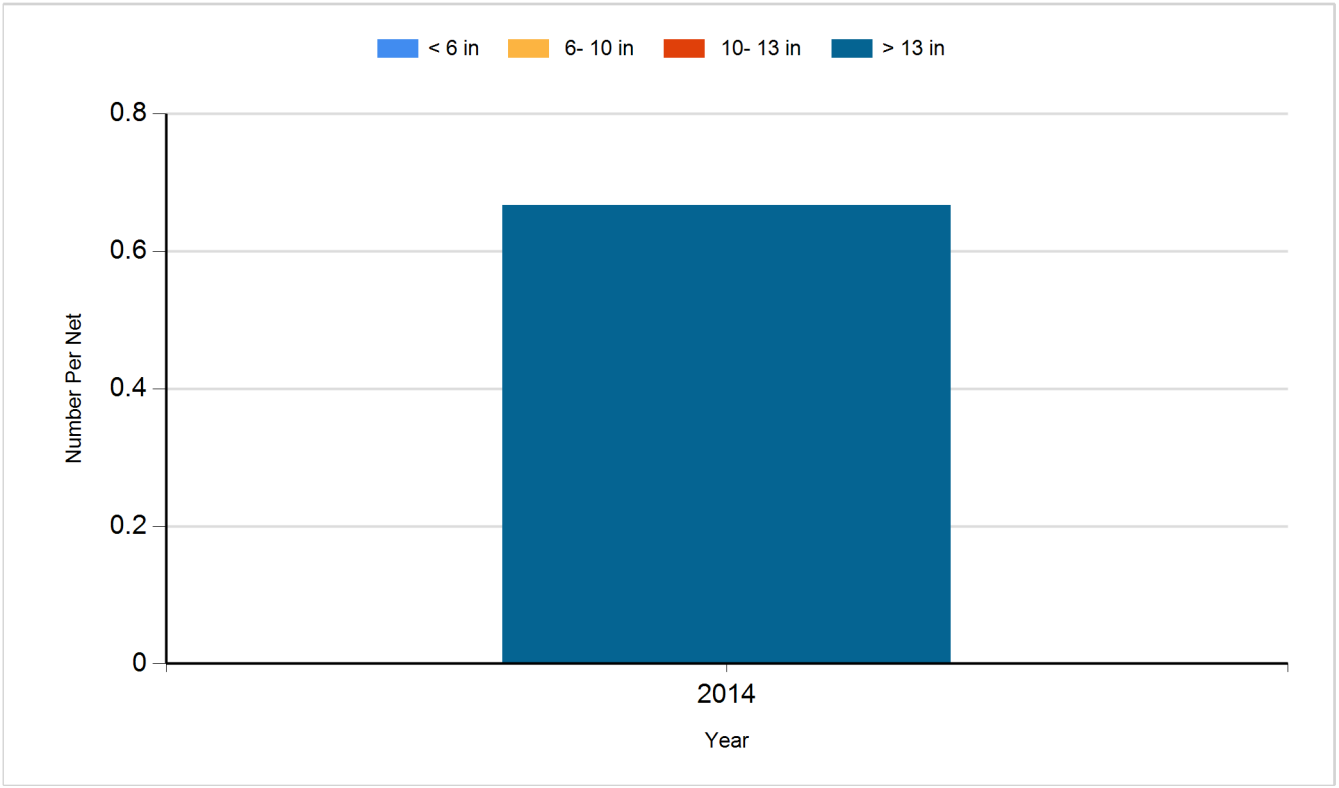
Species: Walleye
Gear: std exp gill net



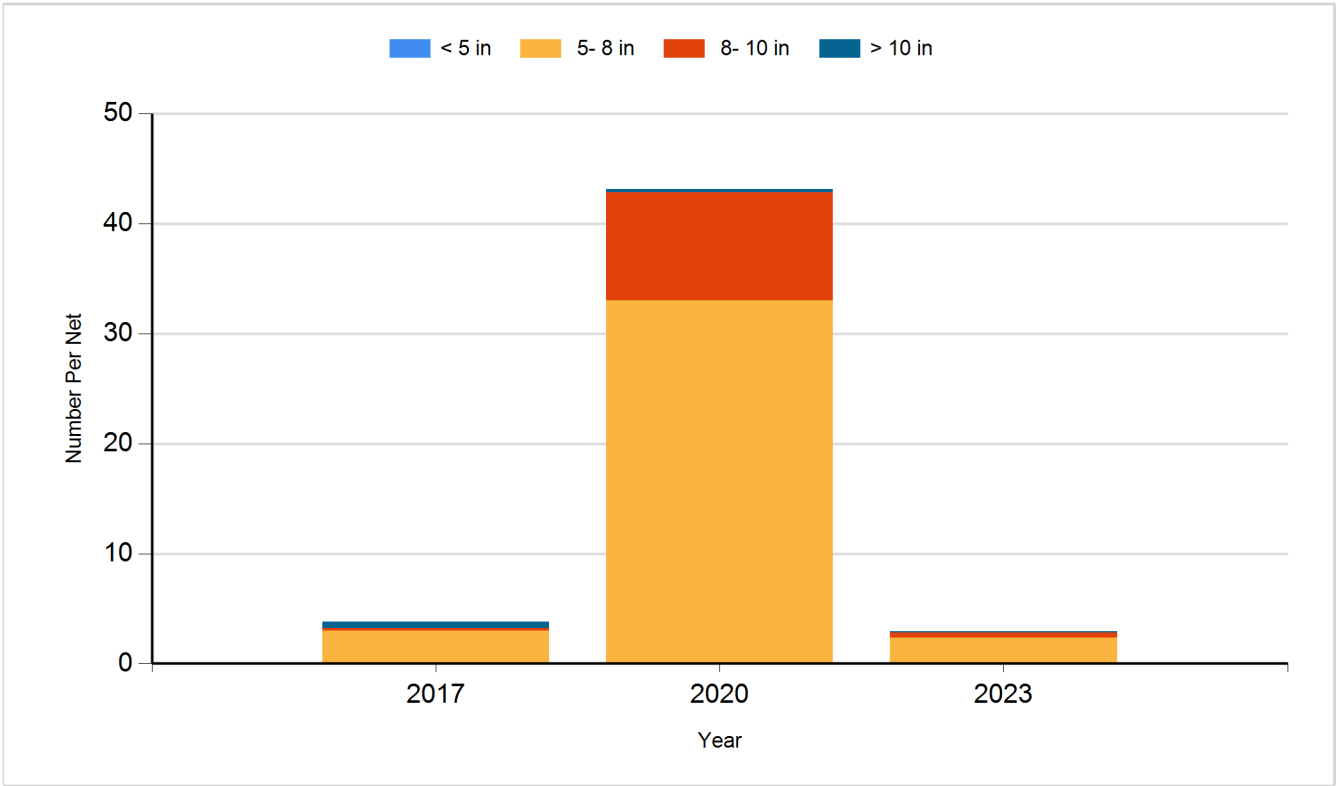
Species: White Sucker
Gear: AFS std gill net



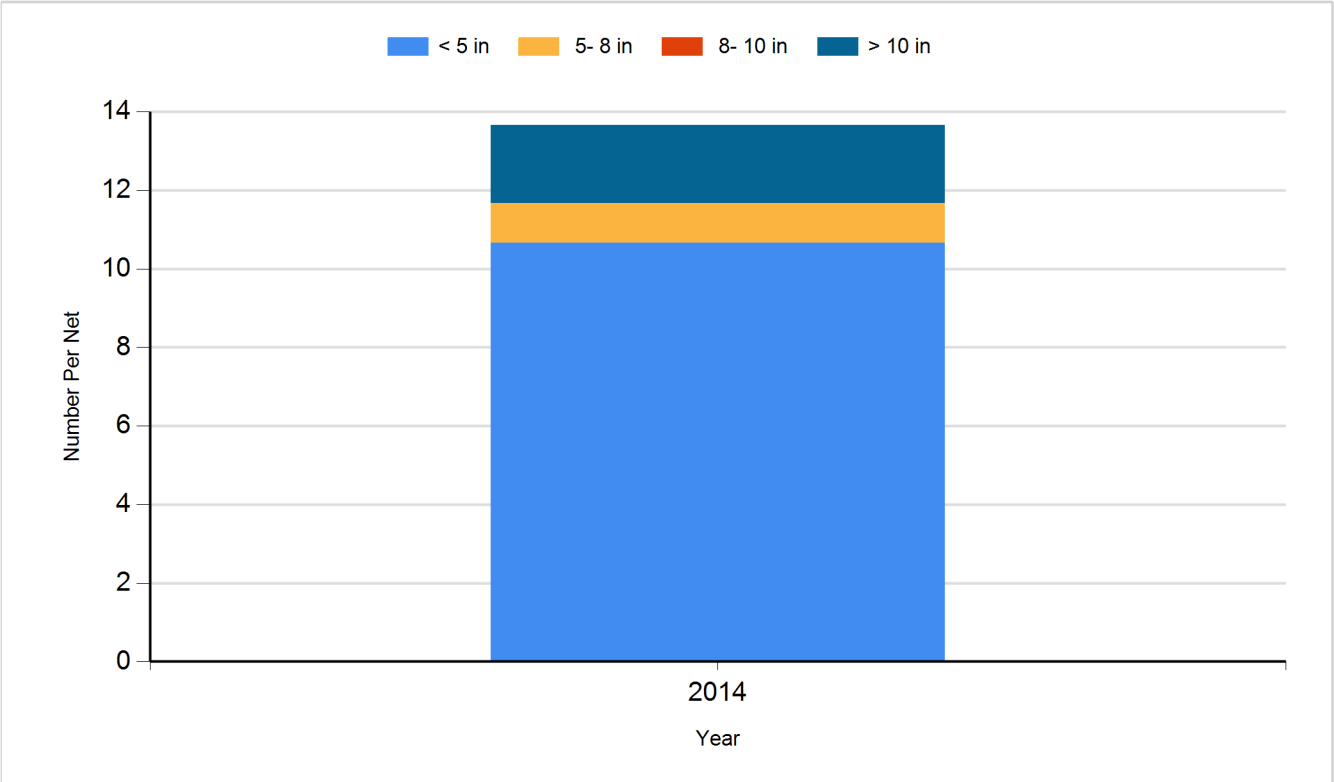
Species: White Sucker
Gear: std exp gill net



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
2013	Walleye	Fry	300,000
2015	Walleye	Fry	250,000
2017	Walleye	Fry	300,000
2019	Walleye	Fry	300,000
2021	Walleye	Fry	300,000
2023	Walleye	Fry	300,000