SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Hwy 81 West, Kingsbury County
MBS-Lake-233-000
2021

Lake Information

Name: Hwy 81 West

County: Kingsbury

Surface Area: 1,580 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Aug 09, 2021	6 net-nights
AFS std gill net	Aug 10, 2021	4 net-nights
frame net (std 3/4 in)	Aug 09, 2021	5 net-nights
frame net (std 3/4 in)	Aug 10, 2021	5 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Muskellunge

Bluegill

White Bass

Northern Pike

Common Carp

Smallmouth Bass

Yellow Bullhead

Black Crappie

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	Common Carp	11	0.4	0.4	100		75			
	Northern Pike	5	0.5	0.4	20		0		91	4
	Smallmouth Bass	12	1.1	0.6	36		9		102	3
	Walleye	35	2.8	1.4	79	12	43	15	83	2
	White Bass	95	7.4	3.1	92	5	70	8	94	1
	Yellow Perch	135	13.5	5.9	21	5	16	5	100	1
frame net (std 3/4 in)	Black Bullhead	11	1.1	0.5	91		36			
	Black Crappie	20	2.0	1.9	90		45	18	108	2
	Bluegill	122	12.2	6.8	3		1		138	2
	Common Carp	31	2.8	1.4	100		89			
	Muskellunge	1	0.1	0.0						
	Northern Pike	29	2.9	0.6	83		7		84	2
	Smallmouth Bass	26	2.6	1.2	73	14	58	15	99	4
	Walleye	9	0.9	0.5	100		67		80	3
	White Bass	88	8.8	2.4	100		99		86	1
	Yellow Bullhead	21	2.1	1.4	100		100			
	Yellow Perch	32	3.2	1.6	81	11	69	13	97	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	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
AFS std gill net	Common Carp										0.4	0.40
	Northern Pike										0.5	0.50
	Smallmouth Bass										1.1	1.10
	Walleye										2.8	2.80
	White Bass										7.4	7.40
	Yellow Perch										13.5	13.50
frame net (std 3/4 in)	Black Bullhead										1.1	1.10
	Black Crappie										2.0	2.00
	Bluegill										12.2	12.20
	Common Carp										2.8	2.80
	Muskellunge										0.1	0.10
	Northern Pike										2.9	2.90
	Smallmouth Bass										2.6	2.60
	Walleye										0.9	0.90
	White Bass										8.8	8.80
	Yellow Bullhead										2.1	2.10
	Yellow Perch										3.2	3.20

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	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AFS std gill net	Common Carp	PSD										100
		PSD-P										75
	Northern Pike	PSD										20
		PSD-P										0
		Wr										91
	Smallmouth Bass	PSD										36
		PSD-P										9
		Wr										102
	Walleye	PSD										79
		PSD-P										43
		Wr										83
	White Bass	PSD										92
		PSD-P										70
		Wr										94
	Yellow Perch	PSD										21
		PSD-P										16
		Wr										100
frame net (std 3/4 in)	Black Crappie	PSD										90
		PSD-P										45
		Wr										108
	Bluegill	PSD										3
		PSD-P										1
		Wr										138
	Common Carp	PSD										100
		PSD-P										89
	Northern Pike	PSD										83
		PSD-P										7
		Wr										84
	Smallmouth Bass	PSD										73
		PSD-P										58
		Wr										99
	Walleye	PSD										100
		PSD-P										67

			Year									
Gear	Species	Index	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
frame net (std 3/4 in)	Walleye	Wr										80
	White Bass	PSD										100
		PSD-P										99
		Wr										86
	Yellow Bullhead	PSD										100
		PSD-P										100
	Yellow Perch	PSD										81
		PSD-P										69
		Wr										97

Fish Condition

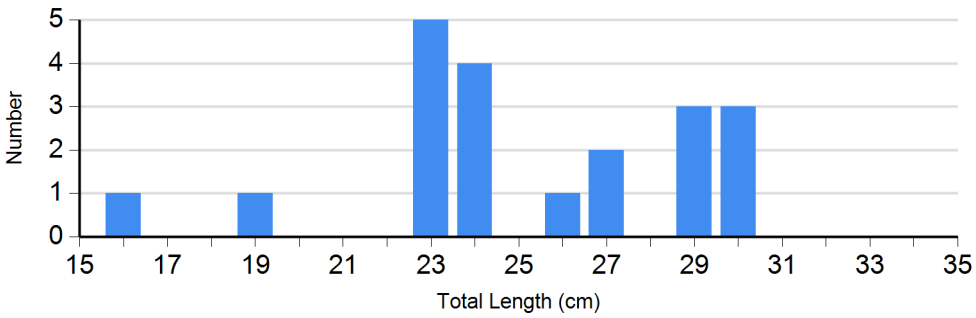
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2	106 (1.6)	9	112 (1.8)	6	108 (2.8)	3	98 (3.2)
Bluegill Frame Net	2021	118	139 (1.9)	3	124 (9.2)	1	123	0	
Northern Pike Gill Net	2021	4	92 (3.2)	1	86	0		0	
Walleye Gill Net	2021	6	90 (3.1)	10	89 (1.6)	10	75 (2.4)	2	74 (0.5)
White Bass Gill Net	2021	6	98 (4.1)	16	94 (1.9)	34	96 (0.7)	18	86 (0.9)
Yellow Perch Gill Net	2021	106	100 (0.7)	8	103 (4.2)	19	98 (1.7)	2	91 (0.1)

Length Frequency Distribution

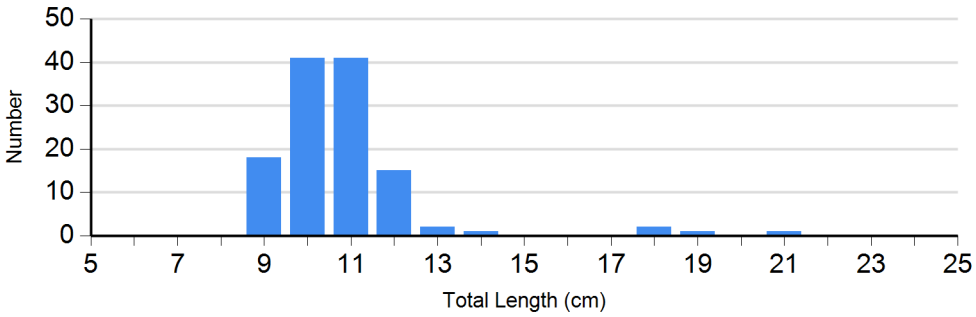
Length frequency histogram of species sampled by year.

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



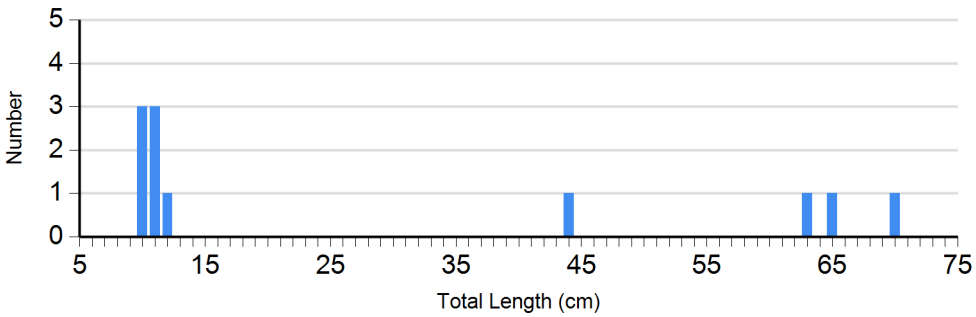
2021

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



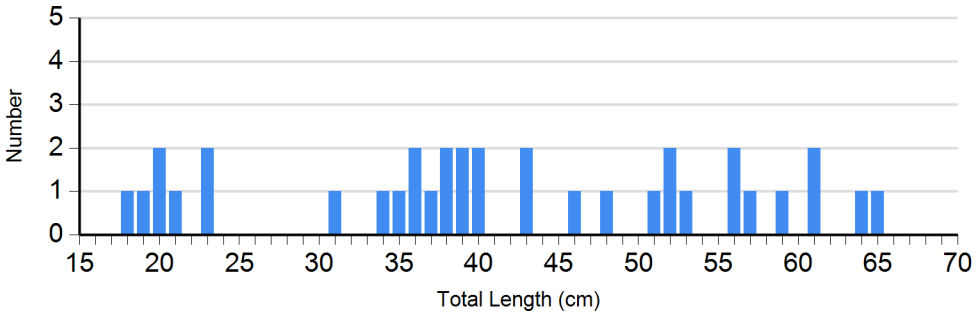
2021

Species: Common Carp
Gear: AFS std gill net



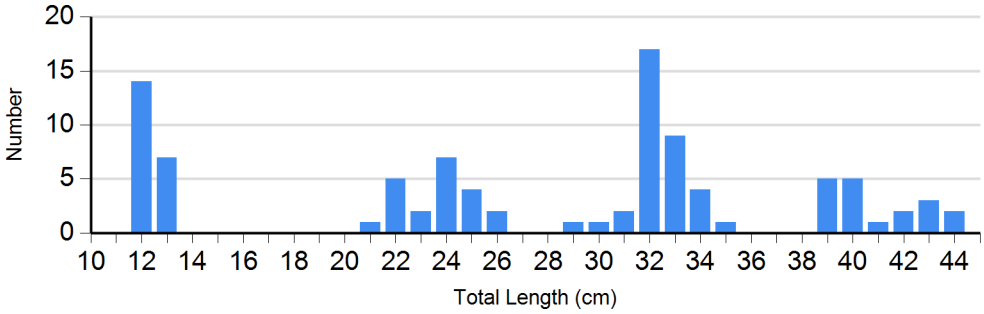
2021

Species: Walleye
Gear: AFS std gill net



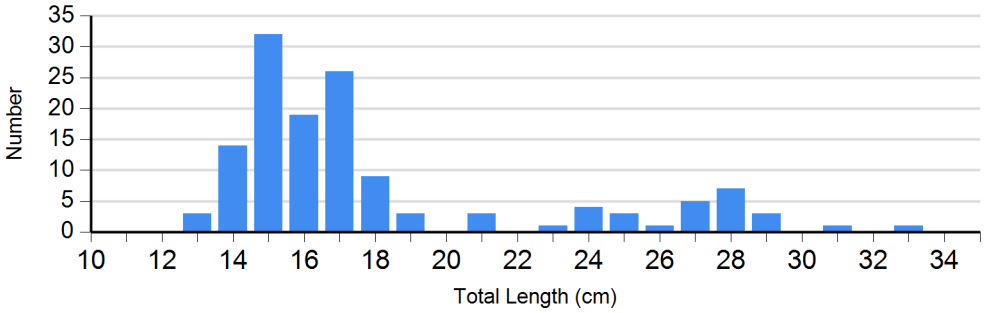
2021

Species: White Bass
Gear: AFS std gill net



2021

Species: Yellow Perch
Gear: AFS std gill net

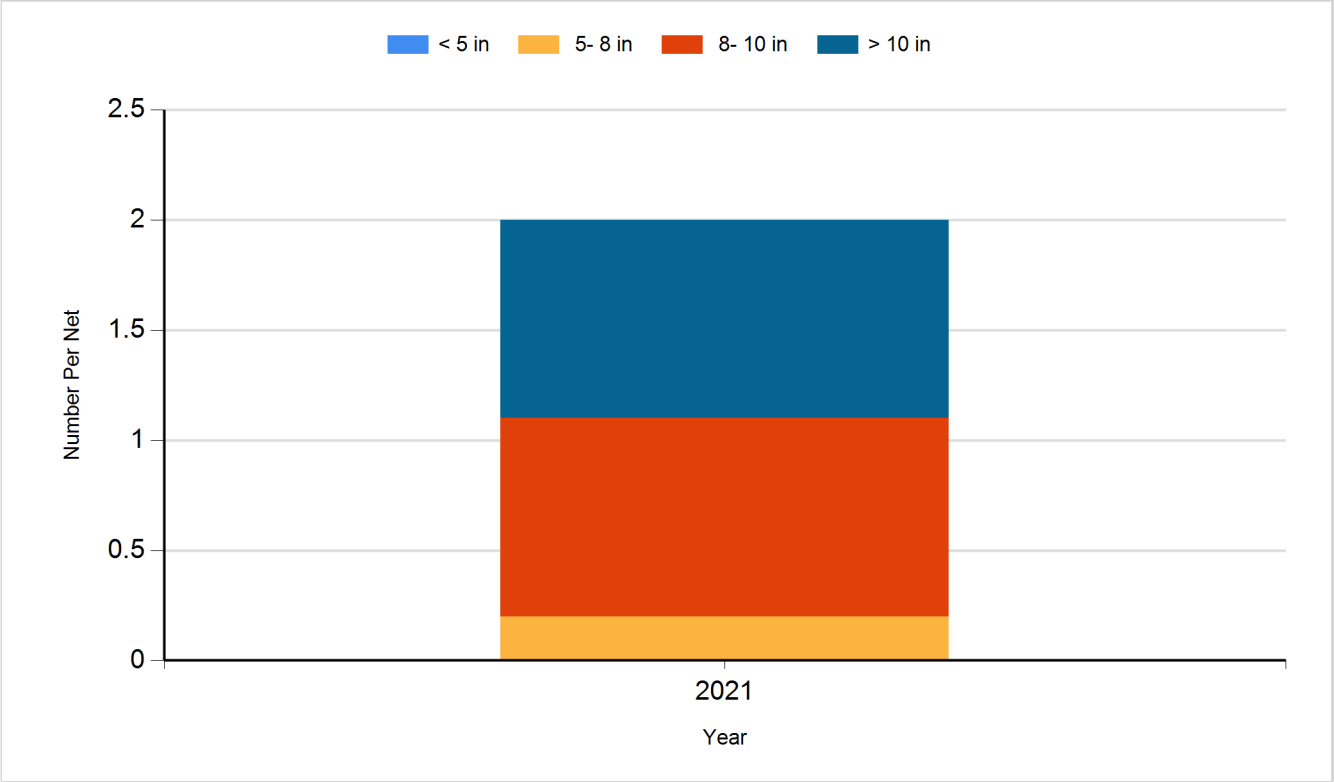


2021

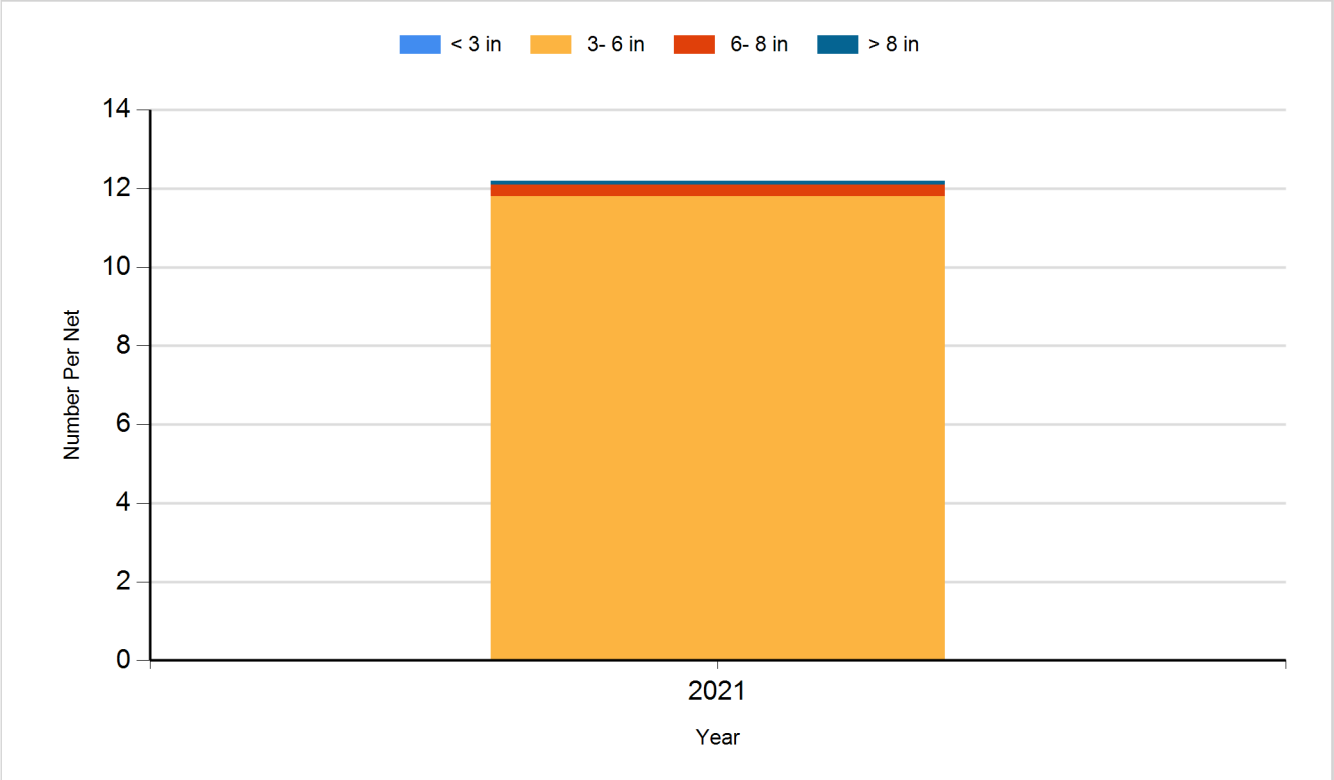
Historic Fish Sizes and Relative Abundance

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

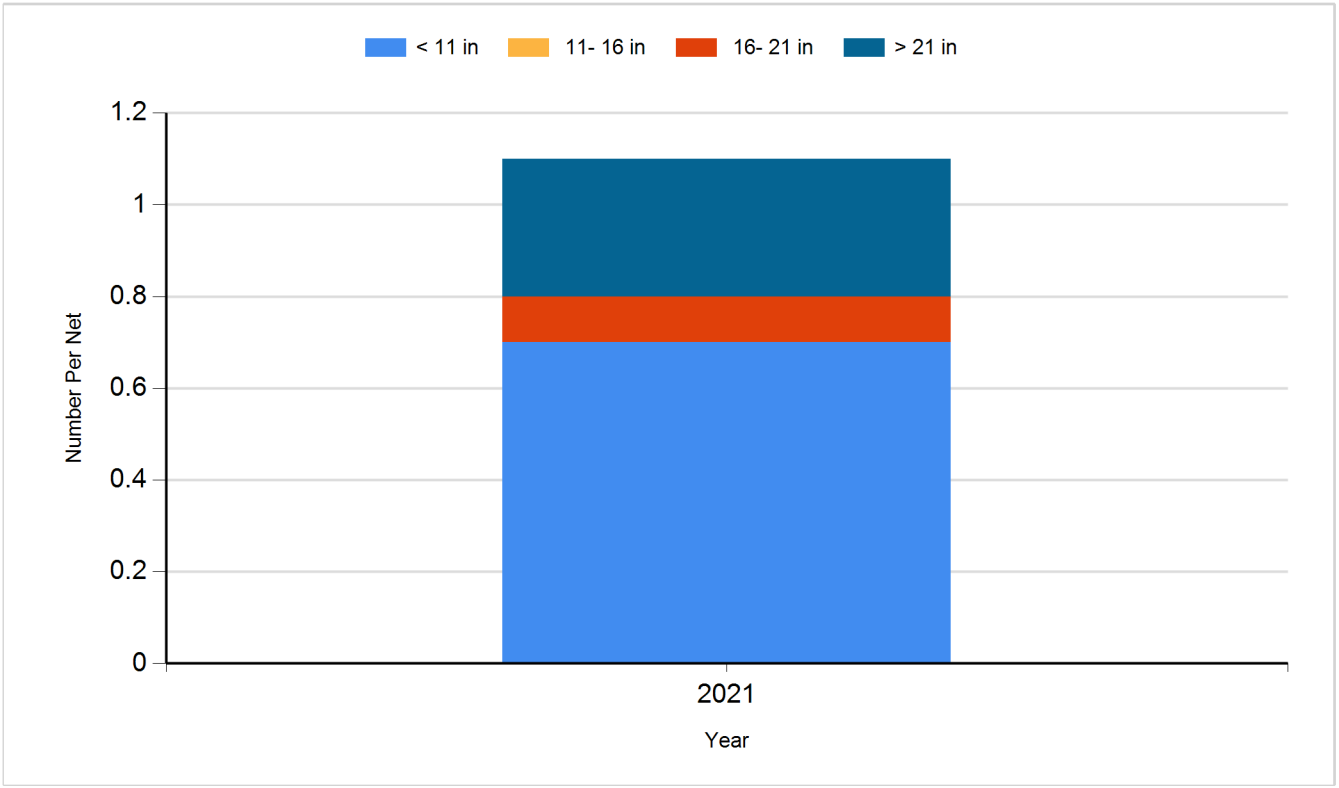
Species: Black Crappie
Gear: frame net (std 3/4 in)



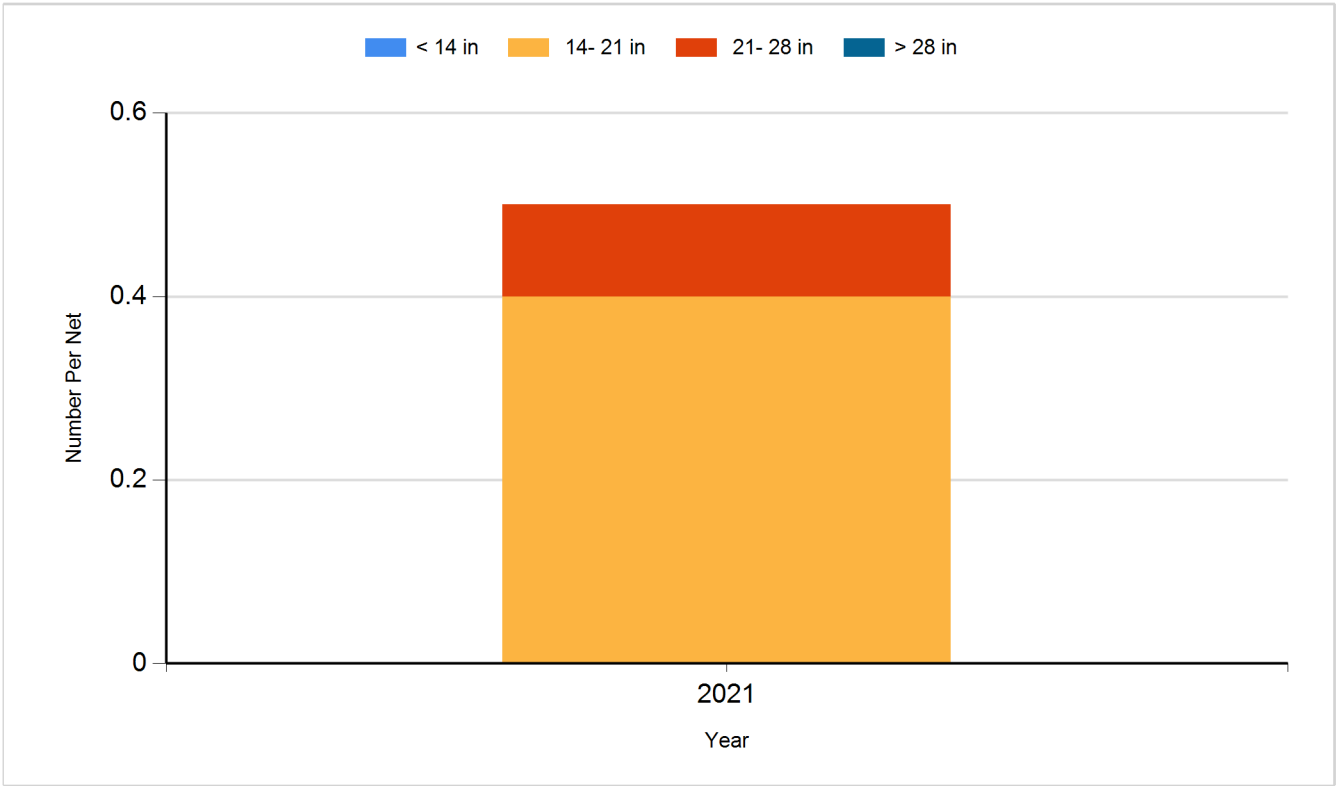
Species: Bluegill
Gear: frame net (std 3/4 in)



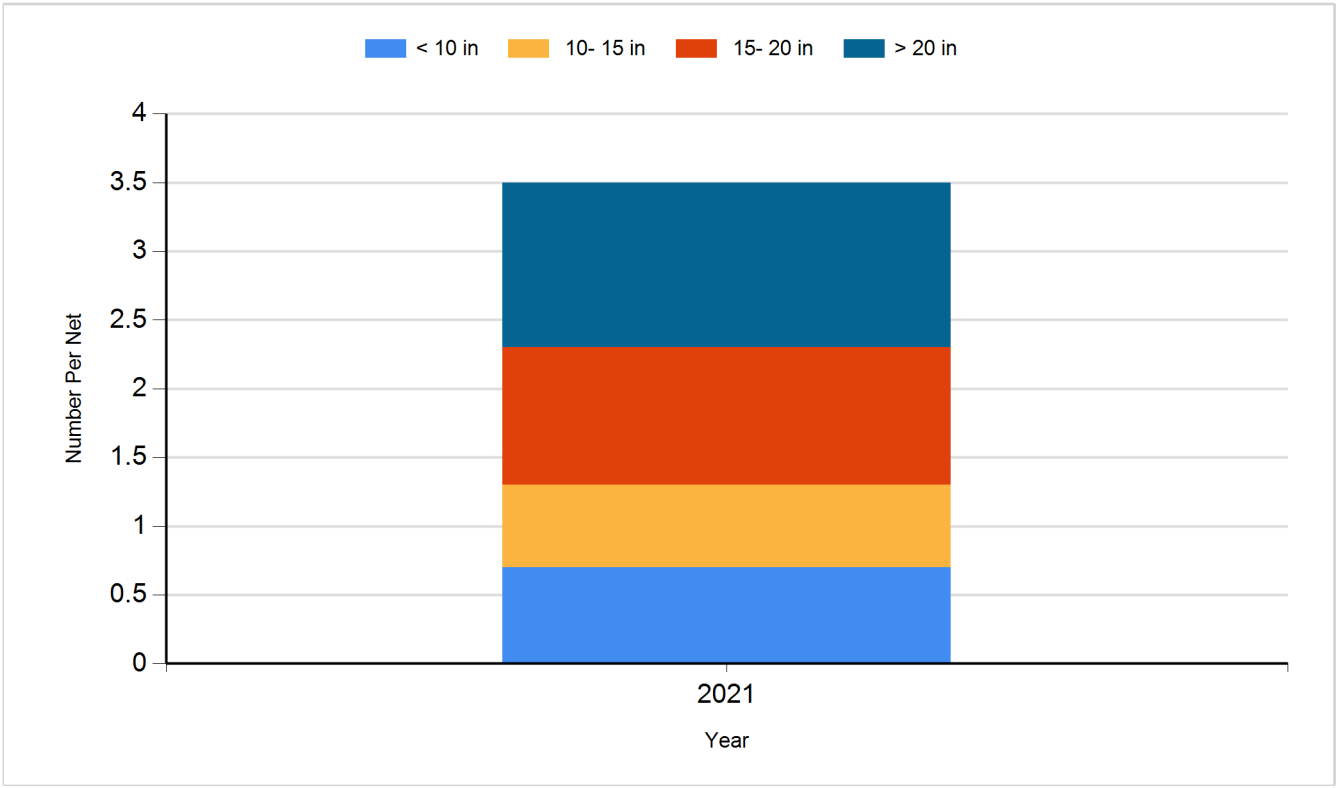
Species: Common Carp
Gear: AFS std gill net



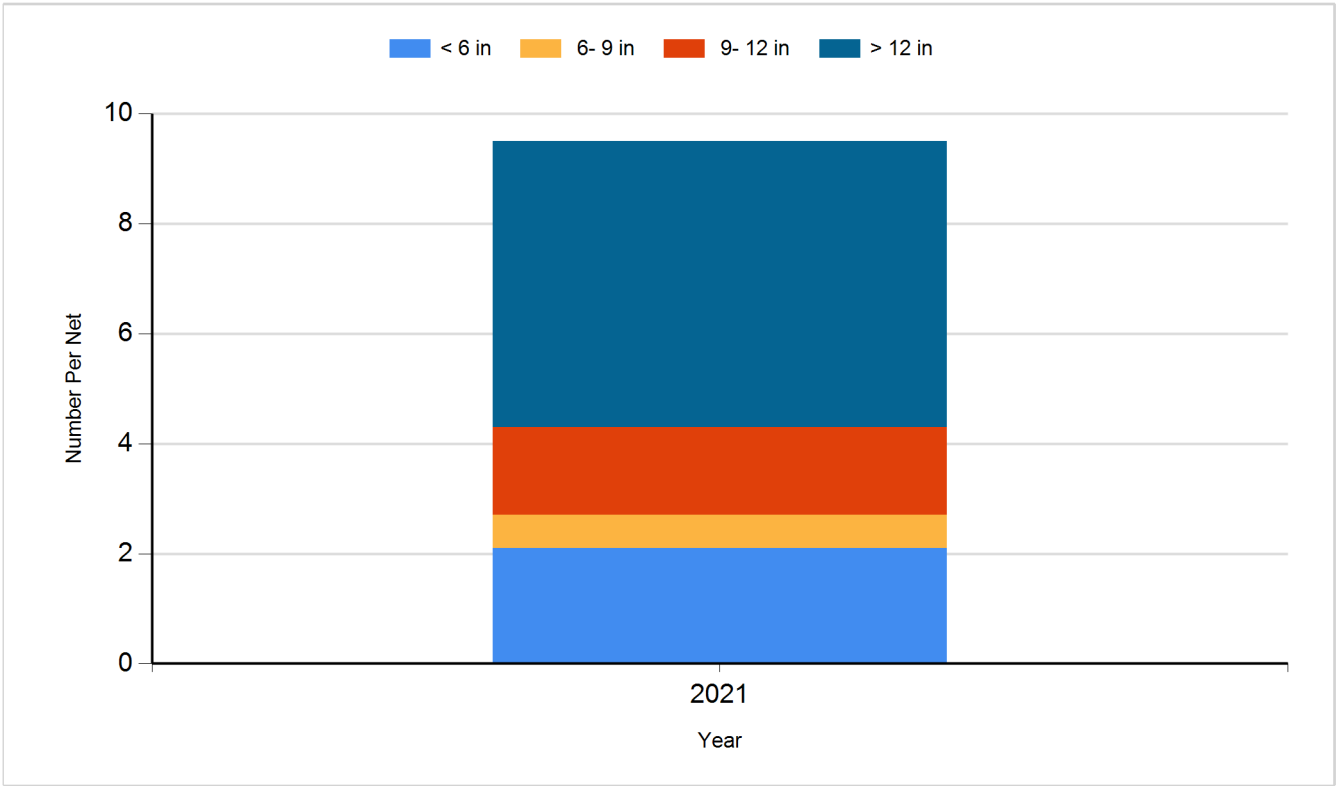
Species: Northern Pike
Gear: AFS std gill net



Species: Walleye
Gear: AFS std gill net



Species: White Bass
Gear: AFS std gill net



Species: Yellow Perch
Gear: AFS std gill net