

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Byron, Beadle County

MJA-Lake-531-800

2025

Lake Information

Name:	Byron	Maximum Depth:	10 Feet
County:	Beadle	Mean Depth:	7 Feet
Legal Description:	T113N- R61W- Sec. 22-23, 25-26, 28, 34-35	OHWM Elevation:	1,250
Surface Area:	1,858 Acres	Outlet Elevation:	1,248

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Aug 12, 2025	6 net-nights

Common Fish Species Present

Walleye

Bigmouth Buffalo

Black Bullhead

Freshwater Drum

White Sucker

Common Carp

Channel Catfish

Black Crappie

River Carpsucker

Northern Pike

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.
- **std 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.

$$CPUE = \frac{\text{number of fish}}{\text{effort}}$$

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.

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

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

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.

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

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		Quality		Preferred		Memorable		Trophy	
	(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	183	21.5	5.6	2		0			
	Black Bullhead	37	6.2	1.7	84	10	0			
	Black Crappie	2	0.3	0.3	50		0		93	
	Channel Catfish	16	2.0	0.9	50	25	8		93	3
	Common Carp	14	2.3	0.9	86		7			
	Freshwater Drum	41	4.8	2.8	0		0			
	Northern Pike	1	0.2	0.2	100		0		84	
	River Carpsucker	1	0.2	0.2	100		0			
	Walleye	7	1.2	0.9	100		0		84	6
	White Sucker	20	3.3	2.3	100		75	16		

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
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
AFS std gill net	Bigmouth Buffalo		12.8	9.2	5.8		6.5		21.8		21.5	12.93
	Black Bullhead		4.5	3.0	1.5		1.8		5.7		6.2	3.78
	Black Crappie		0.3	0.2	0.0		0.2		0.3		0.3	0.22
	Channel Catfish		0.2	0.2	0.7		0.7		1.2		2.0	0.83
	Common Carp		0.2	0.0	0.8		0.0		1.0		2.3	0.72
	Common Shiner		0.0	0.0	0.0		0.0		0.0		0.0	0.00
	Freshwater Drum		0.7	1.2	2.0		1.0		5.2		4.8	2.48
	Goldeye		0.0	0.0	0.0		0.0		0.0		0.0	0.00
	Northern Pike		0.3	0.0	0.2		0.3		0.0		0.2	0.17
	River Carpsucker		0.0	0.3	0.7		0.7		1.2		0.2	0.52
	Shortnose Gar		0.0	0.0	0.0		0.0		0.0		0.0	0.00
	Smallmouth Buffalo		0.0	0.0	0.0		0.0		0.2		0.0	0.03
	Walleye		1.7	1.7	5.2		10.8		2.3		1.2	3.82
	White Sucker		0.2	0.0	0.0		2.0		1.5		3.3	1.17
	Yellow Perch		1.0	0.5	0.3		2.0		0.7		0.0	0.75
frame net (std 3/4 in)	Black Crappie						82.7					82.70
	Bluegill						7.0					7.00
	Shorthead Redhorse						0.3					0.30
	Walleye						11.0					11.00
	Yellow Bullhead						1.0					1.00
std exp gill net	Bigmouth Buffalo	16.7										16.70
	Black Bullhead	19.7										19.70
	Black Crappie	0.0										0.00
	Channel Catfish	0.0										0.00
	Common Carp	0.7										0.70
	Freshwater Drum	2.0										2.00
	Northern Pike	1.0										1.00
	River Carpsucker	1.3										1.30
	Shorthead Redhorse	0.0										0.00
	Shortnose Gar	0.0										0.00
	Walleye	1.0										1.00
	White Sucker	1.7										1.70
	Yellow Perch	0.0										0.00

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.

Gear	Species	Index	Year									
			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
AFS std gill net	Bigmouth Buffalo	PSD		87	91	91		67		18		2
		PSD-P		1	4	6		15		2		0
	Black Bullhead	PSD		100	100	100		100		44		84
		PSD-P		56	100	78		36		18		0
	Black Crappie	PSD		100	100			100		0		50
		PSD-P		50	0			100		0		0
		Wr		102	100			97		122		93
	Channel Catfish	PSD		100	100	100		75		100		50
		PSD-P		100	100	25		75		14		8
		Wr		100	77	90		85		109		93
	Common Carp	PSD		100		80				50		86
		PSD-P		100		40				50		7
	Northern Pike	PSD		100		100		100				100
		PSD-P		100		0		0				0
		Wr		82		89		92				84
	River Carpsucker	PSD			100	100		100		86		100
		PSD-P			100	100		100		86		0
	Walleye	PSD		50	40	48		75		29		100
		PSD-P		30	10	3		0		0		0
		Wr		84	88	94		92		95		84
	White Sucker	PSD		100				100		11		100
		PSD-P		100				100		11		75
frame net (std 3/4 in)	Black Crappie	PSD						40				
		PSD-P						23				
		Wr						102				
	Walleye	PSD						100				
		PSD-P						0				
		Wr						96				
std exp gill net	Bigmouth Buffalo	PSD	6									
		PSD-P	2									
	Black Bullhead	PSD	92									
		PSD-P	3									

Gear	Species	Index	Year									
			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
std exp gill net	Common Carp	PSD	100									
		PSD-P	0									
	Northern Pike	PSD	100									
		PSD-P	33									
		Wr	89									
	River Carpsucker	PSD	100									
		PSD-P	75									
	Walleye	PSD	67									
		PSD-P	0									
		Wr	91									
	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+
2025	7		422 (3)	449 (4)							

Fish Condition

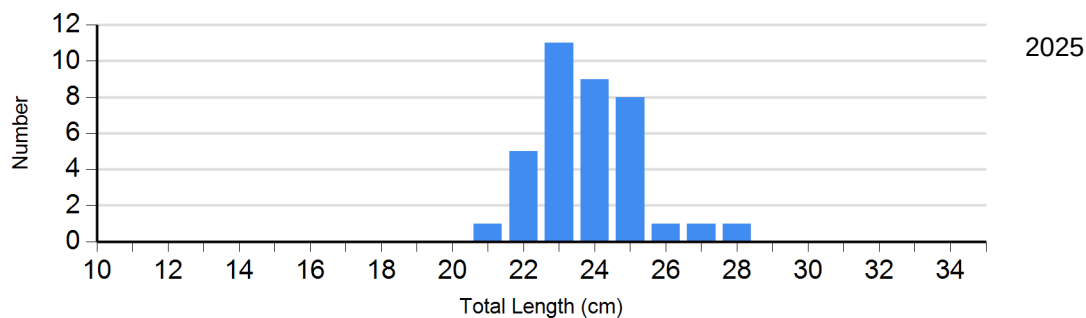
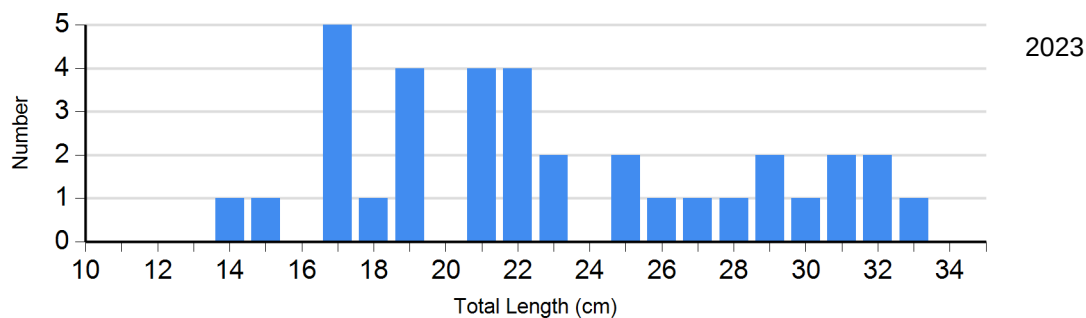
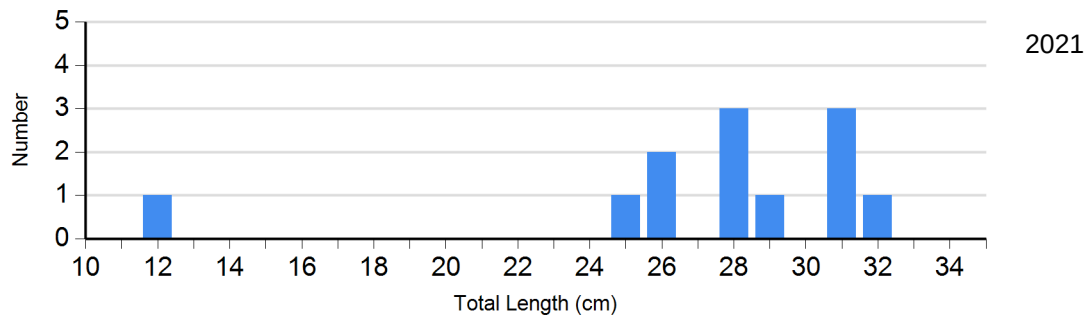
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2021	149		41	106 (1.0)	52	102 (0.6)	6	94 (1.0)
Channel Catfish Gill Net	2021	1	100	0		3	80 (2.6)	0	
	2023	0		6	108 (2.0)	1	115	0	
	2025	6	91 (3.2)	5	97 (2.8)	0		1	88
Northern Pike Gill Net	2021	0		2	92 (9.2)	0		0	
	2025	0		1	84	0		0	
Walleye Gill Net	2021	16	96 (1.0)	49	91 (0.8)	0		0	
	2023	10	97 (2.6)	4	90 (5.7)	0		0	
	2025	0		7	84 (4.8)	0		0	

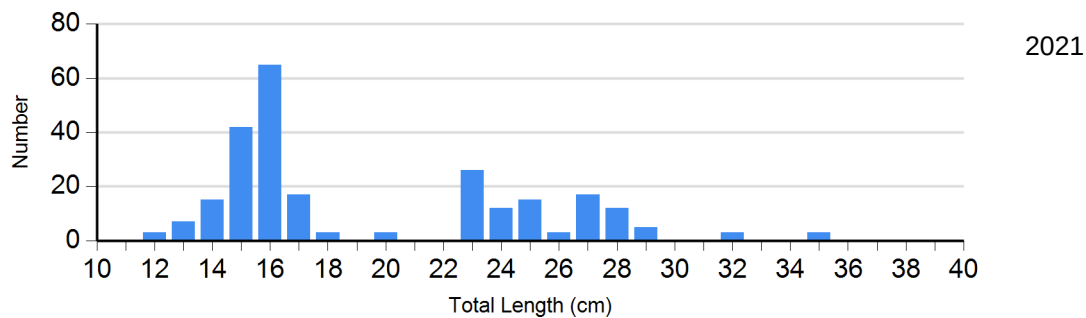
Length Frequency Distribution

Length frequency histogram of species sampled by year.

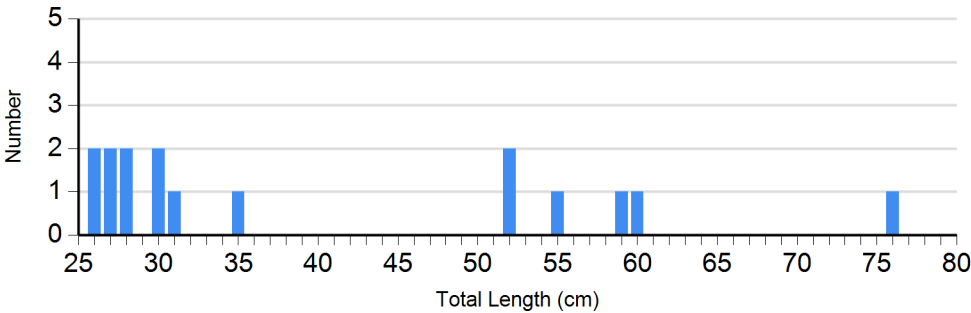
Species: Black Bullhead
Gear: AFS std gill net



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

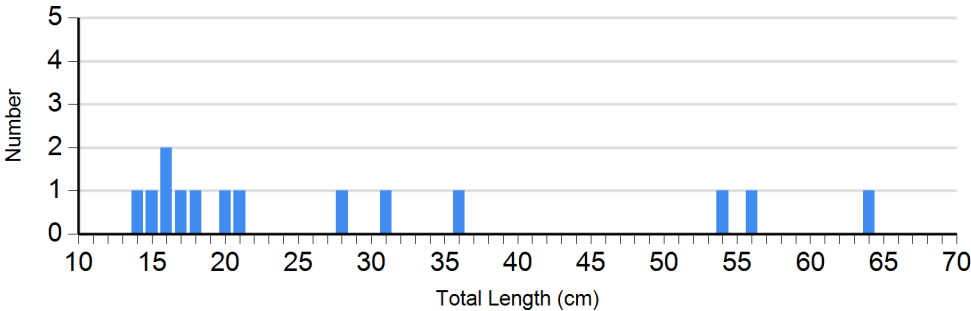


Species: Channel Catfish
Gear: AFS std gill net

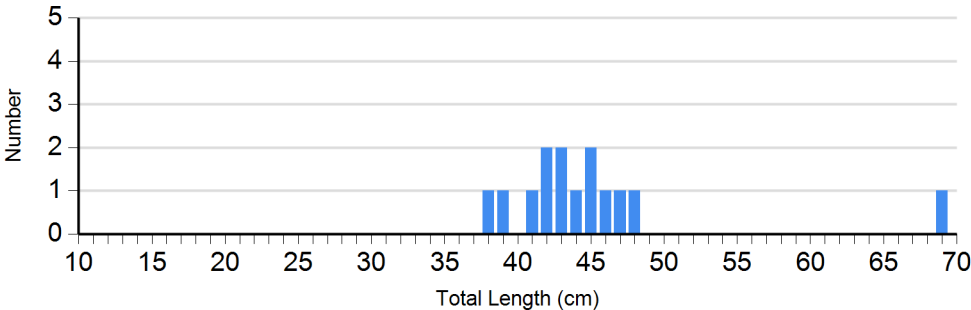


2025

Species: Common Carp
Gear: AFS std gill net

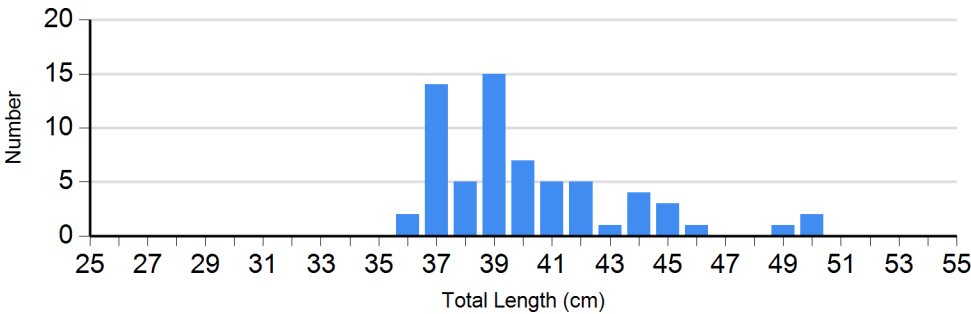


2023

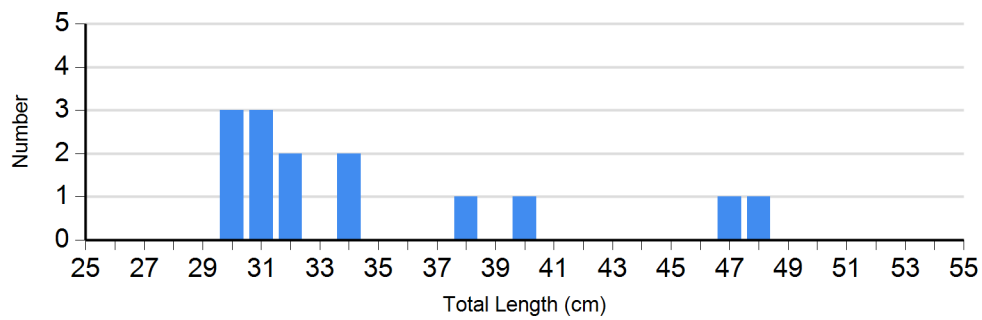


2025

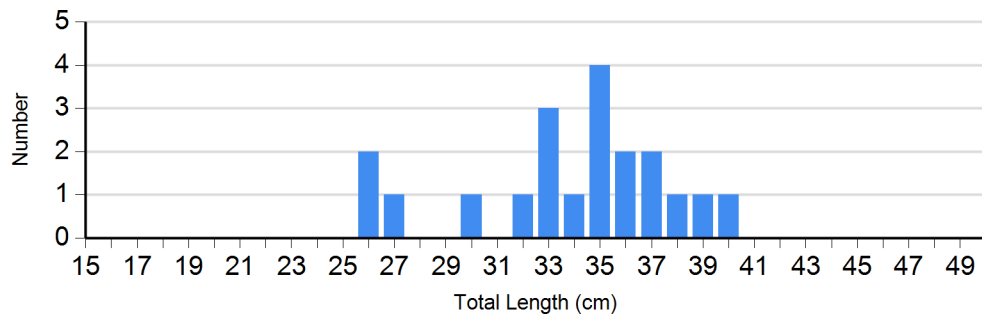
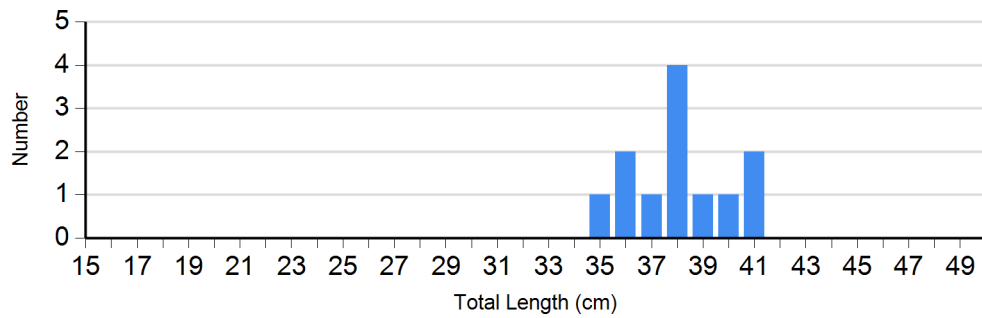
Species: Walleye
Gear: AFS std gill net



2021



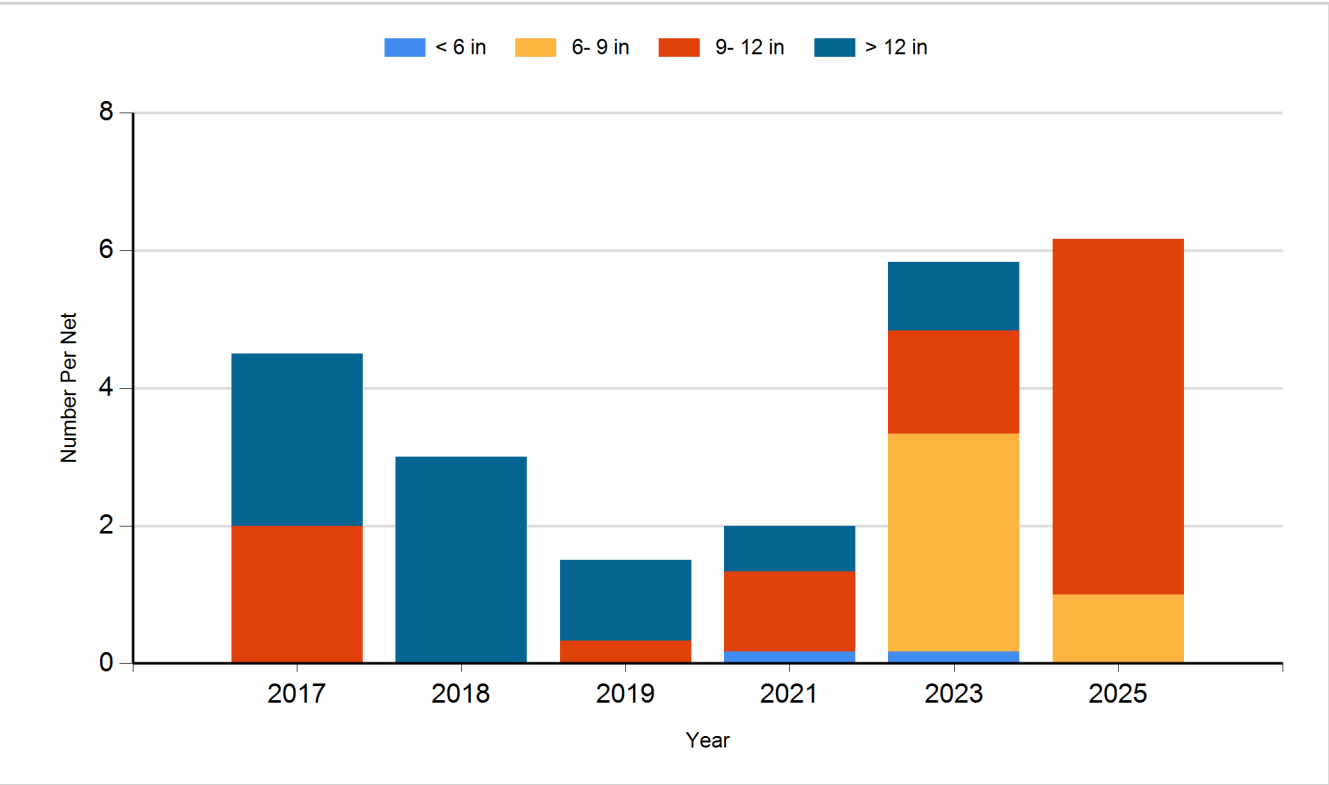
Species: White Sucker
Gear: AFS std gill net



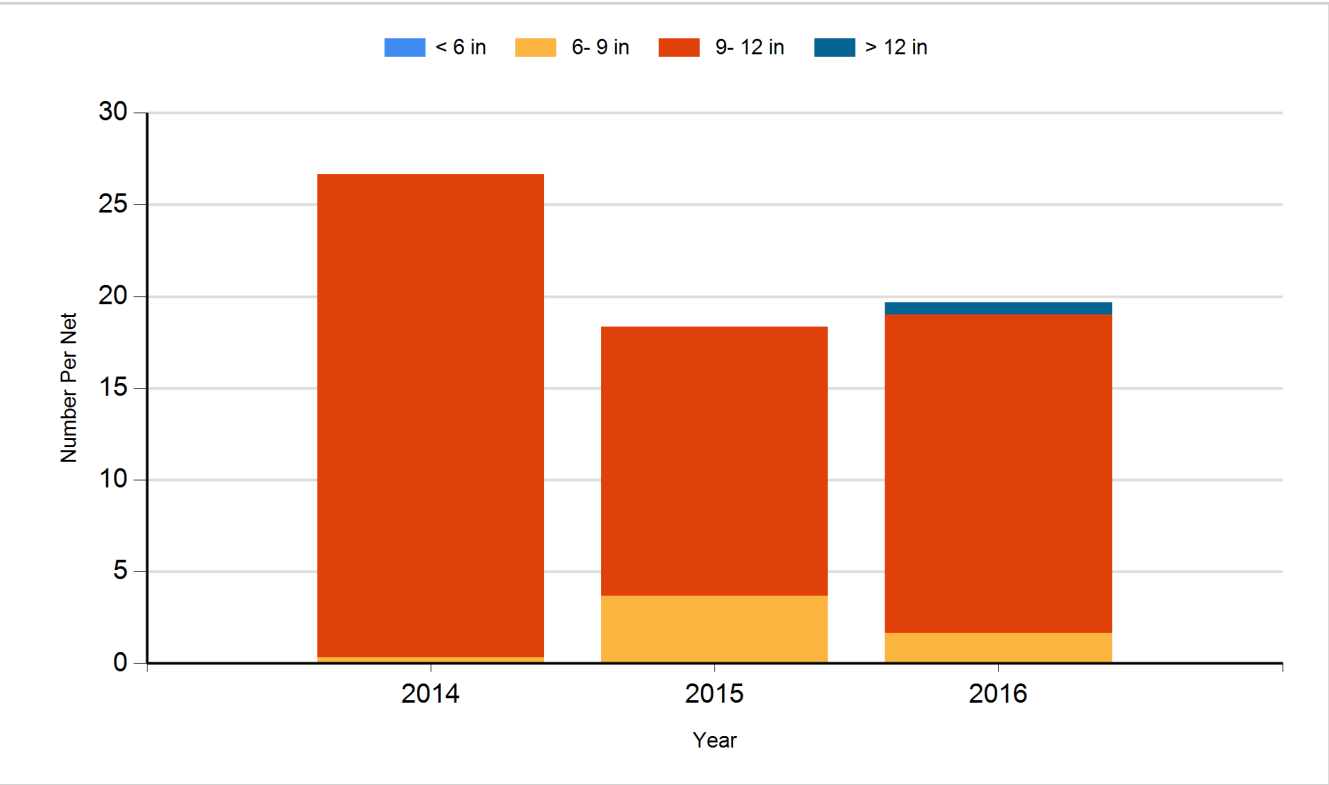
Historic Fish Sizes and Relative Abundance

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

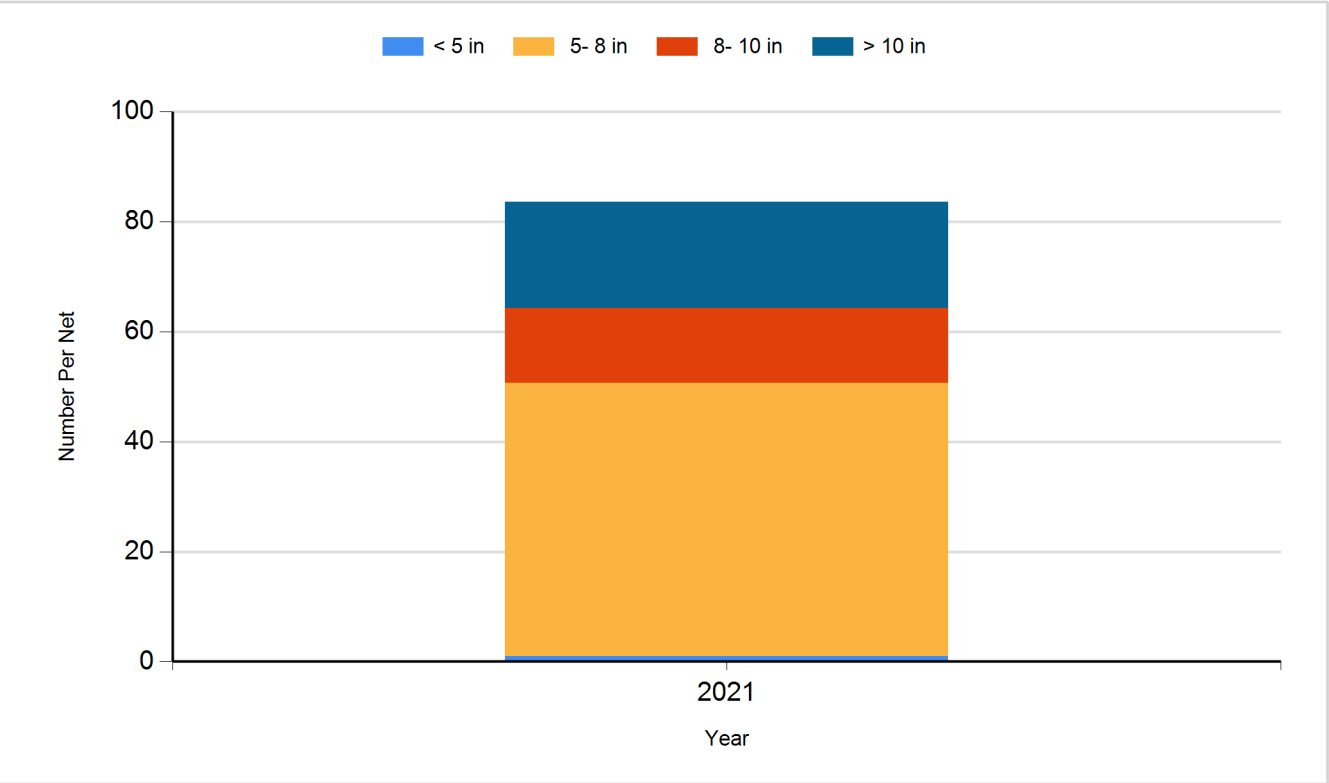
Species: Black Bullhead
Gear: AFS std gill net



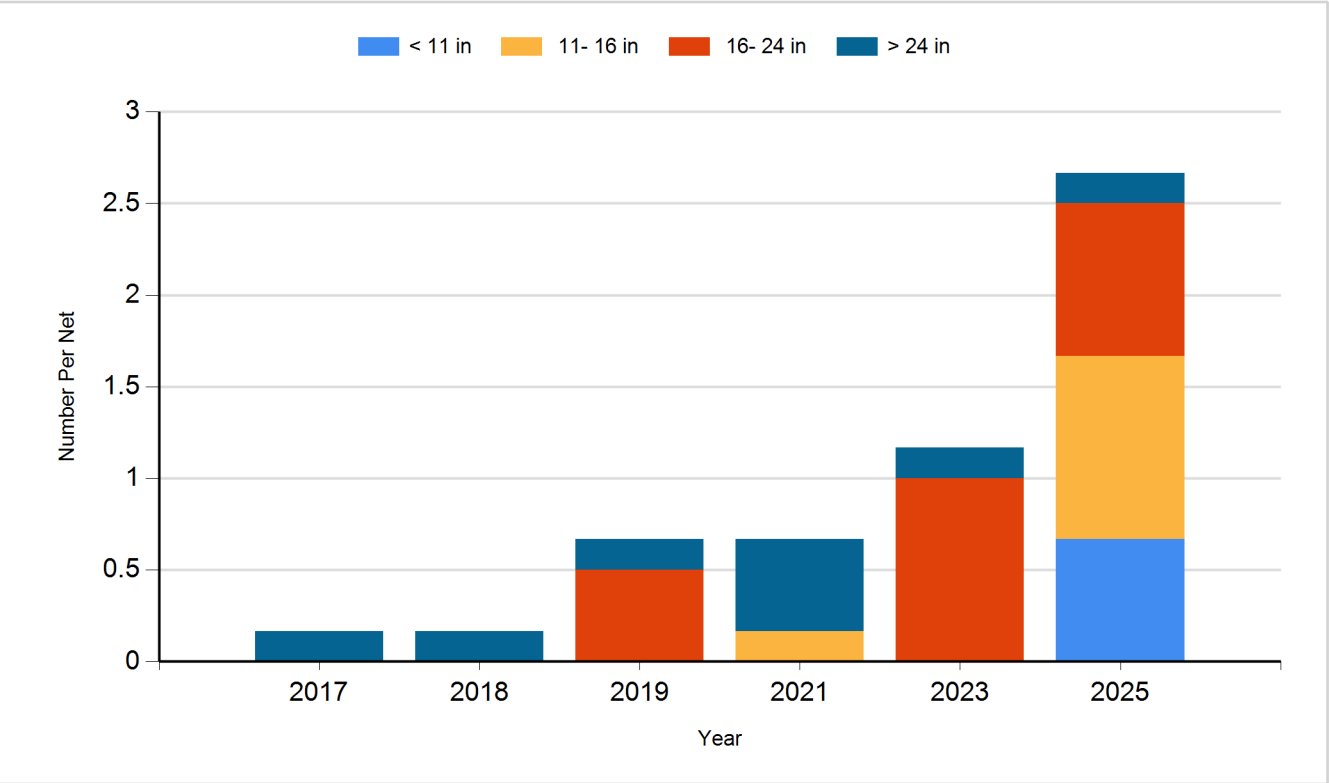
Species: Black Bullhead
Gear: std exp gill net



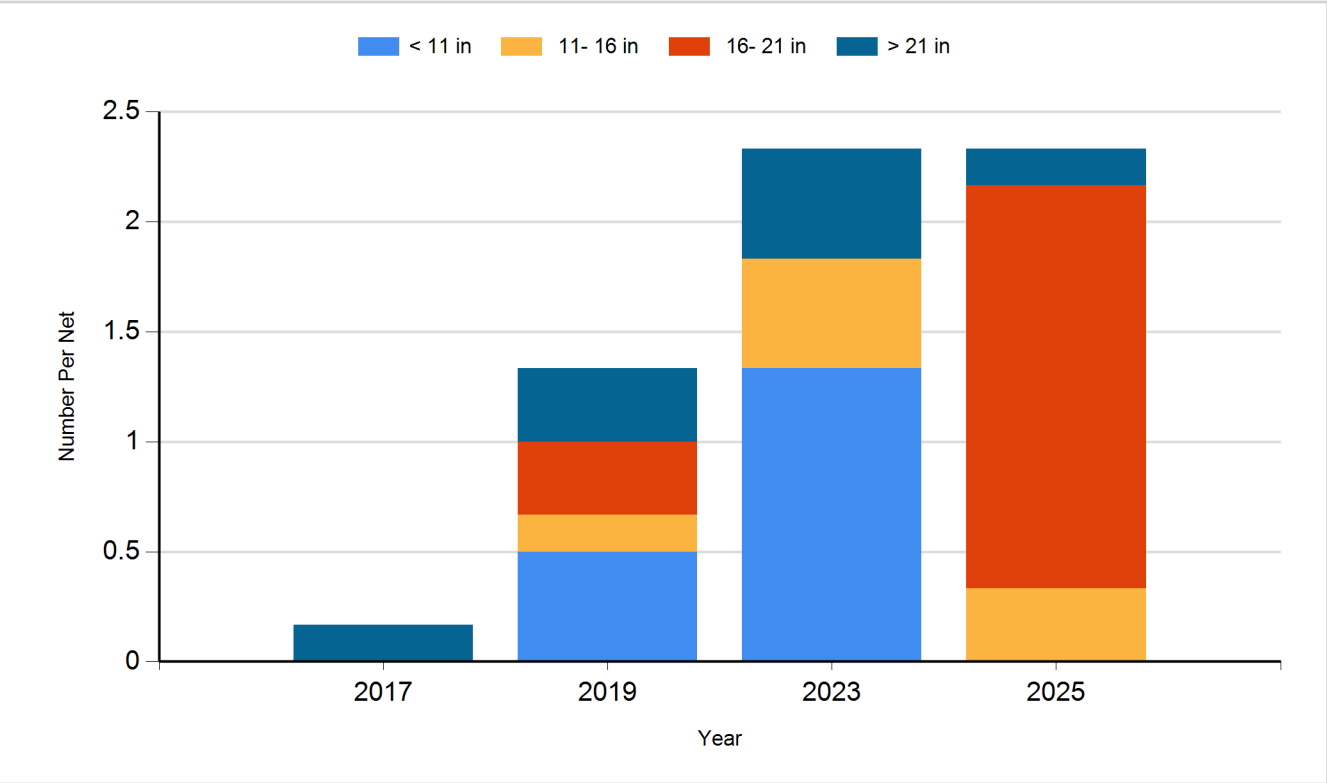
Species: Black Crappie
Gear: frame net (std 3/4 in)



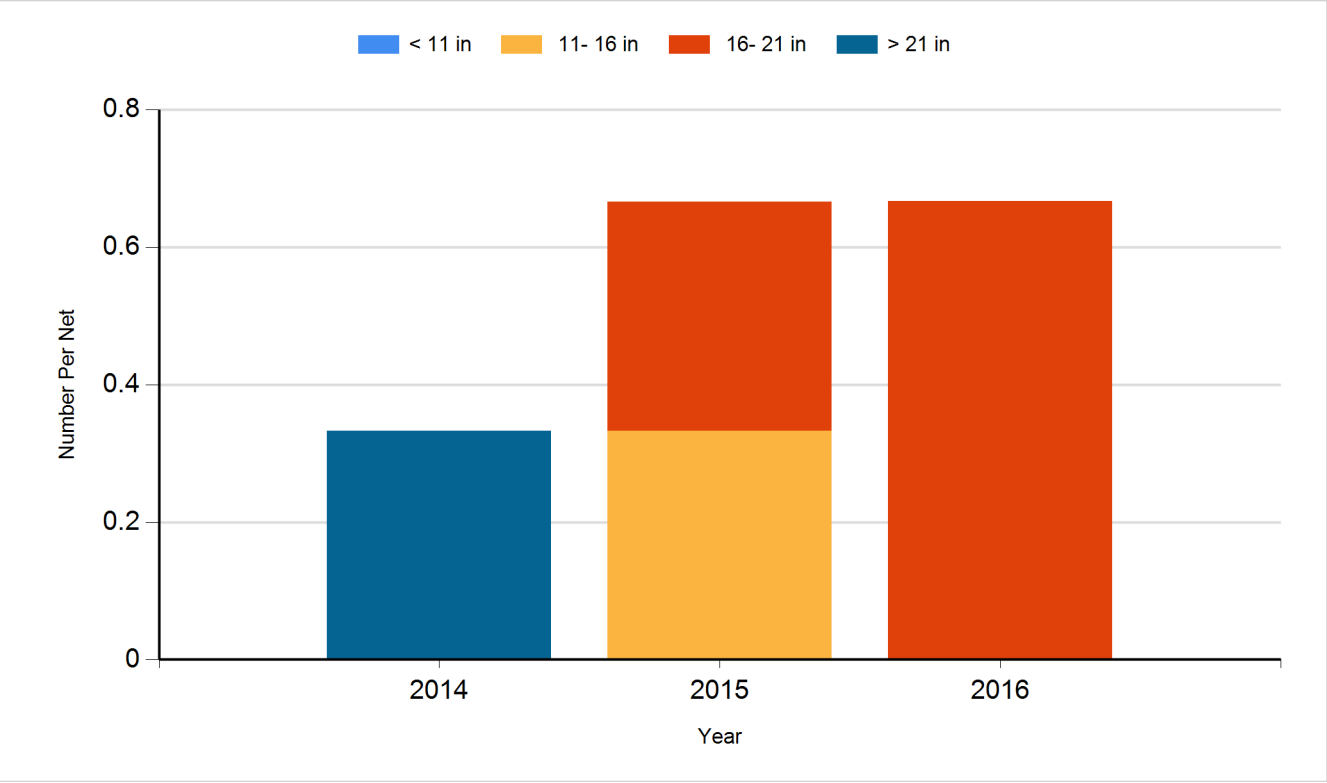
Species: Channel Catfish
Gear: AFS std gill net



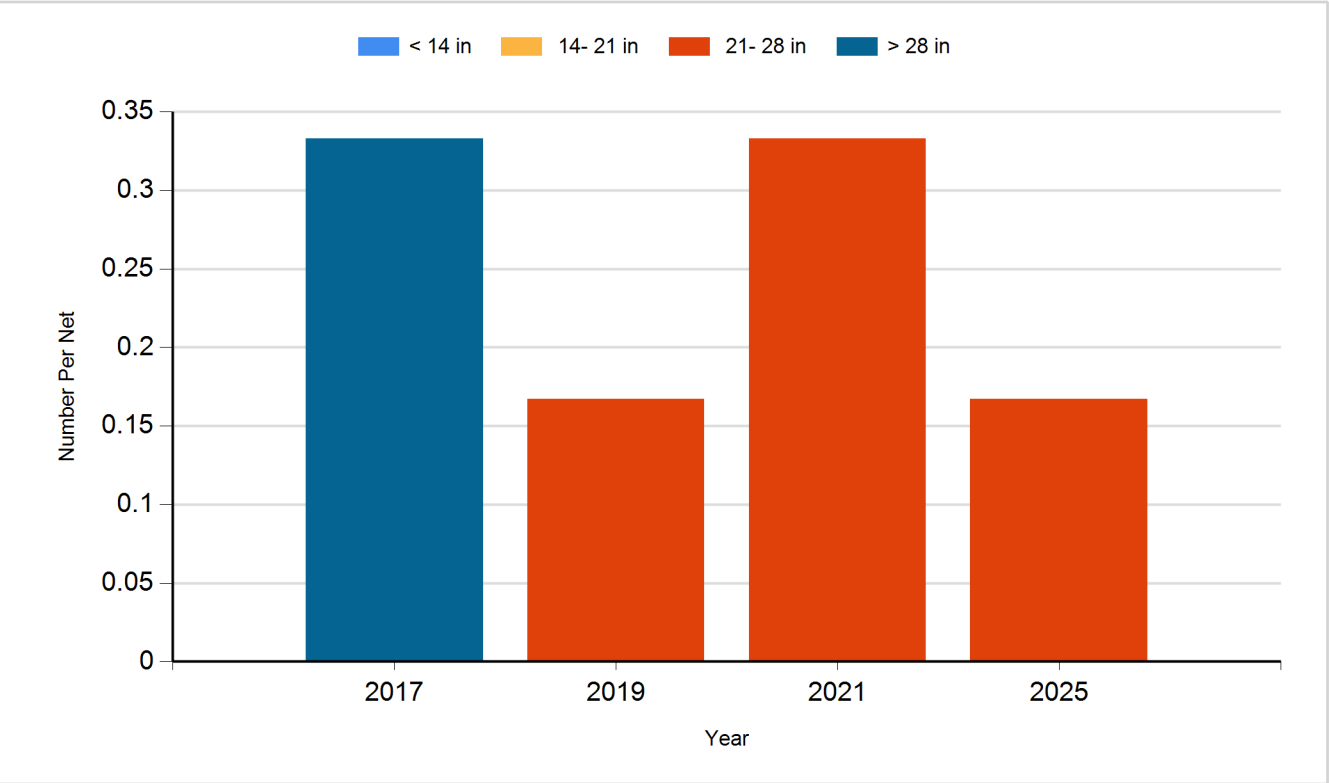
Species: Common Carp
Gear: AFS std gill net



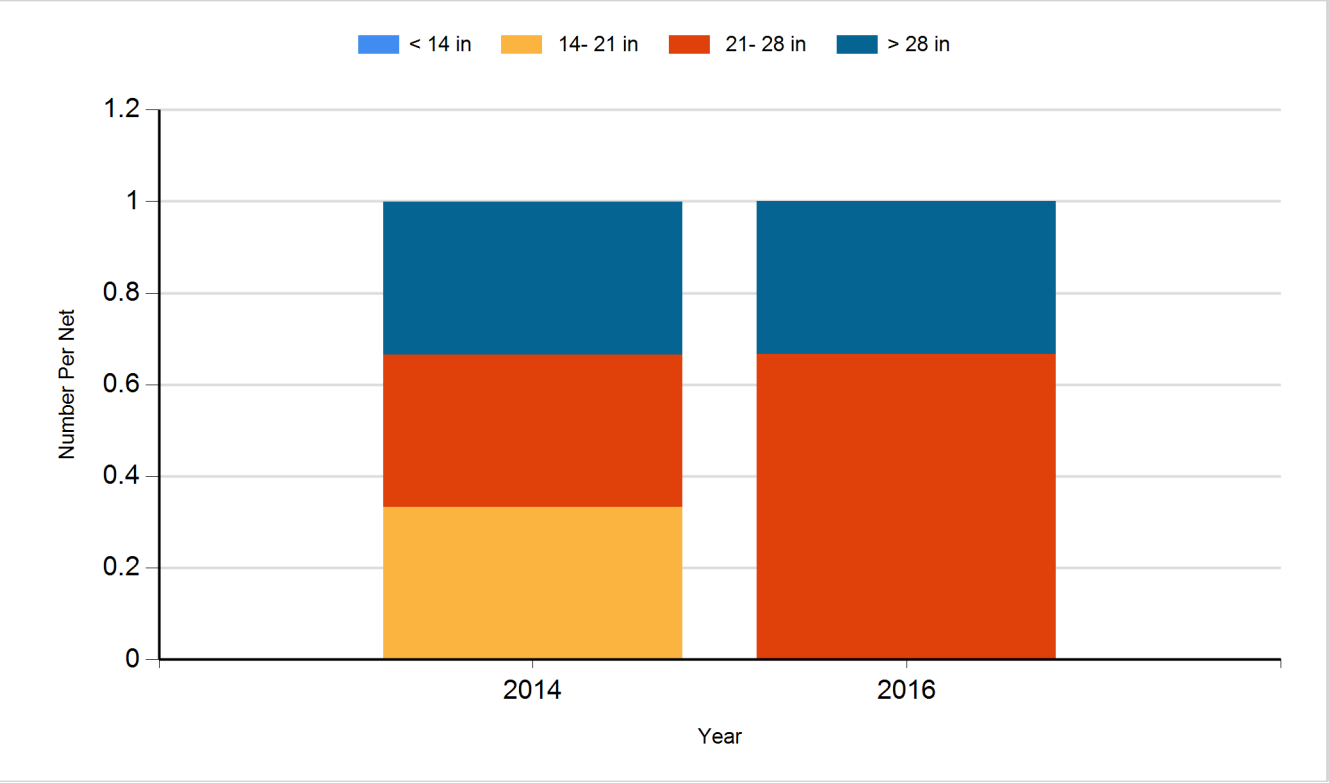
Species: Common Carp
Gear: std exp gill net



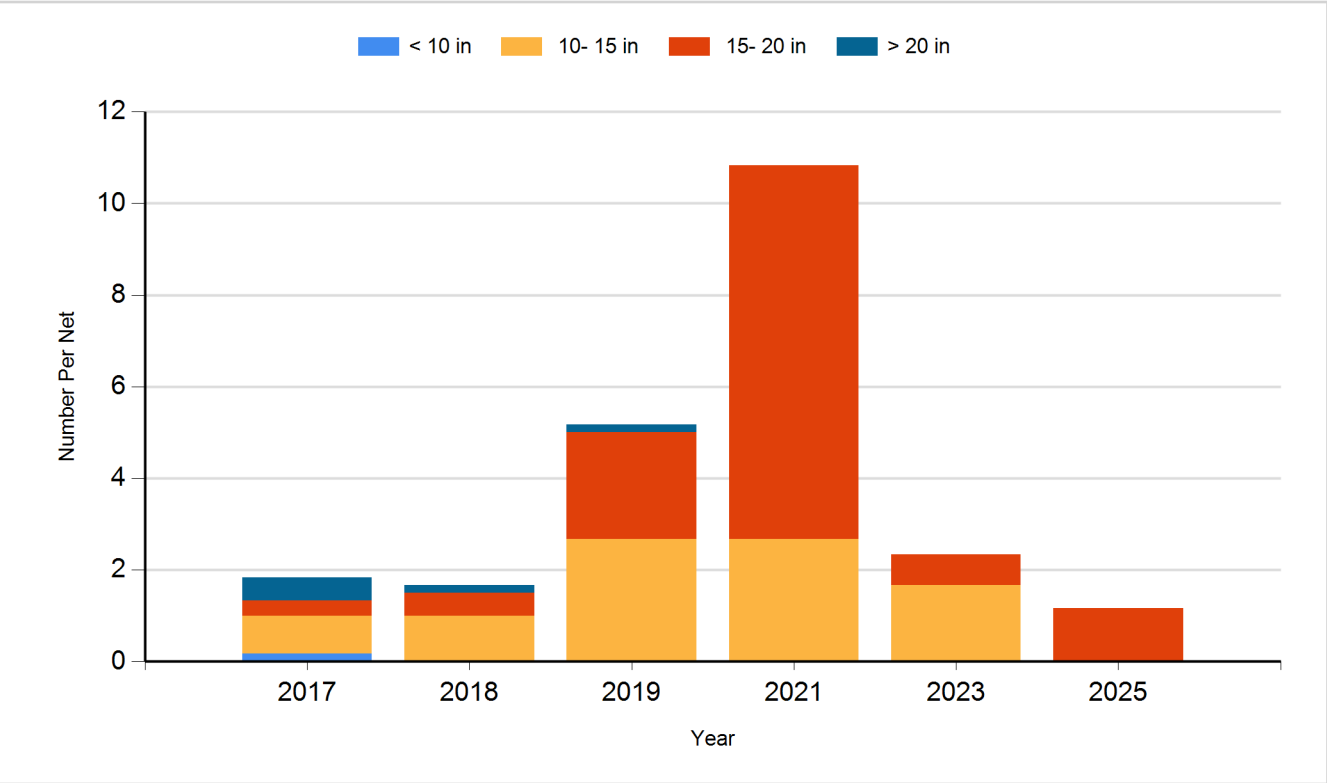
Species: Northern Pike
Gear: AFS std gill net



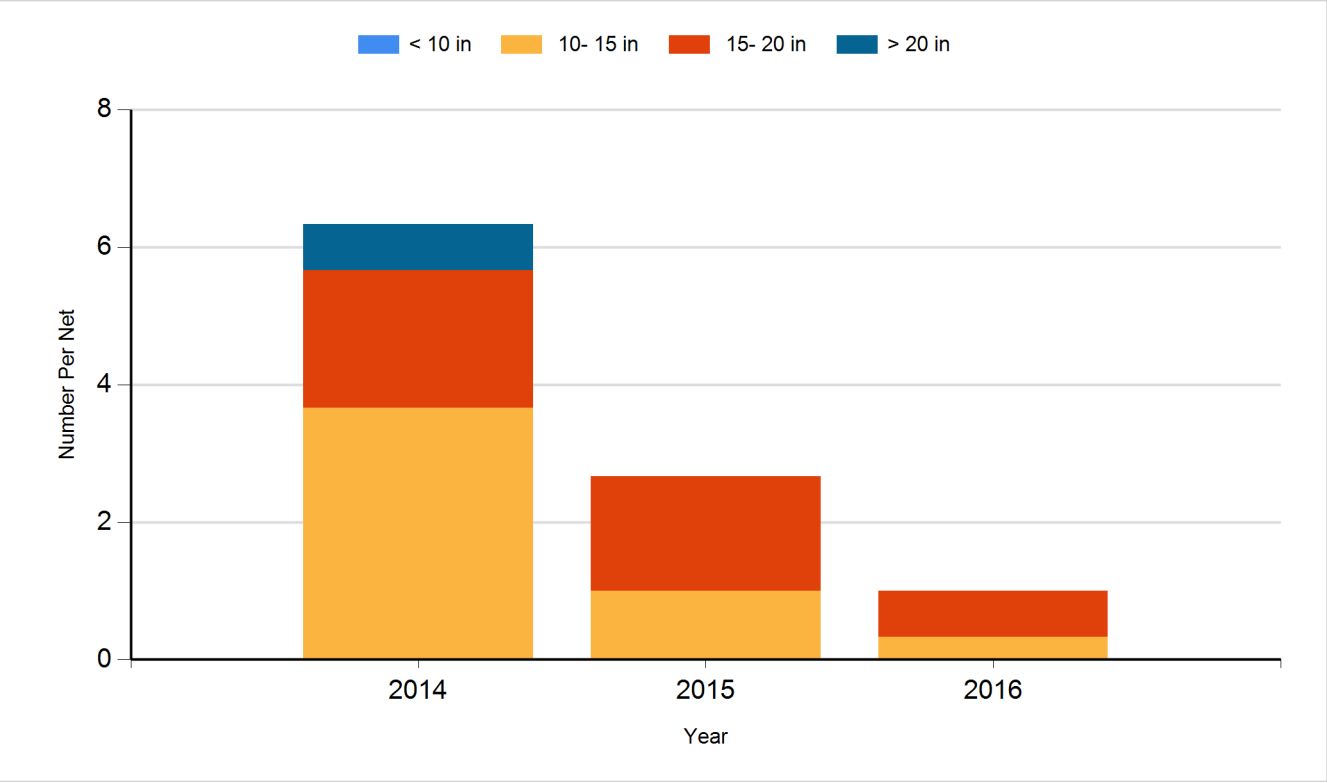
Species: Northern Pike
Gear: std exp gill net



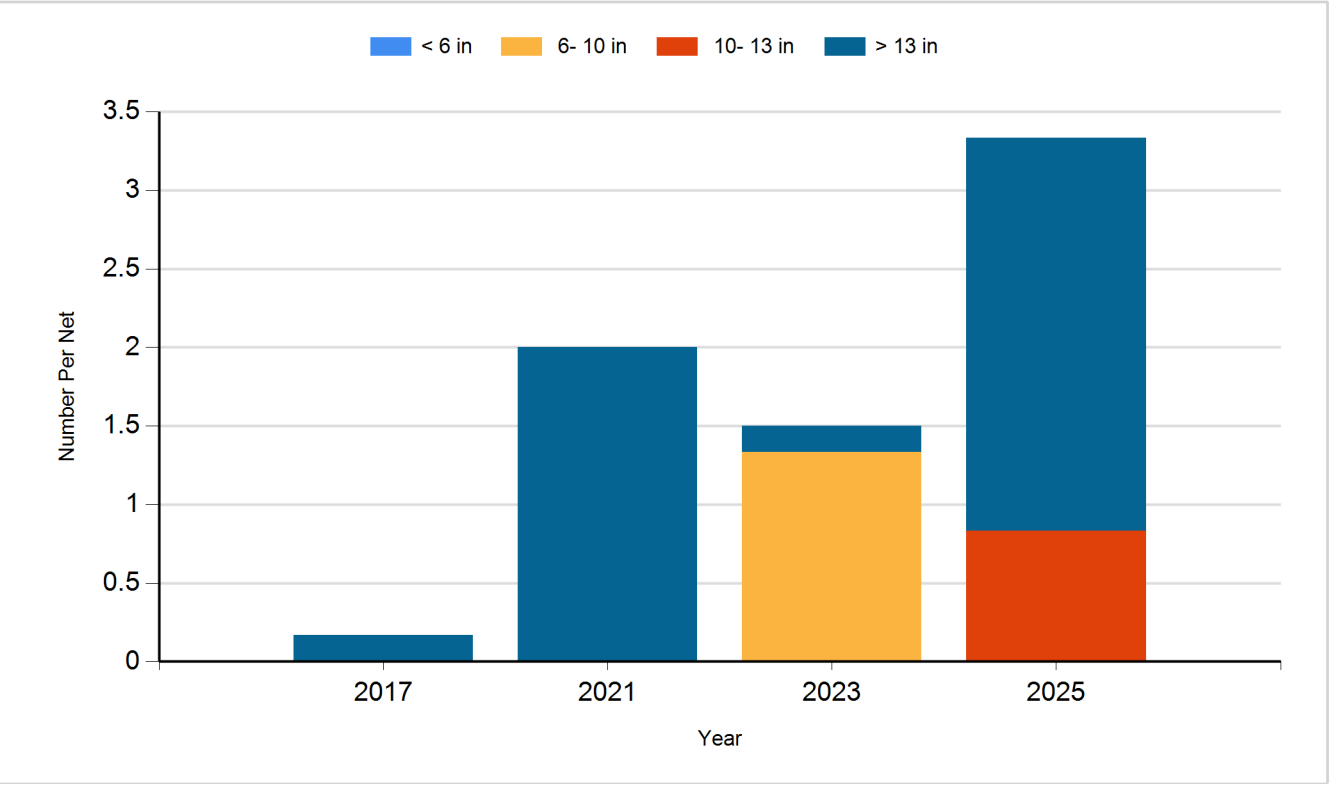
Species: Walleye
Gear: AFS std gill net



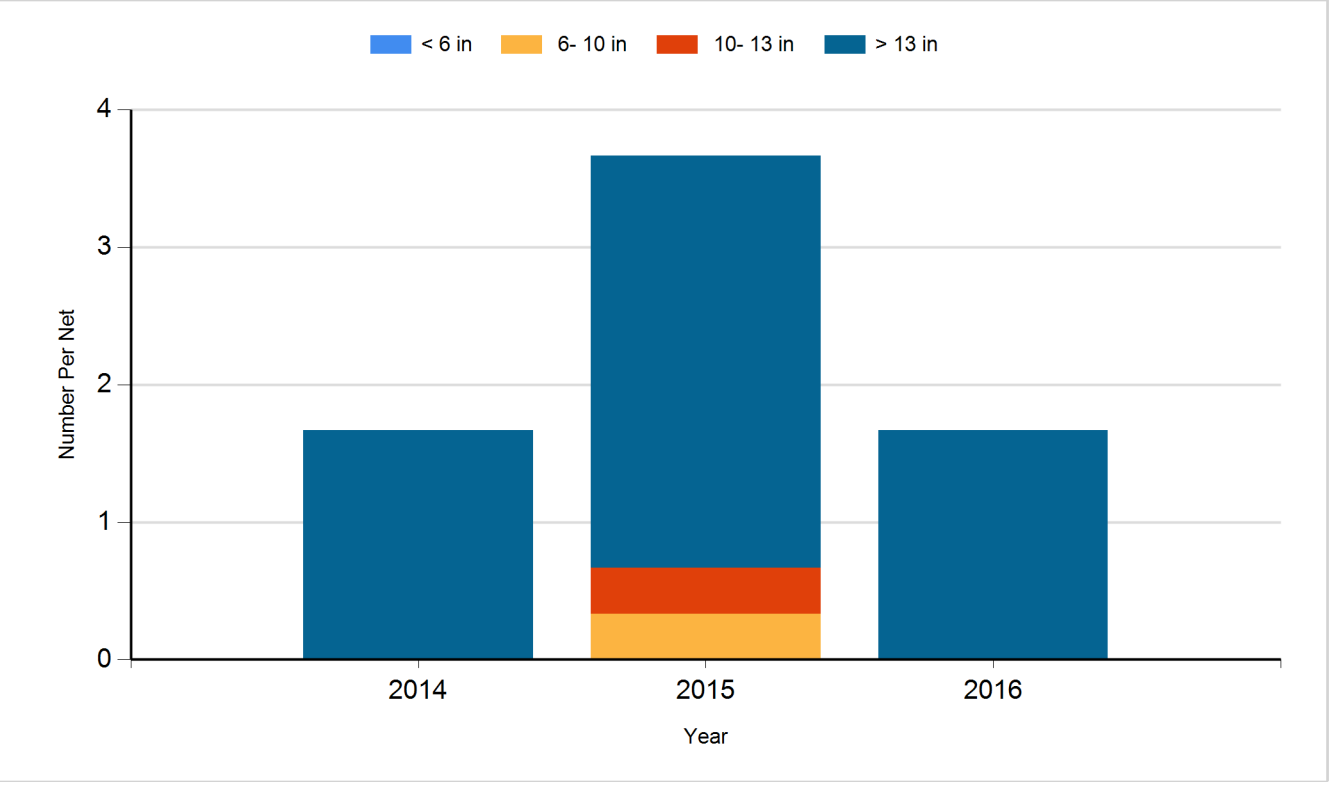
Species: Walleye
Gear: std exp gill net



Species: White Sucker
Gear: AFS std gill net



Species: White Sucker
Gear: std exp gill net



Fish Stocking

Number of fish stocked by year, species, and size.

Year	Species	Size	Number
2014	Walleye	Fry	950,000
2015	Walleye	Fry	891,071
2016	Walleye	Fry	900,000
2017	Walleye	Fry	1,600,000
2018	Walleye	Fry	2,000,000
2019	Walleye	Fry	1,900,000
2021	Walleye	Fry	1,900,000
2023	Walleye	Juvenile	135,252
2025	Walleye	Juvenile	135,469