Angostura Reservoir Lake Survey Summary

Angostura is a 4,612-acre reservoir located seven miles southeast of Hot Springs. Angostura is managed as a multiple species fishery but is dominated by walleye, smallmouth bass, channel catfish, black crappie and gizzard shad. Other common species found in angostura include largemouth bass, bluegill, northern pike, yellow perch and freshwater drum.

Black crappie. Black crappie numbers were about average during the frame net survey (4.2 per net). Most fish ranged from 10 to 12 inches.

Channel catfish. The most abundant species in the gill net sample were channel catfish (18.1 per net). Catfish size structure showed a balanced population with 40 percent of the adults over 16 inches. Catfish numbers seem to remain consistent on an annual basis.

Smallmouth bass. Gill nets showed a strong smallmouth bass population at 4.8 per net. Sizes were large, with 65% of the adult fish being over 14 inches.

Walleye. Walleye catch numbers were 10.6 per gill net, up from 4.5 last year. Fish ranged from around 8 to 26.0 inches. Angostura is stocked annually with around 5 million fry. The gizzard shad forage base keeps this population growing very fast.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Angostura Reservoir, Fall River County
ANR-Lake-4-000
2024

Lake Information

Name: Angostura Reservoir

County: Fall River

Surface Area: 4,835 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Aug 20, 2024	10 net-nights
frame net (std 3/4 in)	May 21, 2024	10 net-nights

Common Fish Species Present

Black Crappie

Channel Catfish

Largemouth Bass

Gizzard Shad

Walleye

River Carpsucker

Smallmouth Bass

Bluegill

Shorthead Redhorse

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 Crappie	13	0.4	0.3	100		75		94	2
	Channel Catfish	244	15.5	6.5	35	5	0		80	1
	Common Carp	13	1.3	0.7	77		0		82	1
	Freshwater Drum	12	0.4	0.2	75		0		71	2
	Gizzard Shad	43	3.5	1.7	0				91	1
	Northern Pike	1	0.1	0.1	100		0		98	
	River Carpsucker	48	4.8	1.2	98		98		94	1
	Shorthead Redhorse	27	2.7	1.6	100		67	14	84	1
	Smallmouth Bass	48	4.6	2.4	96		65	11	93	1
	Walleye	104	9.9	1.6	88	5	21	6	81	1
	White Sucker	2	0.2	0.3	50		50		78	2
	Yellow Perch	8	0.8	0.5	25		0		79	3
frame net (std 3/4 in)	Black Crappie	42	4.1	2.1	88		80	10	96	1
	Bluegill	33	3.3	2.1	52	13	15		107	3
	Channel Catfish	110	5.7	4.6	4		0		83	1
	Common Carp	13	1.3	1.2	92		38		87	3
	River Carpsucker	12	1.2	1.7	100		100		104	4
	Rock Bass	1	0.1	0.1	100		0		91	
	Smallmouth Bass	4	0.4	0.3	50		25		96	5
	Walleye	20	2.0	2.0	90		25	16	90	3

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std frame net	Black Crappie			8.7								8.70
	Bluegill			0.4								0.40
	Common Carp			0.4								0.40
	River Carpsucker			0.5								0.50
	Walleye			0.6								0.60
AFS std gill net	Black Crappie			1.8	0.5	0.8	1.0	0.9	0.4	0.1	0.4	0.74
	Bluegill			0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.04
	Channel Catfish			4.6	10.9	6.1	6.5	10.2	7.8	8.8	15.5	8.80
	Common Carp			1.5	1.8	5.8	3.3	1.7	2.0	2.3	1.3	2.46
	Freshwater Drum			0.6	1.5	5.6	3.3	1.3	0.9	1.6	0.4	1.90
	Gizzard Shad			5.1	2.1	0.8	0.6	0.2	0.2	0.8	3.5	1.66
	Largemouth Bass			0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.05
	Northern Pike			0.5	0.1	0.3	0.5	0.1	0.0	0.0	0.1	0.20
	River Carpsucker			3.0	2.1	2.5	4.4	3.5	1.6	3.9	4.8	3.23
	Rock Bass			0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.01
	Shorthead Redhorse			1.1	0.8	0.0	0.9	3.5	0.9	4.5	2.7	1.80
	Smallmouth Bass			6.3	5.8	5.3	4.5	4.2	5.2	7.7	4.6	5.45
	Spottail Shiner			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Walleye			11.0	12.1	6.5	7.6	12.4	2.7	4.3	9.9	8.31
	White Sucker			0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.04
	Yellow Perch			0.0	0.4	0.6	0.9	0.1	0.0	0.2	0.8	0.38
frame net (std 3/4 in)	Black Bullhead	0.0	0.0		0.0	0.0			0.0		0.0	0.00
	Black Crappie	5.9	8.3		22.8	8.7			2.0		4.1	8.63
	Bluegill	1.4	0.6		0.8	0.3			12.2		3.3	3.10
	Bluegill X Gr. Sunfish Hybrid	0.0	0.0		0.0	0.0			0.0		0.0	0.00
	Channel Catfish	0.3	6.3		7.9	13.0			0.8		5.7	5.67
	Common Carp	0.3	0.9		5.5	5.9			0.2		1.3	2.35
	Freshwater Drum	0.0	0.0		0.0	0.1			0.0		0.0	0.02
	Gizzard Shad	0.0	0.0		1.8	0.0			0.0		0.0	0.30
	Green Sunfish	0.0	0.0		0.0	0.0			0.0		0.0	0.00
	Largemouth Bass	0.0	0.6		0.0	0.0			0.0		0.0	0.10
	Northern Pike	0.0	0.0		0.0	0.0			0.4		0.0	0.07
	River Carpsucker	0.0	0.3		0.1	0.9			0.0		1.2	0.42

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
frame net (std 3/4 in)	Rock Bass	0.1	0.0		0.0	0.0			1.4		0.1	0.27
	Shorthead Redhorse	0.3	0.0		0.0	0.0			1.6		0.0	0.32
	Smallmouth Bass	0.0	0.4		0.5	1.1			4.0		0.4	1.07
	Walleye	1.3	1.9		3.2	1.6			0.8		2.0	1.80
	White Sucker	0.1	0.0		0.1	0.0			0.0		0.0	0.03
	Yellow Perch	0.0	0.0		0.0	0.0			0.0		0.0	0.00
std exp gill net	Black Crappie	2.3	4.3									3.30
	Bluegill	0.0	0.3									0.15
	Channel Catfish	8.8	10.8									9.80
	Common Carp	6.5	4.5									5.50
	Freshwater Drum	2.0	5.0									3.50
	Gizzard Shad	5.8	2.8									4.30
	Largemouth Bass	0.0	0.3									0.15
	Northern Pike	1.8	1.0									1.40
	River Carpsucker	2.0	1.5									1.75
	Shorthead Redhorse	4.8	4.5									4.65
	Smallmouth Bass	5.0	5.0									5.00
	Spottail Shiner	0.0	0.0									0.00
	Walleye	28.0	25.8									26.90
	White Sucker	0.8	0.5									0.65
	Yellow Perch	3.0	2.0									2.50

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std frame net	Black Crappie	PSD			100							
		PSD-P			63							
		Wr			101							
	Bluegill	PSD			100							
		PSD-P			0							
		Wr			112							
	Common Carp	PSD			50							
		PSD-P			25							
		Wr			83							
	River Carpsucker	PSD			100							
		PSD-P			80							
		Wr			100							
	Walleye	PSD			86							
		PSD-P			71							
		Wr			80							
AFS std gill net	Black Crappie	PSD			100	100	100	75	100	100	100	100
		PSD-P			86	100	100	75	0	75	100	75
		Wr			110	97	99	100	107	98	106	94
	Bluegill	PSD			100			100	100			
		PSD-P			100			0	0			
		Wr			79			112	114			
	Channel Catfish	PSD			27	29	29	46	42	41	34	35
		PSD-P			0	1	4	2	3	4	3	0
		Wr			88	80	81	84	83	83	84	80
	Common Carp	PSD			50	50	61	92	100	95	91	77
		PSD-P			0	0	4	4	6	0	0	0
		Wr			87	81	81	86	87	87	86	82
	Gizzard Shad	PSD			100	100	100	100	100	100	100	0
		Wr			101	88	99	102	102	97	99	91
	Largemouth Bass	PSD			100				100			
		PSD-P			50				0			
		Wr			112				88			
	River Carpsucker	PSD			100	100	100	97	97	100	95	98

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std gill net	River Carpsucker	PSD-P			100	100	95	97	97	100	92	98
		Wr			100	94	88	103	101	102	99	94
	Shorthead Redhorse	PSD			100	100		100	43	100	100	100
		PSD-P			78	67		100	26	44	11	67
		Wr			92	86		91	88	87	83	84
	Smallmouth Bass	PSD			68	85	62	53	88	92	95	96
		PSD-P			18	22	19	19	45	35	61	65
		Wr			98	95	96	96	95	93	96	93
	Walleye	PSD			65	62	42	67	68	85	63	88
		PSD-P			5	6	6	2	6	15	7	21
		Wr			88	84	87	87	86	81	81	81
frame net (std 3/4 in)	Black Crappie	PSD	100	79		100	100			100		88
		PSD-P	94	60		86	97			50		80
		Wr	99	111		91	89			98		96
	Bluegill	PSD	91	100		100	100			98		52
		PSD-P	0	25		13	67			5		15
		Wr	95	115		106	102			108		107
	Channel Catfish	PSD	0	32		9	15			0		4
		PSD-P	0	0		0	0			0		0
		Wr	79	96		79	90			79		83
	Common Carp	PSD	100	50		47	66			100		92
		PSD-P	0	0		0	2			100		38
		Wr	73	99		80	85			88		87
	Gizzard Shad	PSD				100						
		Wr				79						
	Largemouth Bass	PSD		100								
		PSD-P		75								
		Wr		109								
	River Carpsucker	PSD		100		100	100					100
		PSD-P		100		100	88					100
		Wr		108		107	101					104
	Shorthead Redhorse	PSD	100							38		
		PSD-P	100							38		
		Wr	78							88		
	Smallmouth Bass	PSD		67		80	100			40		50
		PSD-P		0		0	60			5		25
		Wr		93		85	92			85		96

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
frame net (std 3/4 in)	Walleye	PSD	100	69		94	71			100		90
		PSD-P	80	38		59	36			25		25
		Wr	80	86		74	80			83		90
std exp gill net	Black Crappie	PSD	56	76								
		PSD-P	56	18								
		Wr	118	105								
	Bluegill	PSD		100								
		PSD-P		0								
		Wr		122								
	Channel Catfish	PSD	11	28								
		PSD-P	0	0								
		Wr	87	83								
	Common Carp	PSD	58	33								
		PSD-P	0	0								
		Wr	87	82								
	Gizzard Shad	PSD	100	100								
		Wr	97	93								
	Largemouth Bass	PSD		100								
		PSD-P		0								
		Wr		120								
	River Carpsucker	PSD	100	100								
		PSD-P	100	83								
		Wr	93	105								
	Shorthead Redhorse	PSD	100	100								
		PSD-P	26	67								
		Wr	90									
	Smallmouth Bass	PSD	80	70								
		PSD-P	15	25								
		Wr	97	101								
	Walleye	PSD	58	36								
		PSD-P	14	5								
		Wr	92	85								

Length at Capture

Mean length at capture by age across years sampled, sample size (N).

Species: Black Crappie

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2016	116		189 (26)	251 (56)	264 (10)	298 (4)	308 (20)				

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	51	276 (20)	377 (21)	422 (3)	481 (3)			467 (1)	512 (2)	518 (1)	
2018	95	303 (26)	392 (44)	442 (17)	474 (2)	544 (2)			588 (1)	496 (1)	633 (2)
2017	84	285 (18)	392 (54)	431 (9)					568 (3)		
2016	204	308 (126)	397 (62)		445 (8)	524 (6)			606 (2)		
2015	228	279 (92)	390 (21)	447 (25)	460 (46)	515 (16)	523 (10)	610 (6)	584 (4)	515 (6)	623 (2)

Fish Condition

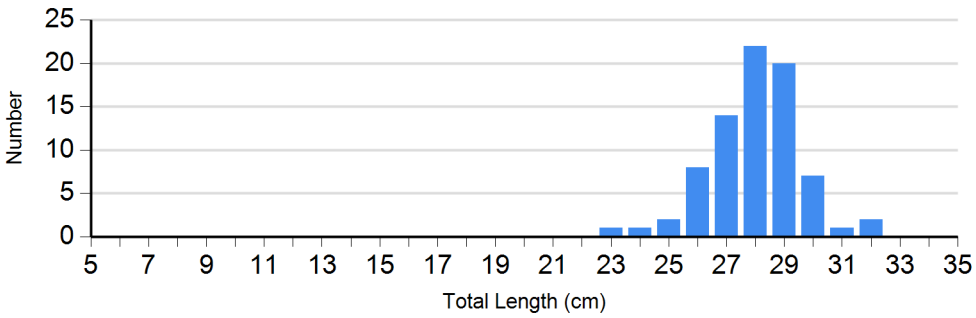
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2022	0		5	101 (2.9)	5	95 (3.2)	0	
	2024	5	108 (2.7)	3	101 (2.7)	23	95 (1.0)	10	93 (1.9)
Bluegill Frame Net	2022	1	111	57	108 (0.9)	3	102 (8.9)	0	
	2024	16	111 (2.7)	12	107 (2.8)	5	98 (8.2)	0	
Channel Catfish Gill Net	2020	28	83 (1.6)	23	85 (1.9)	1	89	0	
	2021	59	82 (1.1)	40	83 (1.6)	3	87 (4.4)	0	
	2022	46	80 (1.0)	29	87 (1.8)	3	87 (0.5)	0	
	2023	58	83 (1.0)	27	85 (1.8)	3	85 (3.7)	0	
	2024	100	78 (0.5)	55	86 (1.4)	0		0	
Common Carp Gill Net	2020	2	84 (1.1)	23	86 (3.4)	1	80	0	
	2021	0		16	87 (1.9)	1	83	0	
	2022	1	89	19	87 (1.5)	0		0	
	2023	2	88 (4.3)	21	85 (1.2)	0		0	
	2024	3	83 (1.5)	10	81 (1.4)	0		0	
Walleye Gill Net	2020	20	91 (2.7)	40	86 (0.8)	1	80	0	
	2021	40	87 (1.2)	77	86 (0.7)	5	81 (1.2)	2	87 (8.9)
	2022	4	85 (2.9)	19	81 (0.8)	4	77 (3.0)	0	
	2023	16	83 (1.1)	24	81 (1.1)	3	73 (3.2)	0	
	2024	12	78 (0.6)	66	80 (0.5)	20	84 (1.3)	1	82

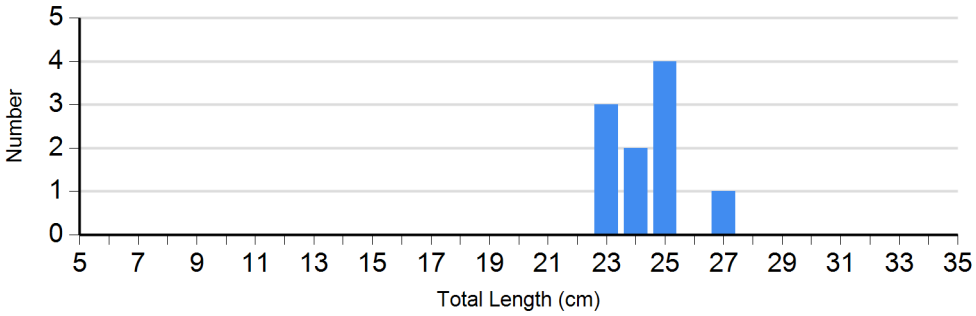
Length Frequency Distribution

Length frequency histogram of species sampled by year.

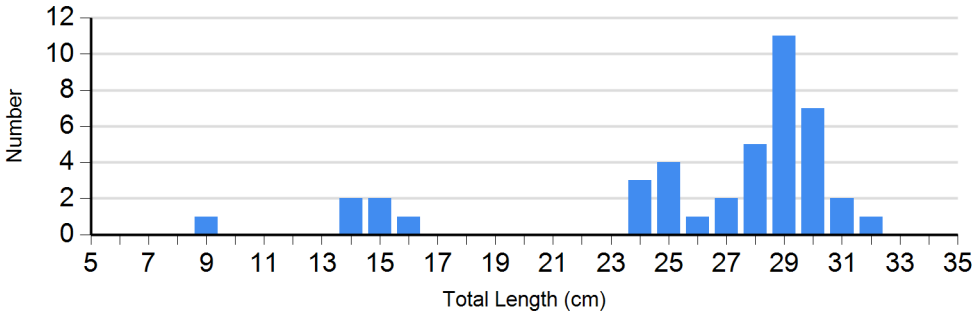
Species: Black Crappie
Gear: frame net (std 3/4 in)



2019

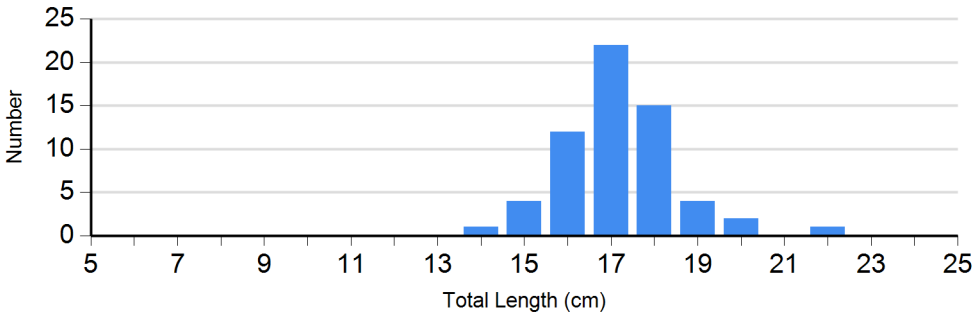


2022

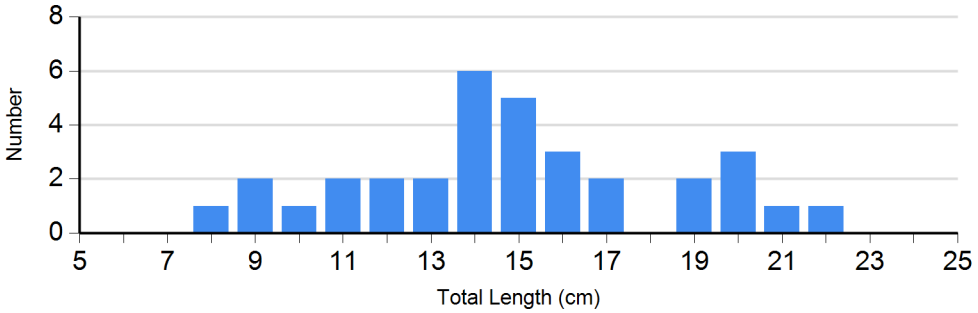


2024

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

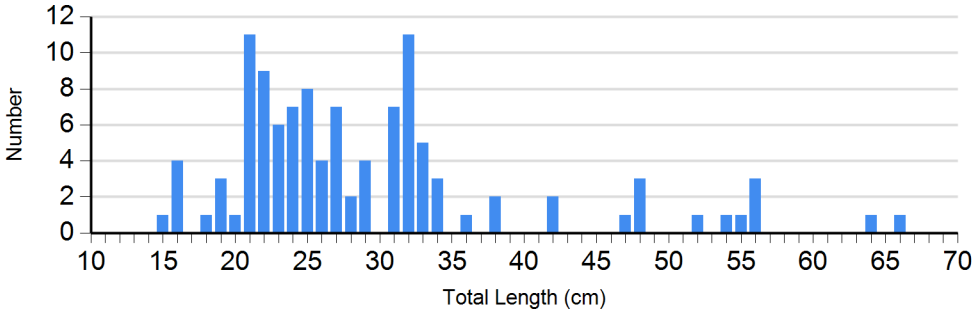


2022

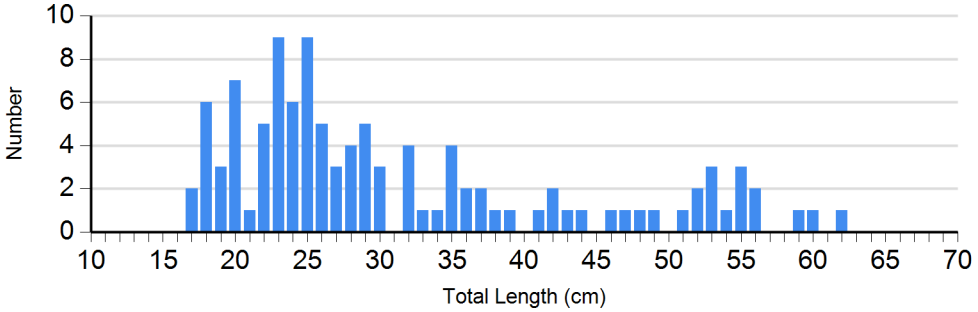


2024

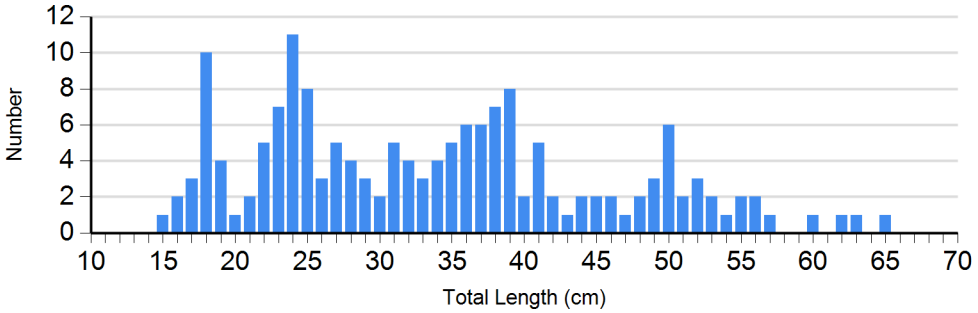
Species: Channel Catfish
Gear: AFS std gill net



2019



2020



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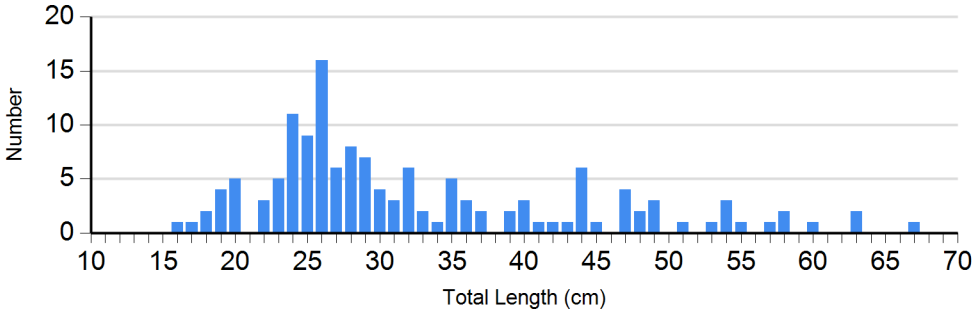

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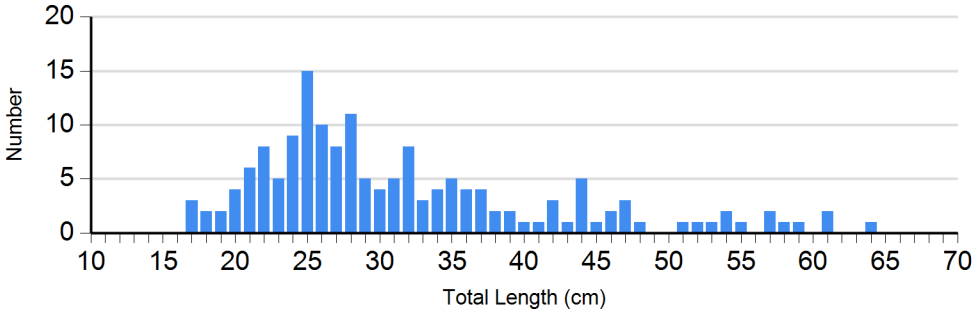

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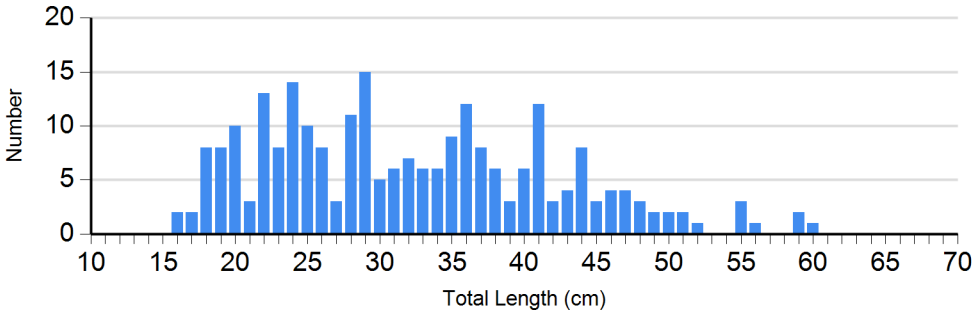
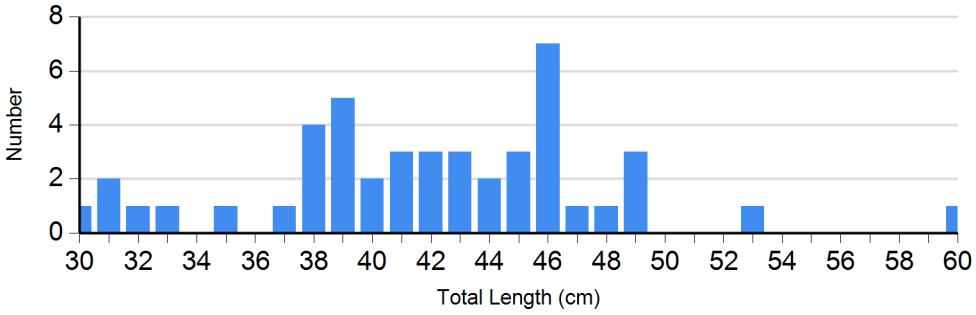
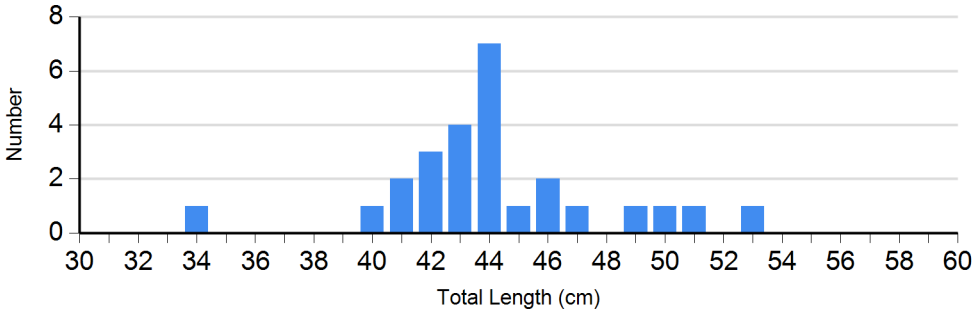


2024

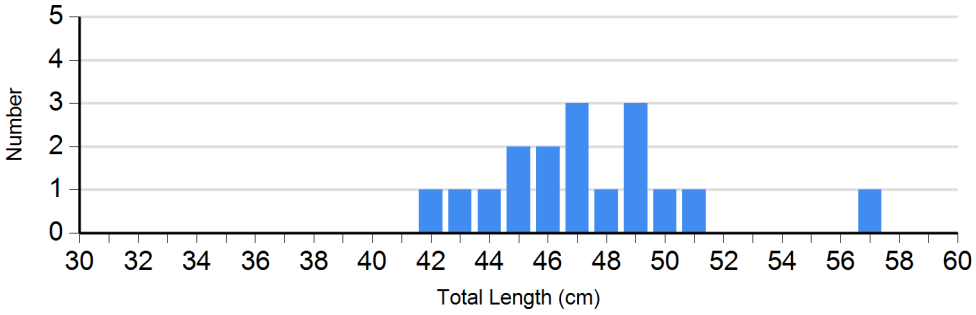
Species: Common Carp
Gear: AFS std gill net



2019



2020



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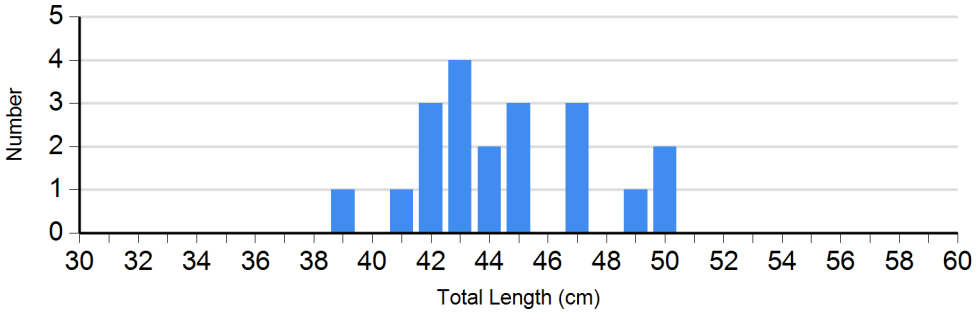

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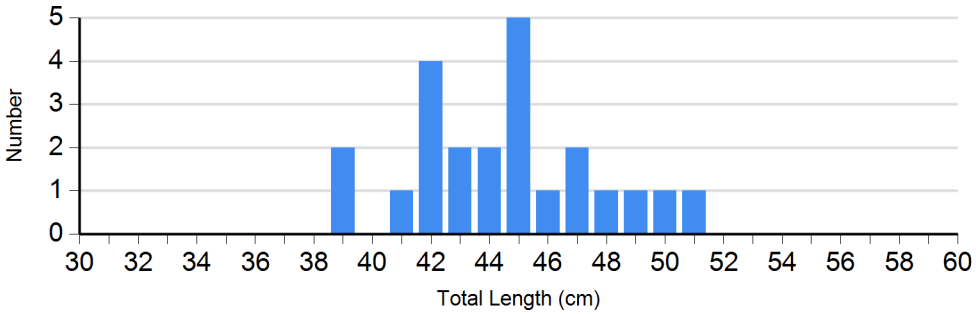

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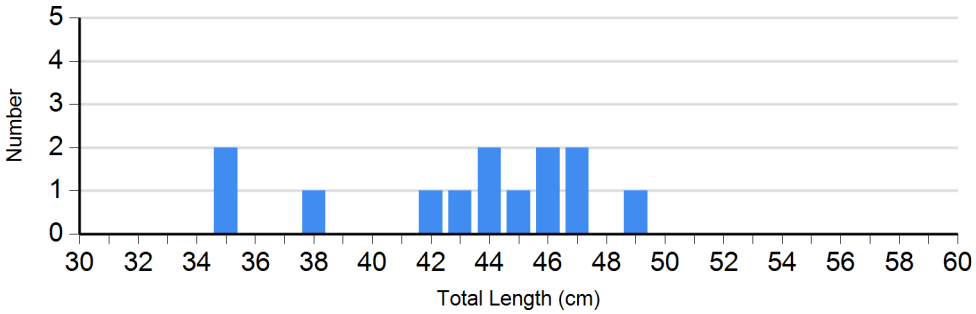
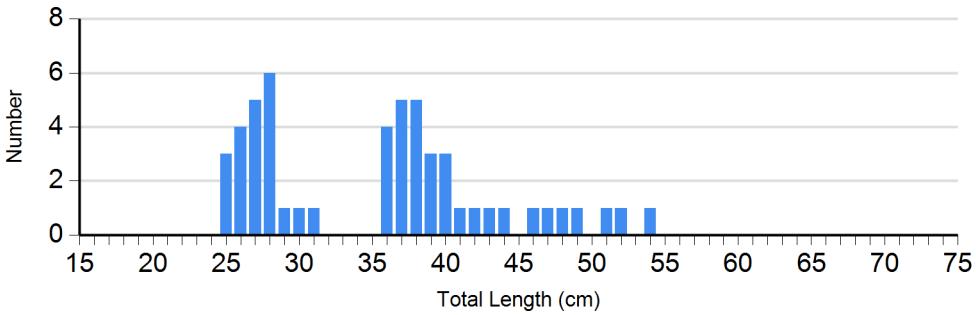


2024

Species: Walleye
Gear: AFS std gill net



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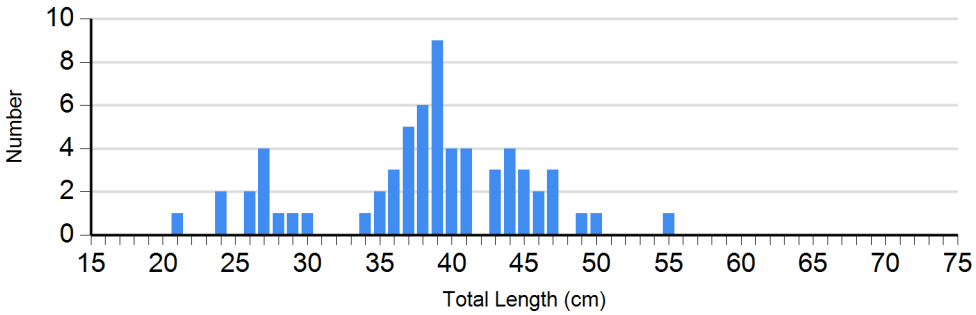
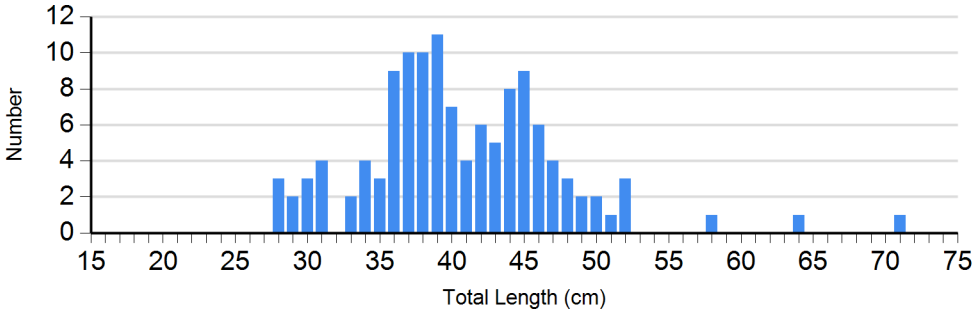
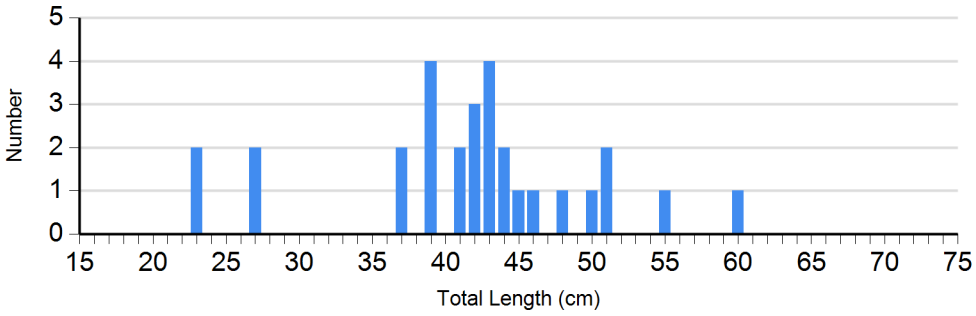


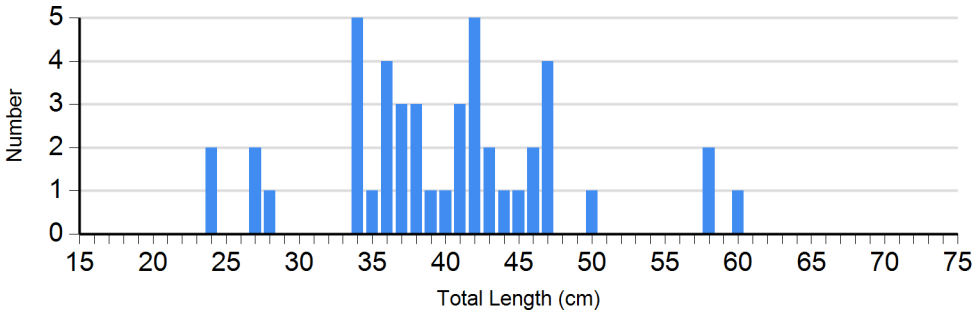
2020



2021



2022



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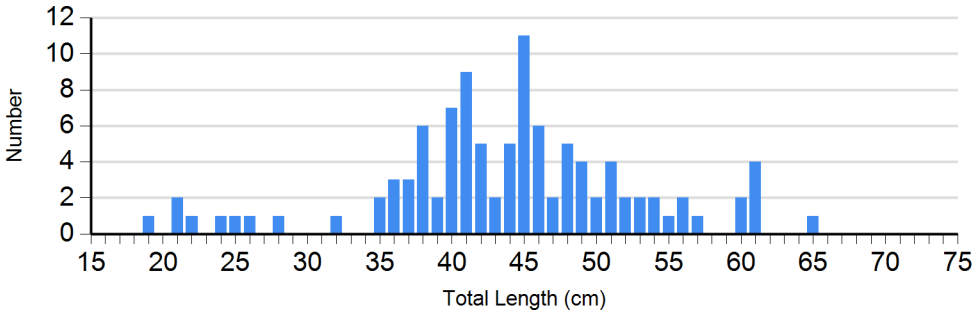
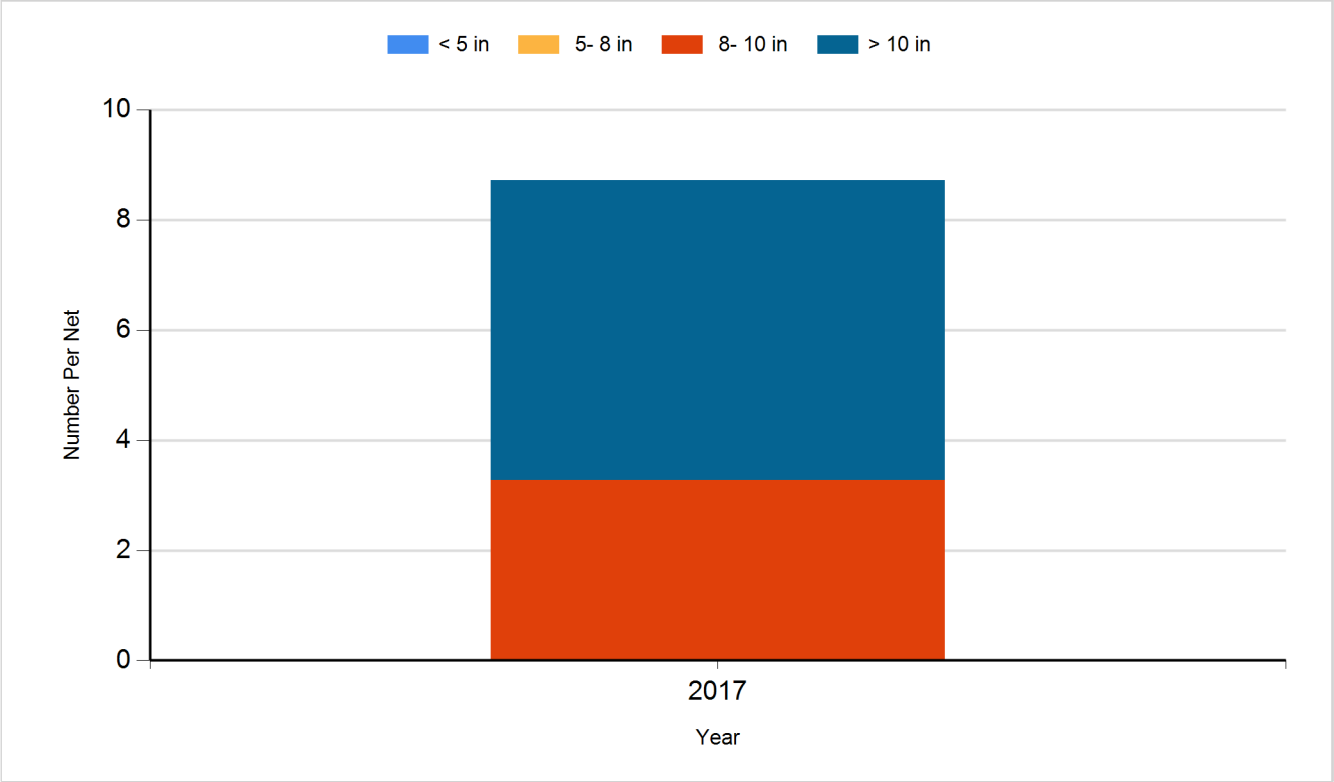


2024

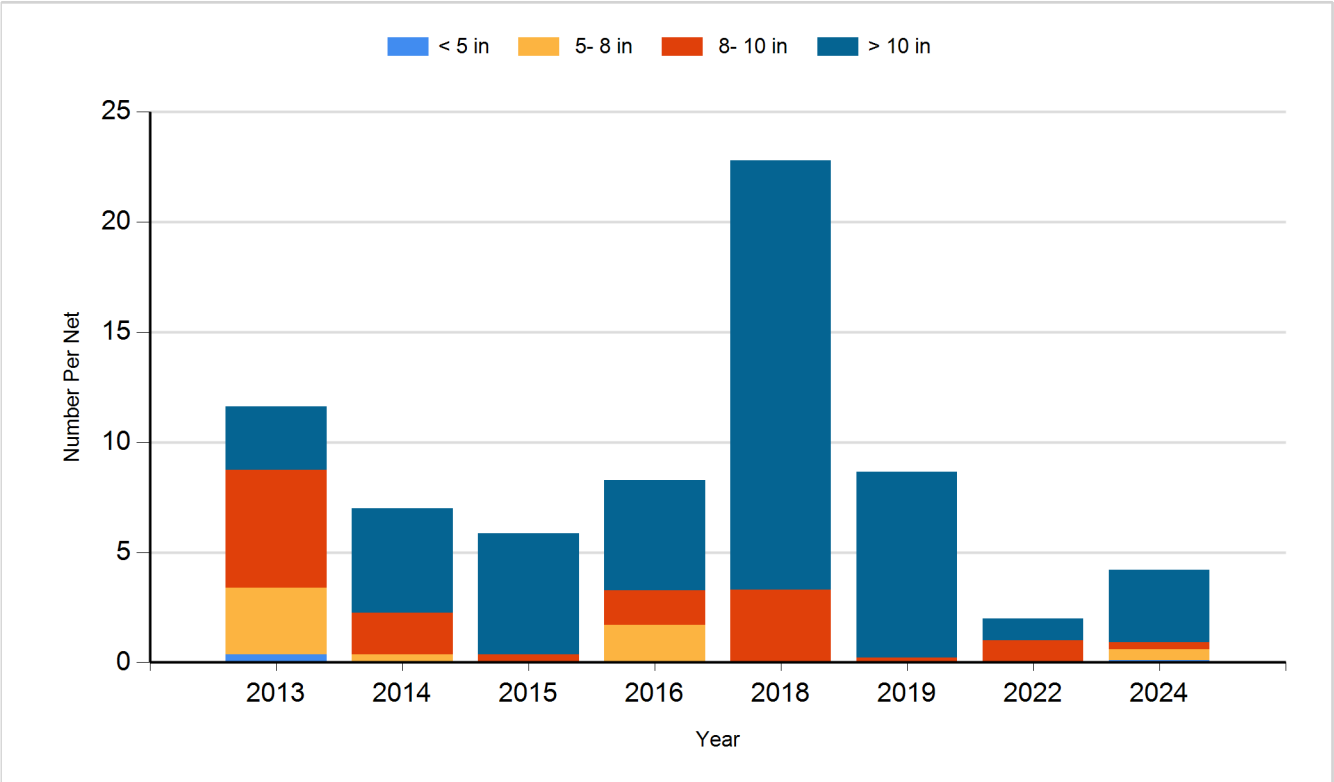
Historic Fish Sizes and Relative Abundance

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

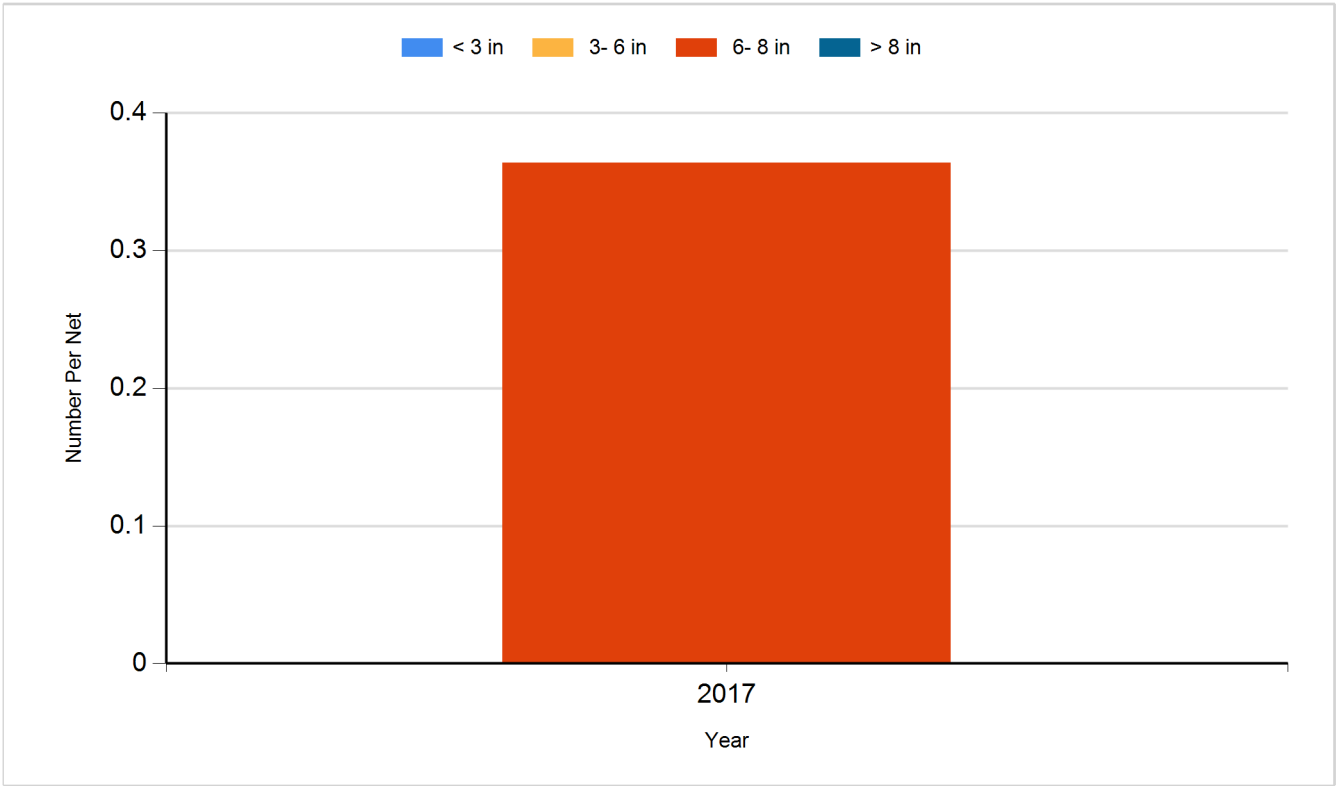
Species: Black Crappie
Gear: AFS std frame net



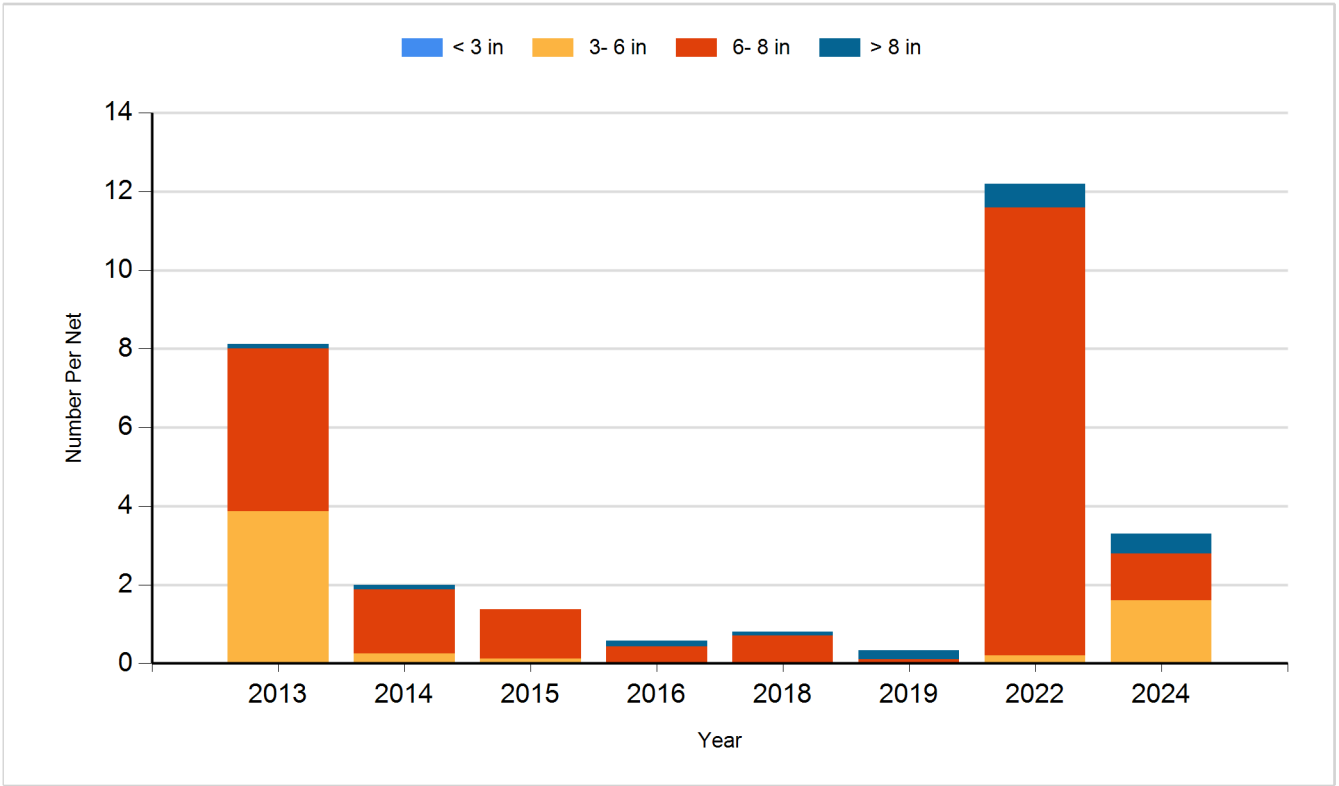
Species: Black Crappie
Gear: frame net (std 3/4 in)



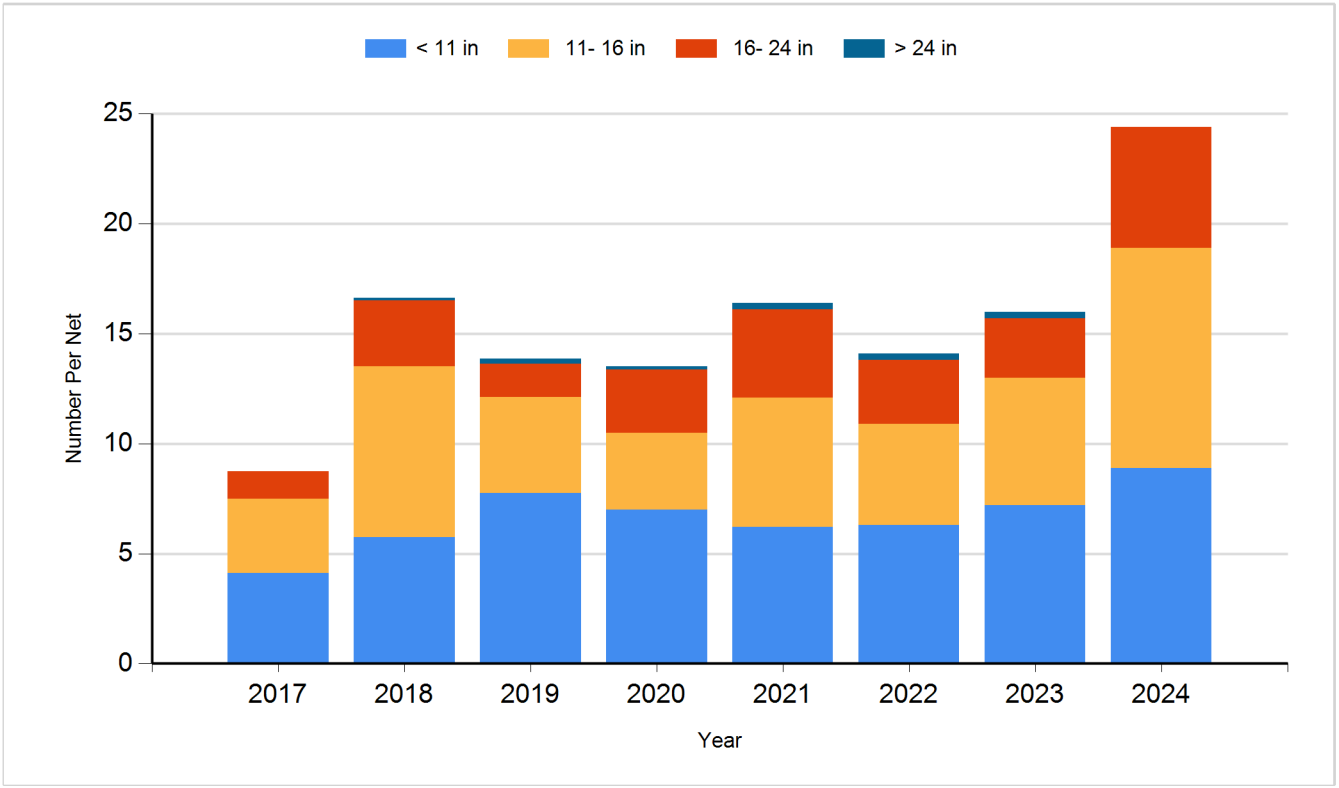
Species: Bluegill
Gear: AFS std frame net



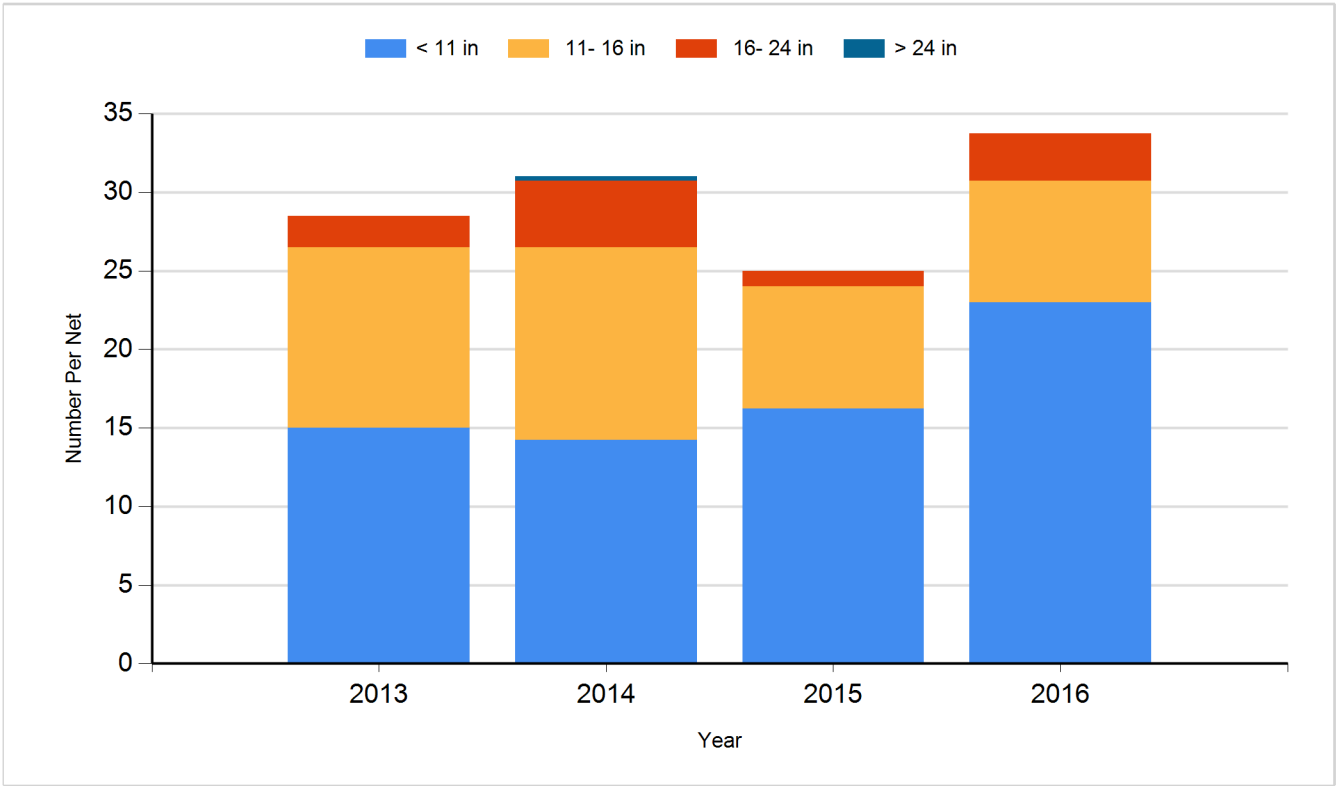
Species: Bluegill
Gear: frame net (std 3/4 in)



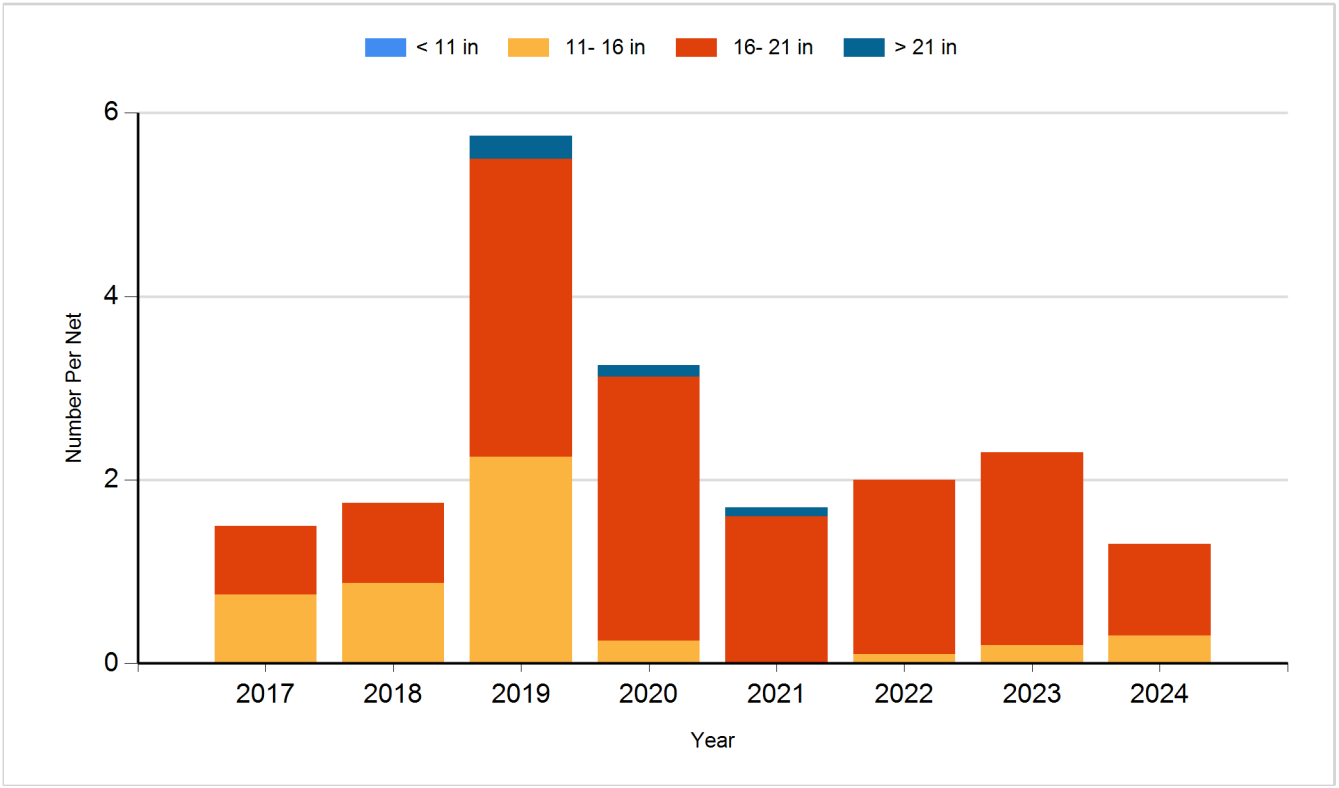
Species: Channel Catfish
Gear: AFS std gill net



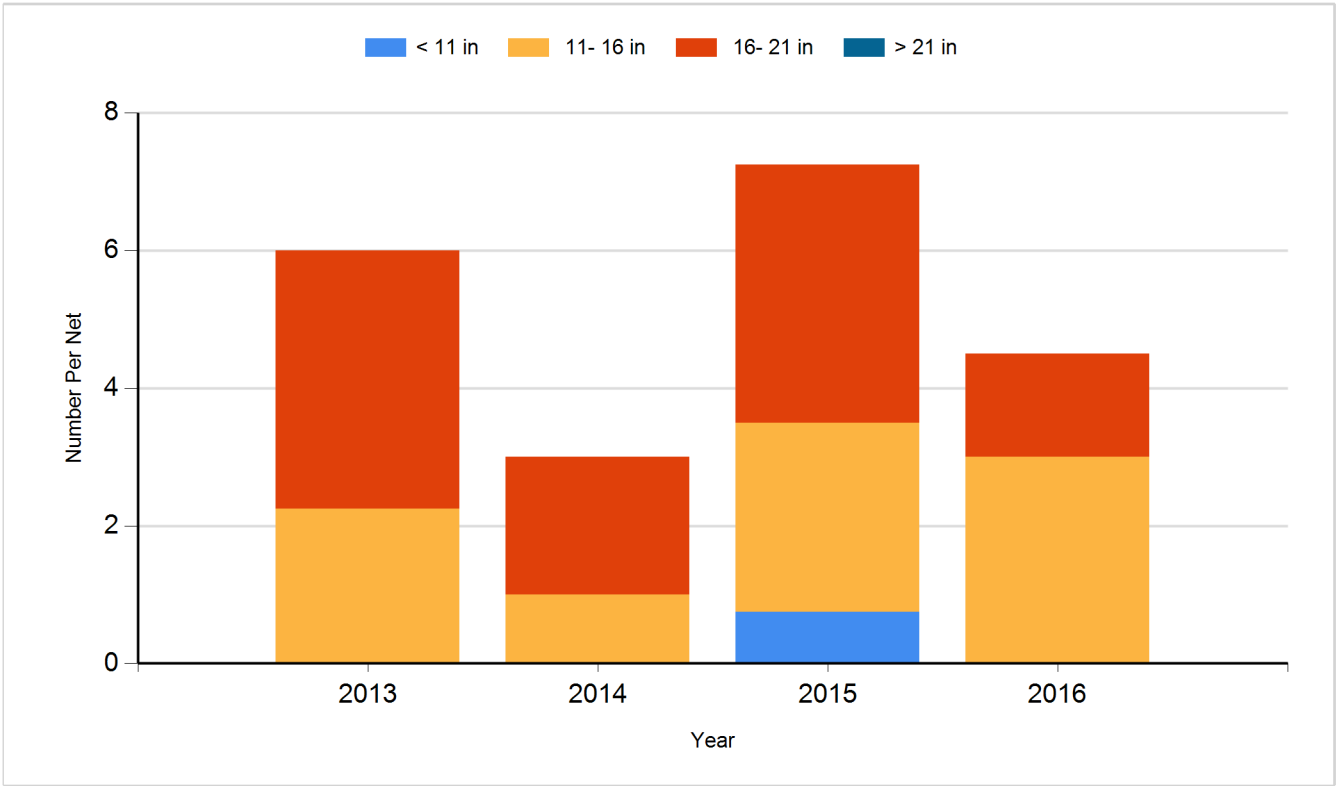
Species: Channel Catfish
Gear: std exp gill net



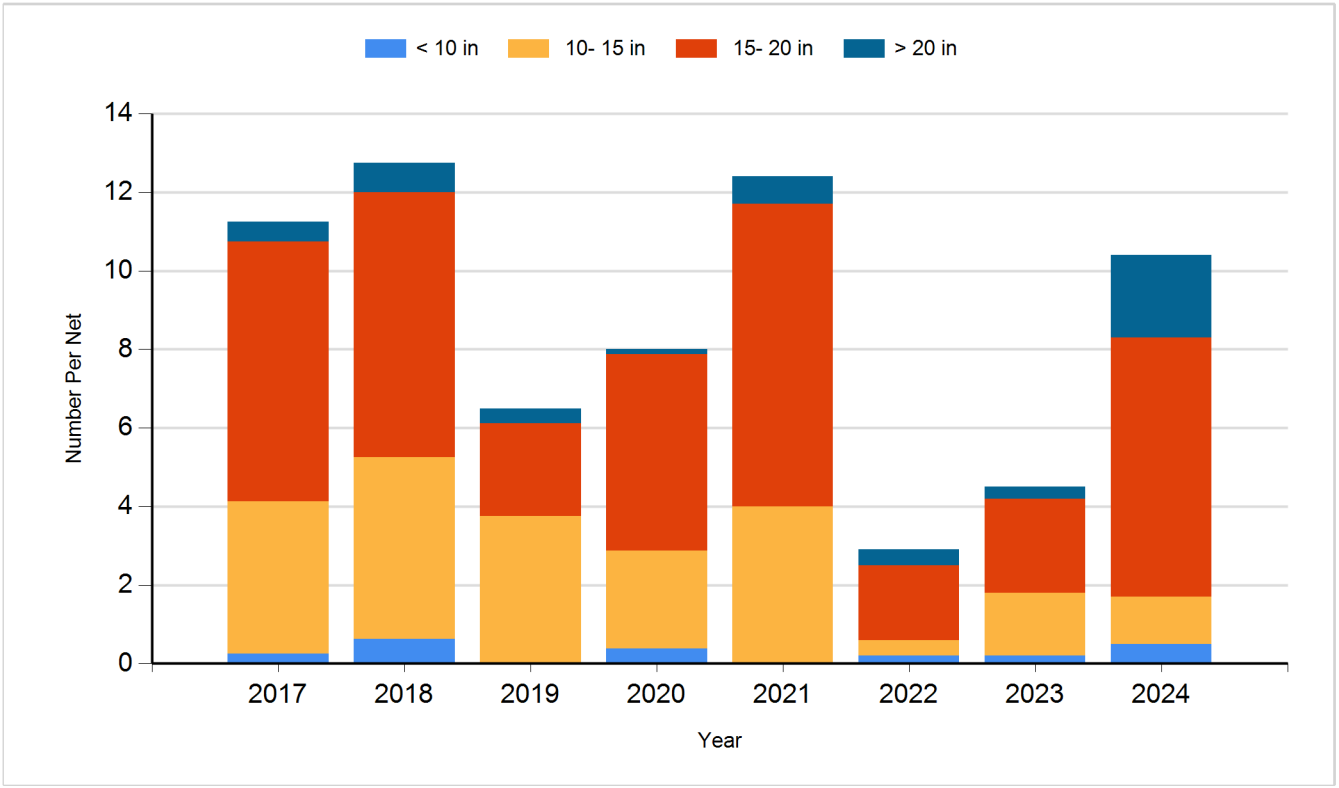
Species: Common Carp
Gear: AFS std gill net



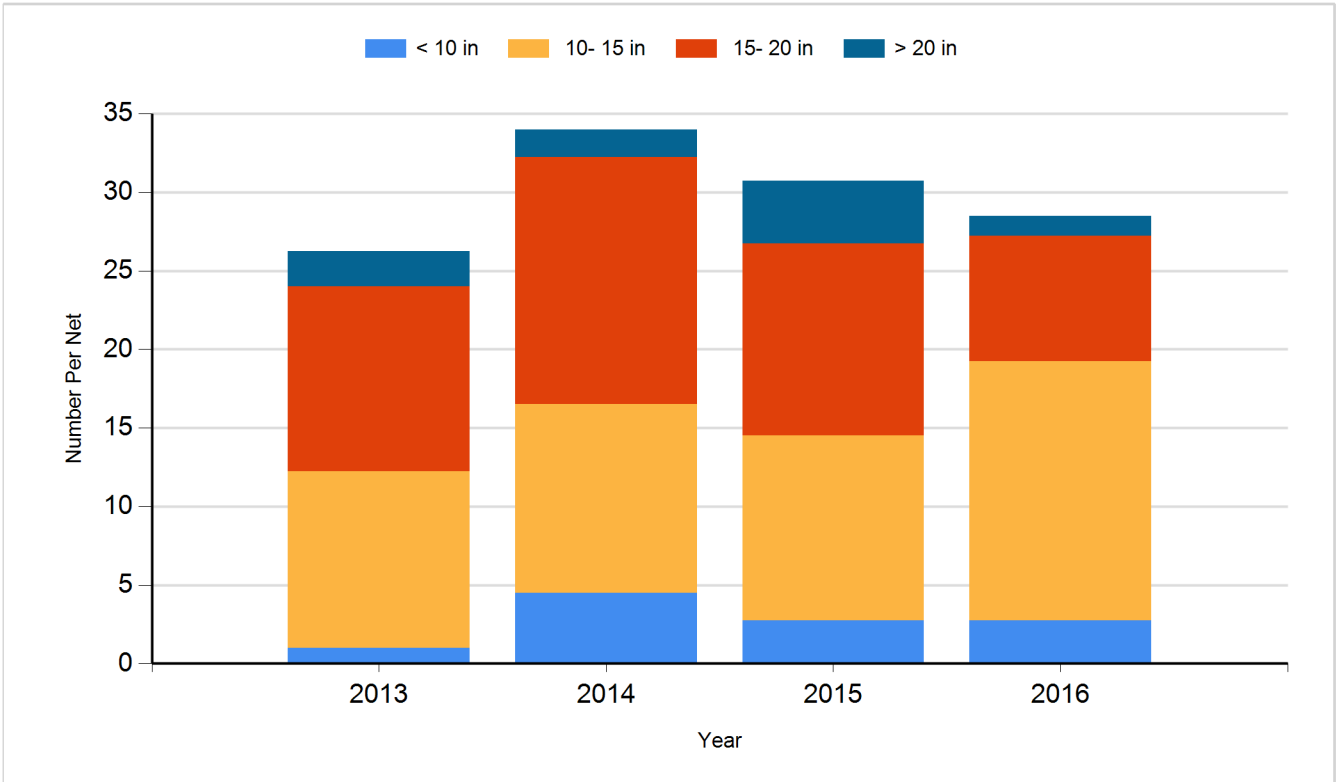
Species: Common Carp
Gear: std exp gill net



Species: Walleye
Gear: AFS std gill net



Species: Walleye
Gear: std exp gill net



Fish Stocking

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

Year	Species	Size	Number
2014	Walleye	Fingerling	549,725
2015	Walleye	Fry	4,702,776
2016	Walleye	Fry	4,809,475
2017	Walleye	Fry	4,609,032
2018	Walleye	Fry	5,000,000
2019	Walleye	Fry	5,422,140
2021	Walleye	Fry	5,503,520
2022	Walleye	Fry	4,750,000
2023	Walleye	Fry	5,000,000
2023	Yellow Perch	Adult	8,500
2024	Walleye	Fry	5,811,890
2024	Yellow Perch	Adult	7,500