SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Oahe Lower, Stanley County
LLO-Lake-2952-000
2024

Lake Information

Name: Oahe Lower

County: Stanley

Surface Area: 154,978 Acres

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Sep 09, 2024	24 net-nights
AFS std gill net	Sep 10, 2024	24 net-nights
AFS std gill net	Sep 11, 2024	24 net-nights
AFS std gill net	Sep 23, 2024	24 net-nights
suspended gill net	Aug 05, 2024	2 net-nights
suspended gill net	Aug 07, 2024	1 net-nights
suspended gill net	Aug 09, 2024	1 net-nights

Common Fish Species Present

Rainbow Smelt

Lake Herring

Walleye

Channel Catfish

Smallmouth Bass

Chinook Salmon

Common Carp

Freshwater Drum

Shorthead Redhorse

River Carpsucker

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	Bigmouth Buffalo	1	0.0	0.0	100		100		104	
	Black Crappie	1	0.0	0.0	0		0		109	
	Channel Catfish	262	2.6	0.3	64	4	2	1	81	1
	Chinook Salmon	2	0.0	0.0						
	Common Carp	38	0.4	0.1	92		42	12	84	2
	Freshwater Drum	28	0.3	0.1	64	15	12		88	2
	Gizzard Shad	8	0.1	0.0	60				96	2
	Goldeye	24	0.0	0.0						
	Northern Pike	11	0.1	0.1	82		55		86	4
	River Carpsucker	20	0.2	0.1	100		95		102	3
	Sauger	3	0.0	0.0	67		0		81	5
	Shorthead Redhorse	24	0.3	0.1	100		83		91	2
	Shortnose Gar	1	0.0	0.0						
	Smallmouth Bass	246	2.3	0.4	68	4	50	5	100	1
	Smallmouth Buffalo	5	0.1	0.0	100		60		76	6
	Walleye	452	4.7	0.4	64	3	11	2	85	0
	White Bass	13	0.1	0.0	90		90		105	4
	White Sucker	3	0.0	0.0	67		67		96	16
	Yellow Perch	13	0.1	0.0	46	23	8		78	4
suspended gill net*	Chinook Salmon	2	0.5	0.5						
	Lake Herring	218	54.5	22.2	100		90	3		
	Rainbow Smelt	748	187.0	250.3						
	Walleye	1	0.3	0.4	0		0			

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 gill net (1/2 inch)*	Channel Catfish			0.0	0.0	0.1	0.1	0.1				0.06
	Common Carp			0.0	0.0	0.1	0.1	0.1				0.06
	Emerald Shiner			0.0	0.0	0.0	0.0	0.0				0.00
	Freshwater Drum			0.0	0.0	0.0	0.1	0.0				0.02
	Gizzard Shad			0.4	0.0	0.0	0.0	0.0				0.08
	Goldeye			0.0	0.0	0.0	0.0	0.0				0.00
	Northern Pike			0.0	0.0	0.0	0.0	0.0				0.00
	Rainbow Smelt			0.0	0.0	0.0	0.0	0.0				0.00
	Sauger			0.0	0.0	0.0	0.0	0.0				0.00
	Shortnose Gar			0.0	0.0	0.0	0.0	0.0				0.00
	Smallmouth Bass			0.0	0.0	0.1	0.1	0.1				0.06
	Spotfin Shiner			0.0	0.0	0.0	0.0	0.0				0.00
	Spottail Shiner			0.0	0.0	0.7	0.2	0.1				0.20
	Walleye			0.2	0.3	0.3	0.3	0.2				0.26
	White Bass			0.1	0.0	0.1	0.2	0.0				0.08
	White Crappie			0.0	0.0	0.0	0.0	0.0				0.00
	Yellow Perch			0.3	0.1	2.7	1.0	0.2				0.86
AFS std gill net	Bigmouth Buffalo			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Black Bullhead			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Black Crappie			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Catfish			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Channel Catfish			4.8	9.6	11.7	4.9	6.2	4.6	3.2	2.6	5.95
	Chinook Salmon			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Common Carp			0.4	0.5	0.8	0.9	0.6	0.7	0.3	0.4	0.58
	Freshwater Drum			0.4	0.4	0.7	0.5	0.3	0.3	0.4	0.3	0.41
	Gizzard Shad			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.01
	Goldeye			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Lake Herring			0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.04
	Northern Pike			0.3	0.2	0.2	0.1	0.2	0.3	0.1	0.1	0.19
	Rainbow Smelt			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Redhorse			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	River Carpsucker			0.2	0.1	0.2	0.3	0.4	0.2	0.2	0.2	0.23
	Sauger			0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.01
	Shorthead Redhorse			0.1	0.1	0.2	0.1	0.3	0.1	0.2	0.3	0.18

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std gill net	Shortnose Gar			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
	Smallmouth Bass			1.6	1.7	1.7	1.5	2.0	2.6	2.7	2.3	2.01
	Smallmouth Buffalo			0.4	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.15
	Walleye			1.4	1.7	3.6	3.0	2.0	3.7	4.0	4.7	3.01
	White Bass			0.9	0.5	0.2	0.1	0.3	0.3	0.3	0.1	0.34
	White Crappie			0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.01
	White Sucker			0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.03
	Yellow Perch			0.1	0.6	1.7	0.8	0.4	0.3	0.6	0.1	0.58
boat shocker (night)	Walleye*			29.3			17.7					23.50
fall night EF-WAE*	Walleye					57.7						57.70
large seine*	Walleye		0.5	0.3	0.4	0.1						0.33
std exp gill net	Bigmouth Buffalo	0.0	0.0									0.00
	Black Crappie	0.0	0.0									0.00
	Channel Catfish	8.3	17.3									12.80
	Chinook Salmon	0.0	0.0									0.00
	Common Carp	1.4	2.2									1.80
	Freshwater Drum	0.3	0.7									0.50
	Gizzard Shad	0.0	0.0									0.00
	Goldeye	0.0	0.0									0.00
	Lake Herring	103.4	0.0									51.70
	Northern Pike	0.5	0.8									0.65
	Rainbow Smelt	0.0	0.0									0.00
	River Carpsucker	0.1	0.1									0.10
	Sauger	0.0	0.0									0.00
	Shorthead Redhorse	0.5	0.0									0.25
	Shortnose Gar	0.0	0.0									0.00
	Smallmouth Bass	2.1	2.9									2.50
	Smallmouth Buffalo	0.5	0.4									0.45
	Walleye	3.0	3.9									3.45
	White Bass	0.3	0.2									0.25
	White Crappie	0.2	0.0									0.10
	White Sucker	0.2	0.1									0.15
	Yellow Perch	1.8	0.8									1.30
suspended gill net*	Channel Catfish		1.0	0.5	0.0			0.3			0.0	0.36
	Chinook Salmon		0.1	0.4	0.0			0.0			0.5	0.20
	Lake Herring		174.3	237.4	301.0			145.2			54.5	182.48

		CPUE										
Gear	Species	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
suspended gill net*	Rainbow Smelt		2.2	14.5	41.3			7.3			187.0	50.46
	Walleye		0.5	0.1	0.0			1.0			0.3	0.38
	Yellow Perch		0.2	0.0	0.0			0.0			0.0	0.04

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 gill net	Channel Catfish	PSD			60	66	66	79	89	81	82	64
		PSD-P			1	4	4	4	4	4	3	2
		Wr			79	82	82	85	81	78	81	81
	Common Carp	PSD			65	100	72	85	91	91	96	92
		PSD-P			15	49	32	37	45	42	29	42
		Wr			81	79	85	85	90	88	86	84
	Lake Herring	PSD				100	100					
		PSD-P				21	100					
		Wr				76	76					
	River Carpsucker	PSD			100	100	94	100	100	91	100	100
		PSD-P			100	100	82	95	92	91	81	95
		Wr			101	93	96	99	98	103	99	102
	Shorthead Redhorse	PSD			60	100	100	90	100	92	94	100
		PSD-P			60	60	50	80	68	83	94	83
		Wr			92	94	95	93	92	85	89	91
	Smallmouth Bass	PSD			57	82	78	66	72	79	82	68
		PSD-P			13	39	45	33	24	30	61	50
		Wr			94	96	99	97	91	101	108	100
	Walleye	PSD			36	37	48	51	44	33	73	64
		PSD-P			19	15	13	13	16	11	7	11
		Wr			81	86	88	83	79	82	87	85
boat shocker (night)	Walleye	PSD			0			4				
		PSD-P			0			0				
std exp gill net	Channel Catfish	PSD	36	49								
		PSD-P	3	2								
		Wr	78	77								
	Common Carp	PSD	97	65								
		PSD-P	70	40								
		Wr	82	82								
	Lake Herring	PSD	99									
		PSD-P	3									
	River Carpsucker	PSD	0	100								

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
std exp gill net	River Carpsucker	PSD-P	0	100								
		Wr	837	103								
	Shorthead Redhorse	PSD	100									
		PSD-P	77									
		Wr	101									
	Smallmouth Bass	PSD	65	65								
		PSD-P	49	44								
		Wr	94	94								
	Walleye	PSD	59	59								
		PSD-P	3	36								
		Wr	81	83								
suspended gill net	Channel Catfish	PSD		100	100				100			
		PSD-P		20	0				0			
	Lake Herring	PSD		100	100	100			100			100
		PSD-P		2	1	10			33			90
	Walleye	PSD		33	0				17			0
		PSD-P		0	0				17			0

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+
2024	449	294 (62)	356 (116)	413 (13)	458 (75)	453 (132)	487 (27)	483 (2)	574 (8)	575 (1)	642 (9)
2023	390	272 (62)	337 (29)	399 (49)	416 (188)	447 (30)	495 (4)	583 (3)	574 (4)	608 (11)	695 (8)
2022	363	265 (7)	305 (44)	343 (158)	387 (94)	443 (15)	553 (12)	524 (4)	557 (18)	585 (5)	712 (6)
2021	219	216 (15)	287 (104)	388 (55)	461 (8)	494 (11)	513 (9)	551 (13)	604 (1)	686 (2)	612 (2)
2020	262	227 (60)	351 (83)	389 (31)	445 (25)	466 (16)	497 (35)	498 (2)	514 (2)	610 (5)	633 (4)
2019	288	253 (78)	312 (42)	369 (42)	400 (21)	434 (58)	460 (10)	492 (8)	526 (6)	643 (2)	644 (20)
2018	125	253 (7)	308 (23)	367 (12)	379 (49)	454 (15)	345 (1)	532 (4)	421 (1)	527 (10)	678 (3)
2017	86	219 (9)	286 (7)	327 (39)	354 (13)	555 (1)	506 (7)	593 (2)	535 (7)		645 (1)
2016	84	218 (2)	264 (23)	310 (16)	390 (5)	480 (10)	530 (4)	539 (24)	514 (1)		
2015	92	211 (21)	278 (16)	343 (10)	391 (13)	458 (5)	454 (28)				

Fish Condition

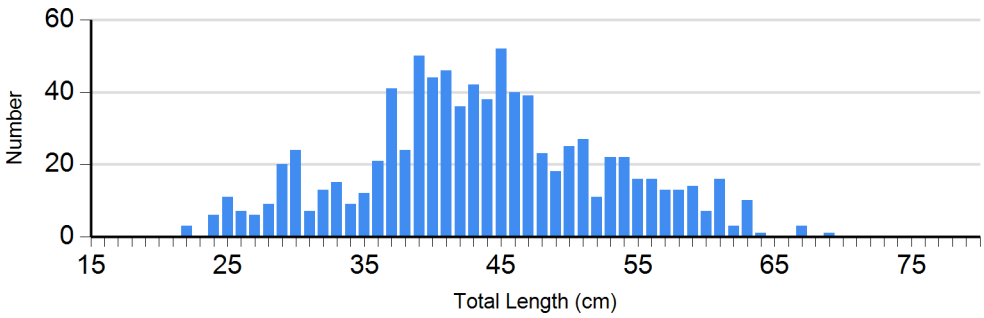
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Channel Catfish Gill Net	2020	75	86 (2.1)	266	85 (0.6)	14	84 (3.2)	0	
	2021	64	81 (0.8)	512	81 (0.5)	22	79 (2.8)	0	
	2022	85	80 (1.2)	336	77 (0.4)	16	84 (3.2)	0	
	2023	54	80 (1.1)	243	82 (0.6)	7	80 (2.1)	1	83
	2024	90	81 (0.7)	158	81 (0.7)	4	97 (7.1)	0	
Common Carp Gill Net	2020	10	88 (1.2)	33	86 (1.4)	25	82 (1.3)	0	
	2021	5	133 (45.7)	24	93 (4.0)	22	81 (4.1)	2	57 (17.4)
	2022	6	85 (1.7)	32	90 (2.6)	26	85 (2.6)	1	106
	2023	1	93	16	88 (2.5)	6	82 (4.3)	1	79
	2024	3	83 (1.5)	18	86 (1.2)	15	81 (2.8)	0	
Walleye Gill Net	2020	106	81 (0.6)	81	84 (0.7)	21	88 (2.0)	7	96 (2.4)
	2021	106	77 (0.5)	52	80 (0.9)	22	86 (1.8)	8	88 (3.4)
	2022	239	81 (0.4)	79	81 (0.7)	32	86 (1.9)	9	95 (4.3)
	2023	105	85 (0.6)	252	87 (0.4)	13	88 (2.2)	13	89 (3.4)
	2024	161	83 (0.5)	238	86 (0.4)	38	85 (1.1)	11	94 (2.7)

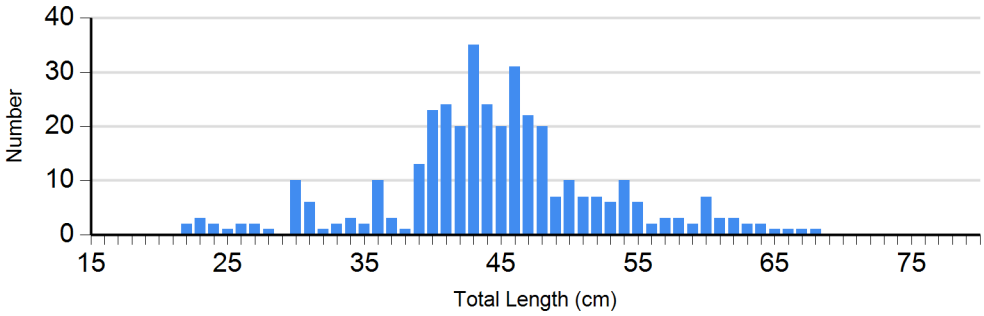
Length Frequency Distribution

Length frequency histogram of species sampled by year.

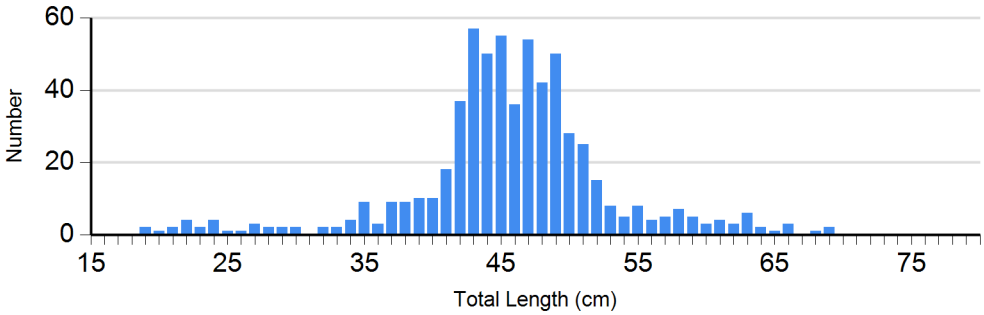
Species: Channel Catfish
Gear: AFS std gill net



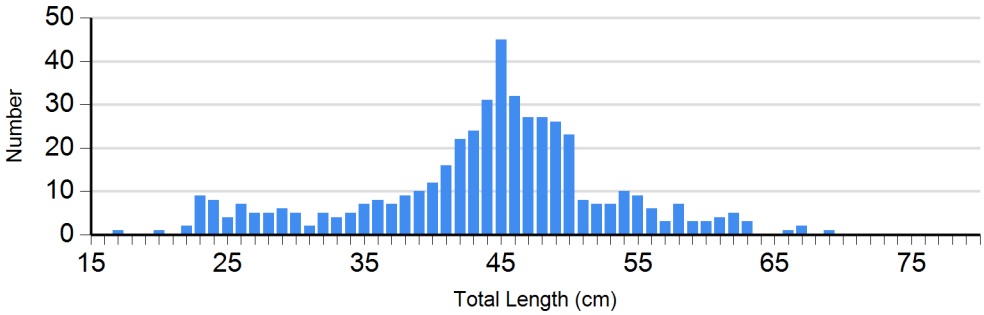
2019



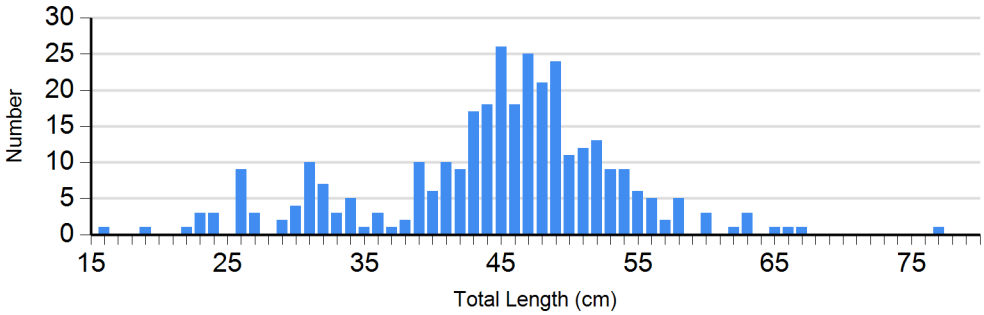
2020



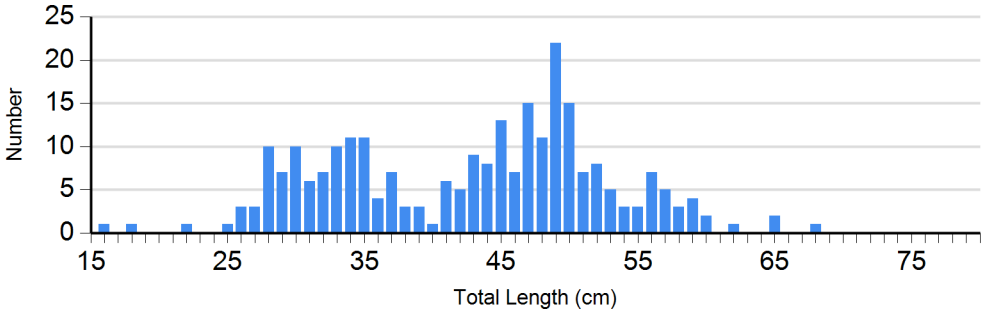
2021



2022

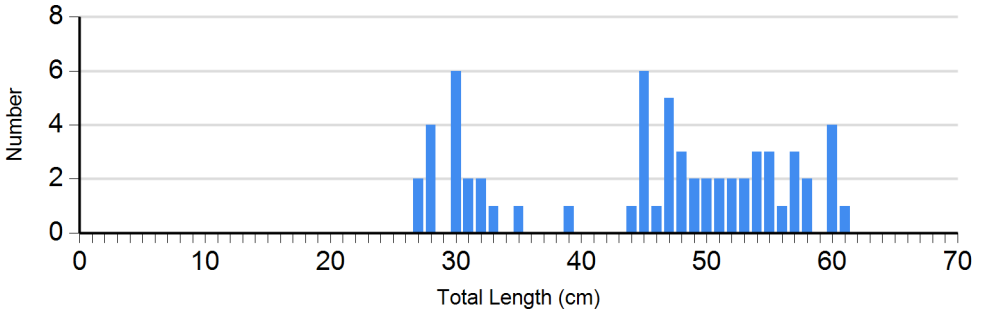


2023

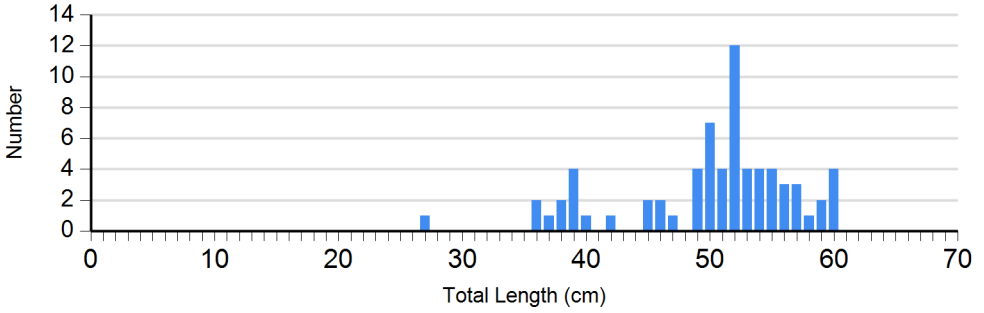


2024

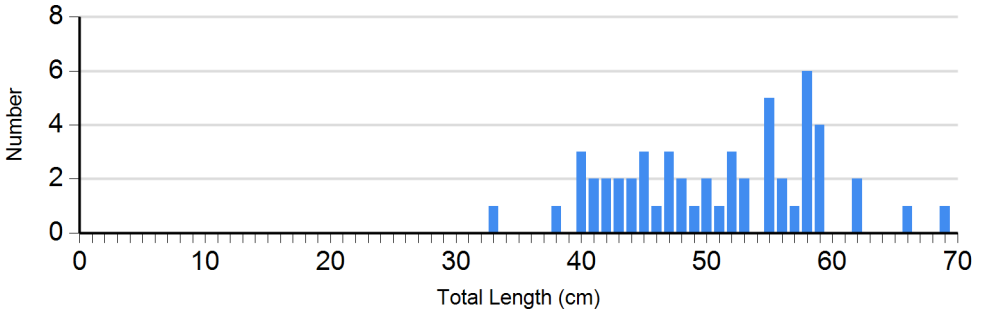
Species: Common Carp
Gear: AFS std gill net



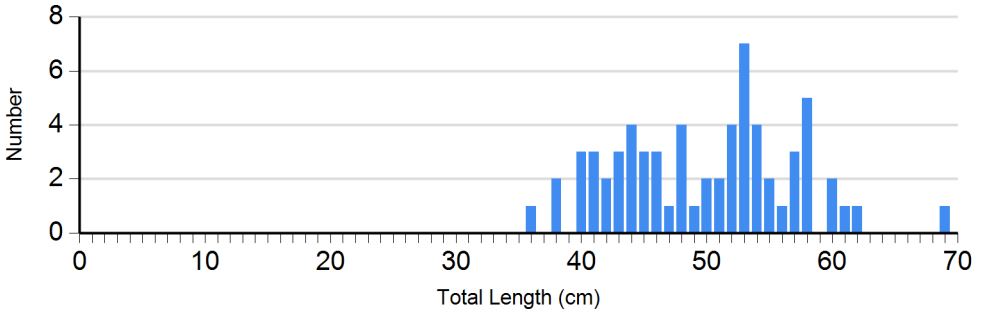
2019



2020



2021



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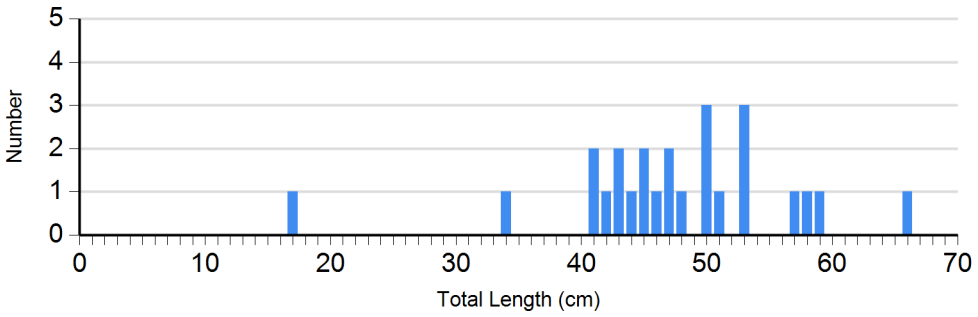

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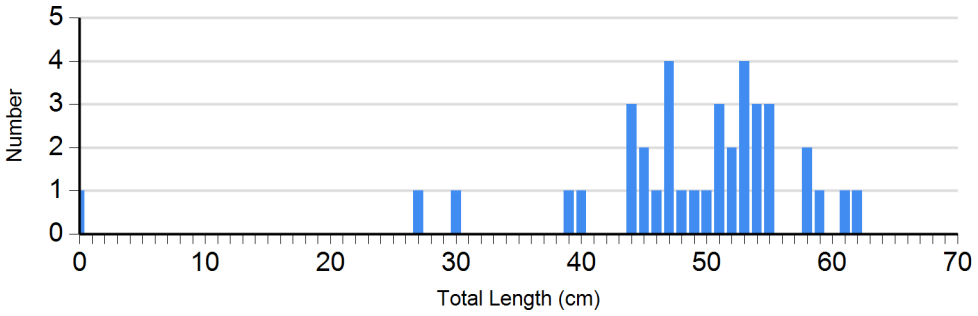
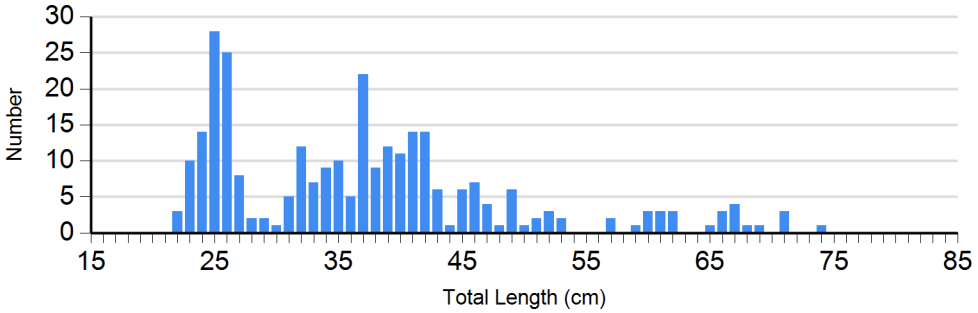
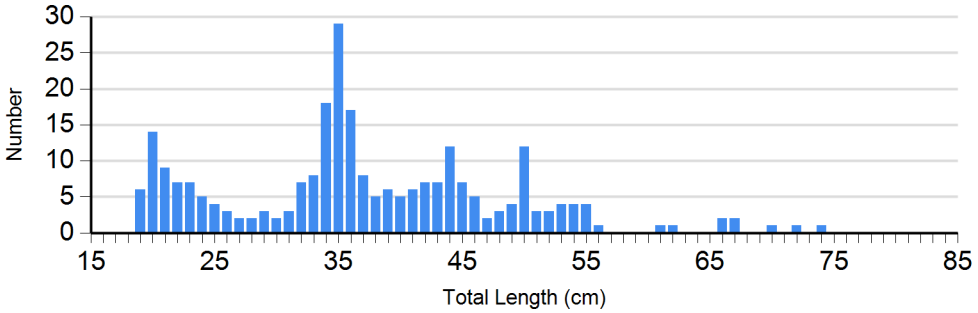


2024

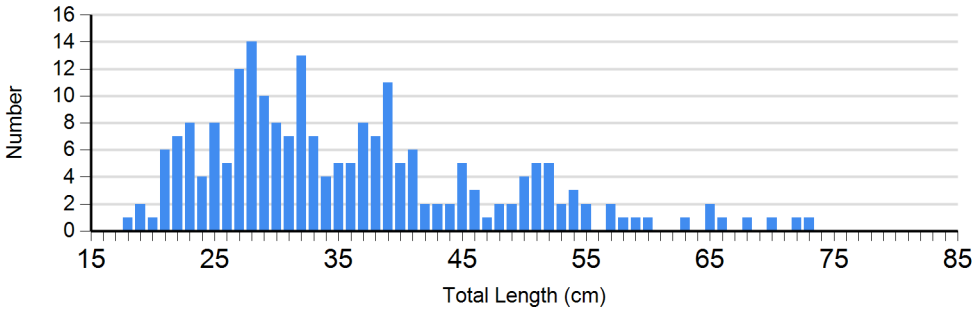
Species: Walleye
Gear: AFS std gill net



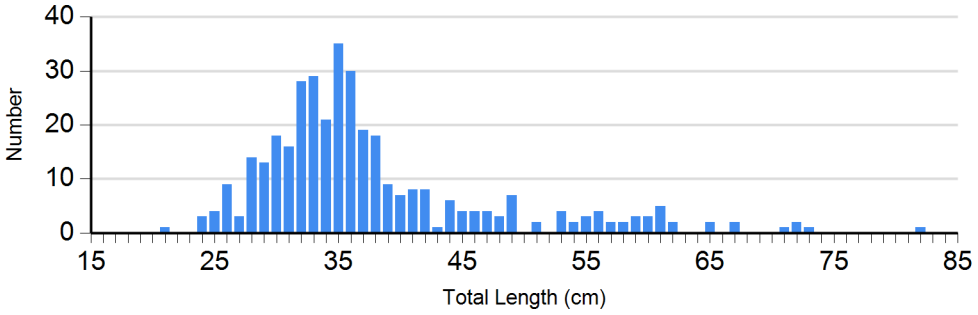
2019



2020



2021



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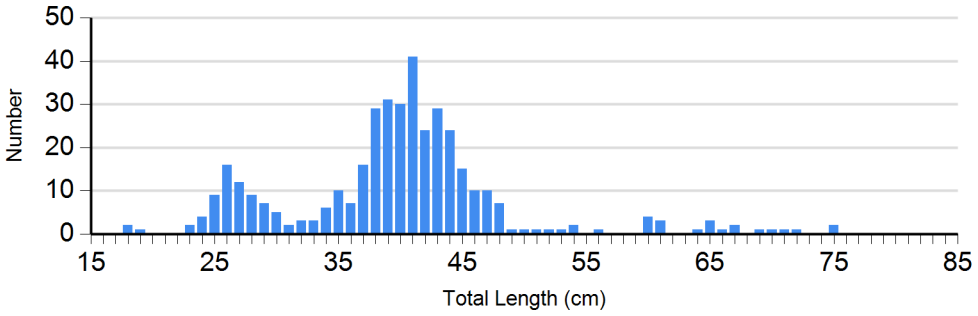

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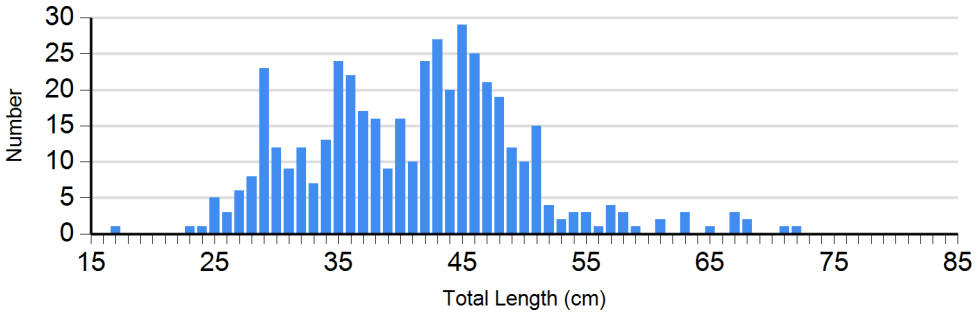
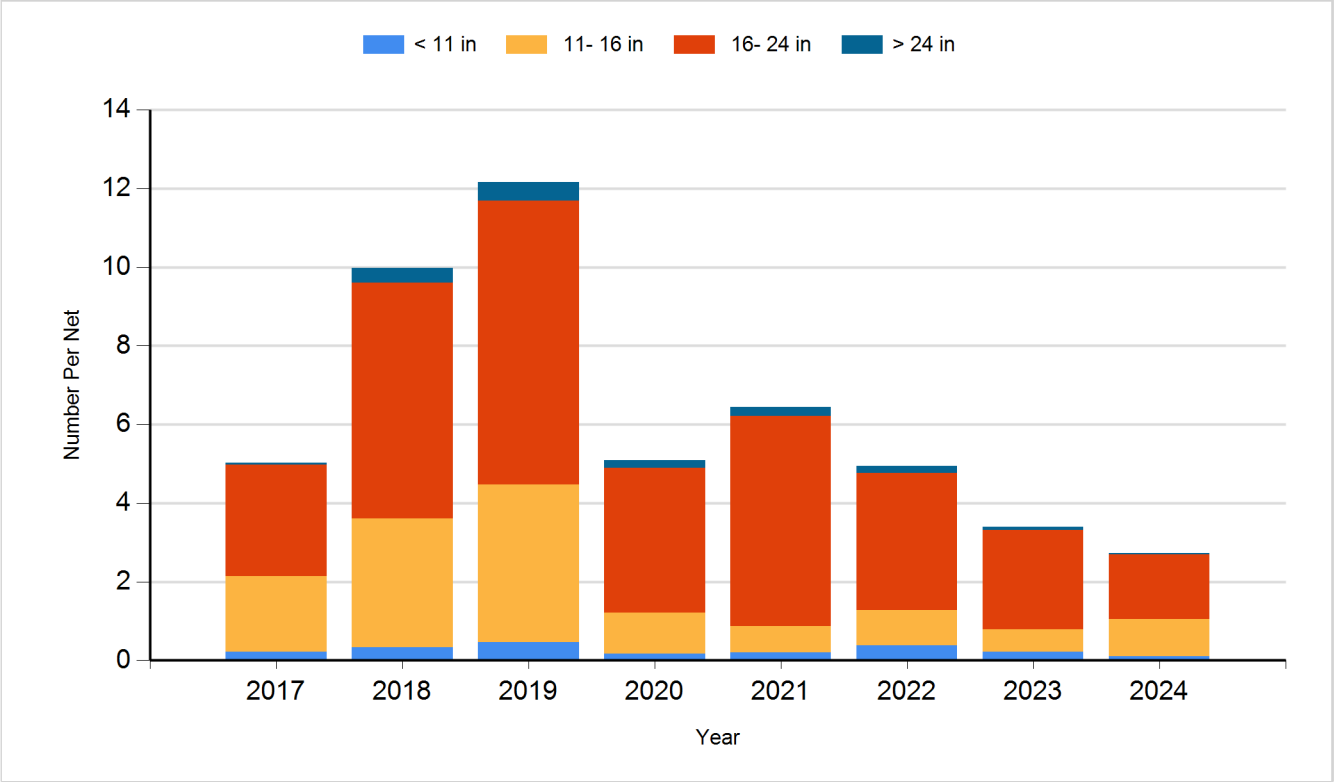


2024

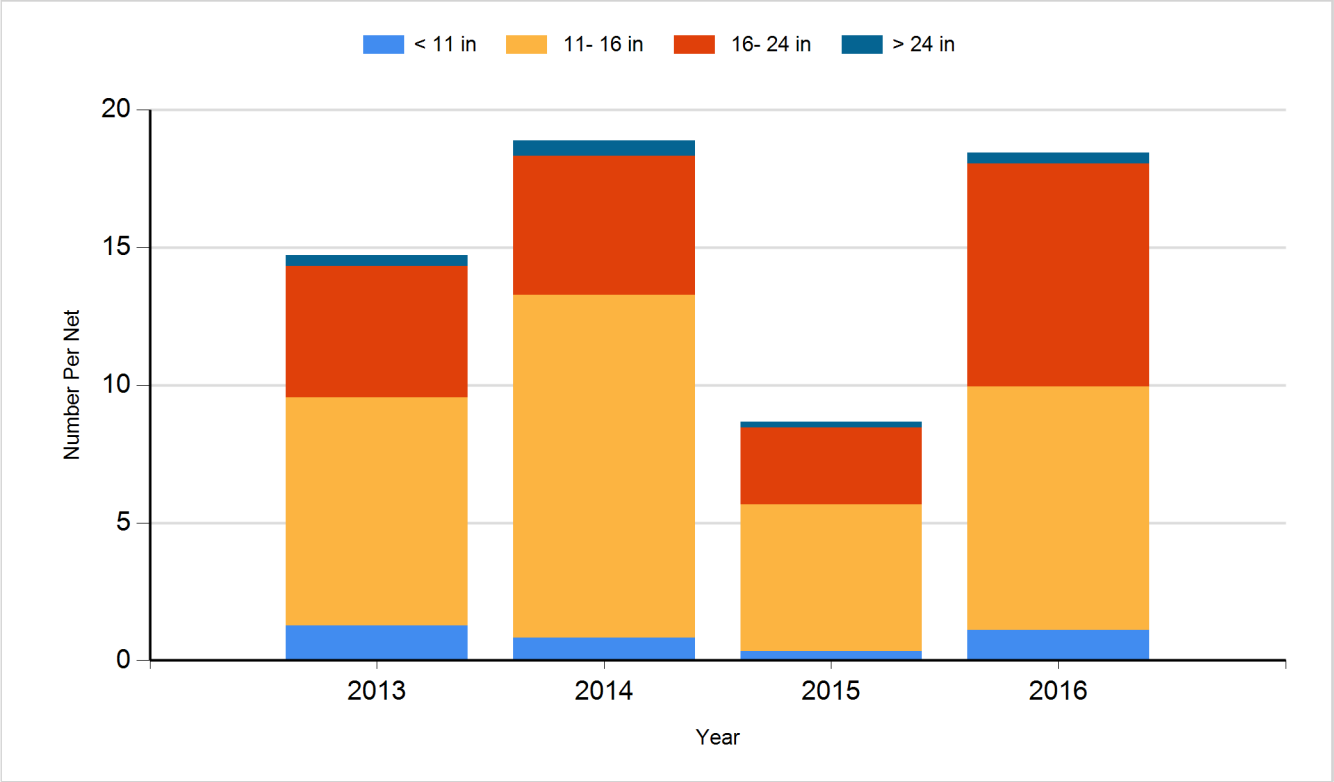
Historic Fish Sizes and Relative Abundance

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

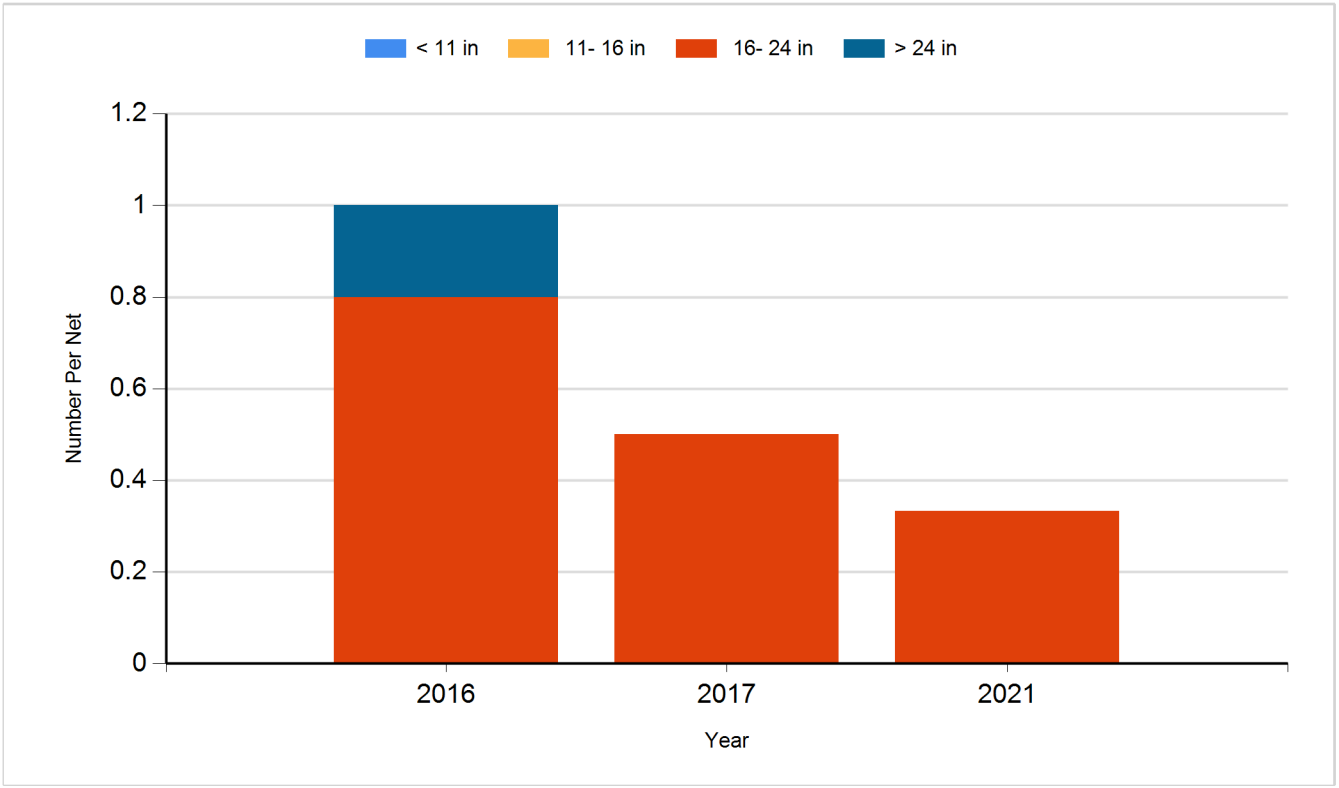
Species: Channel Catfish
Gear: AFS std gill net



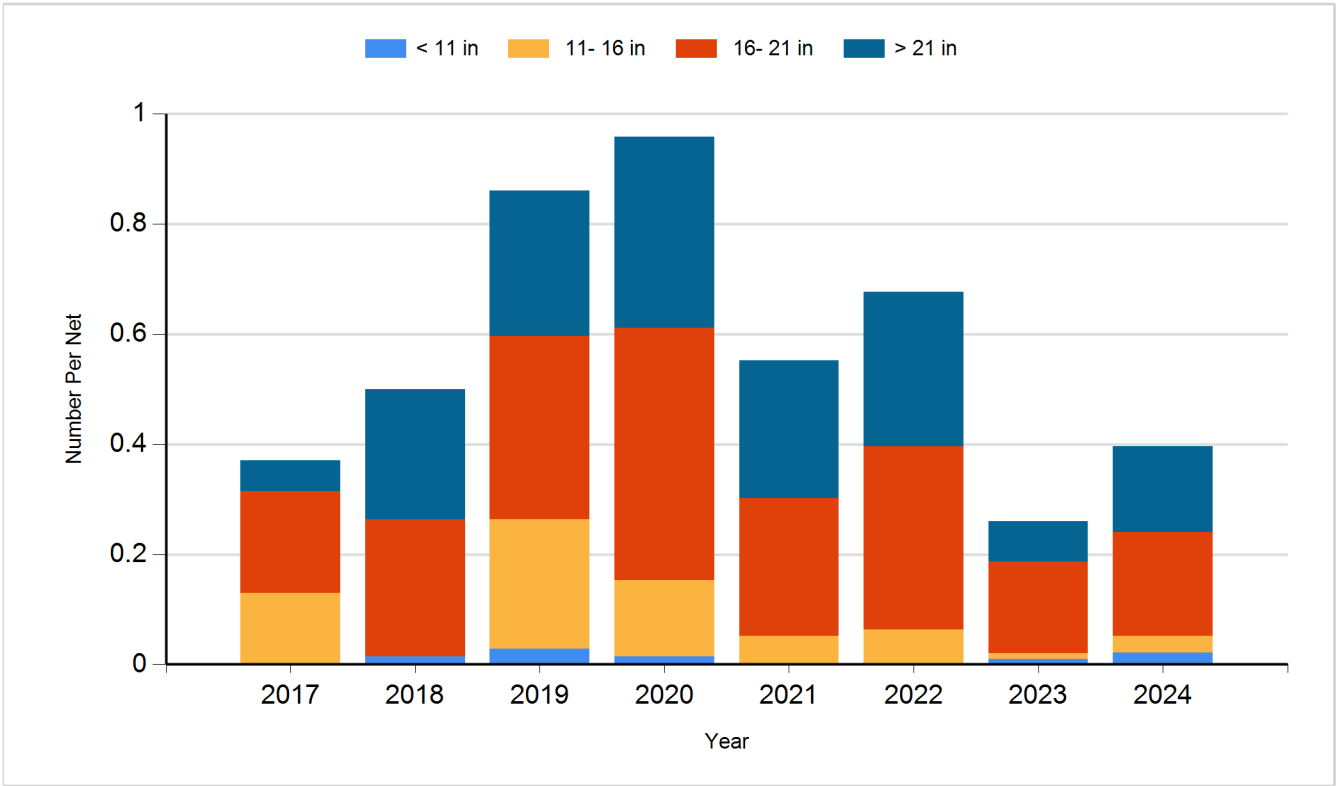
Species: Channel Catfish
Gear: std exp gill net



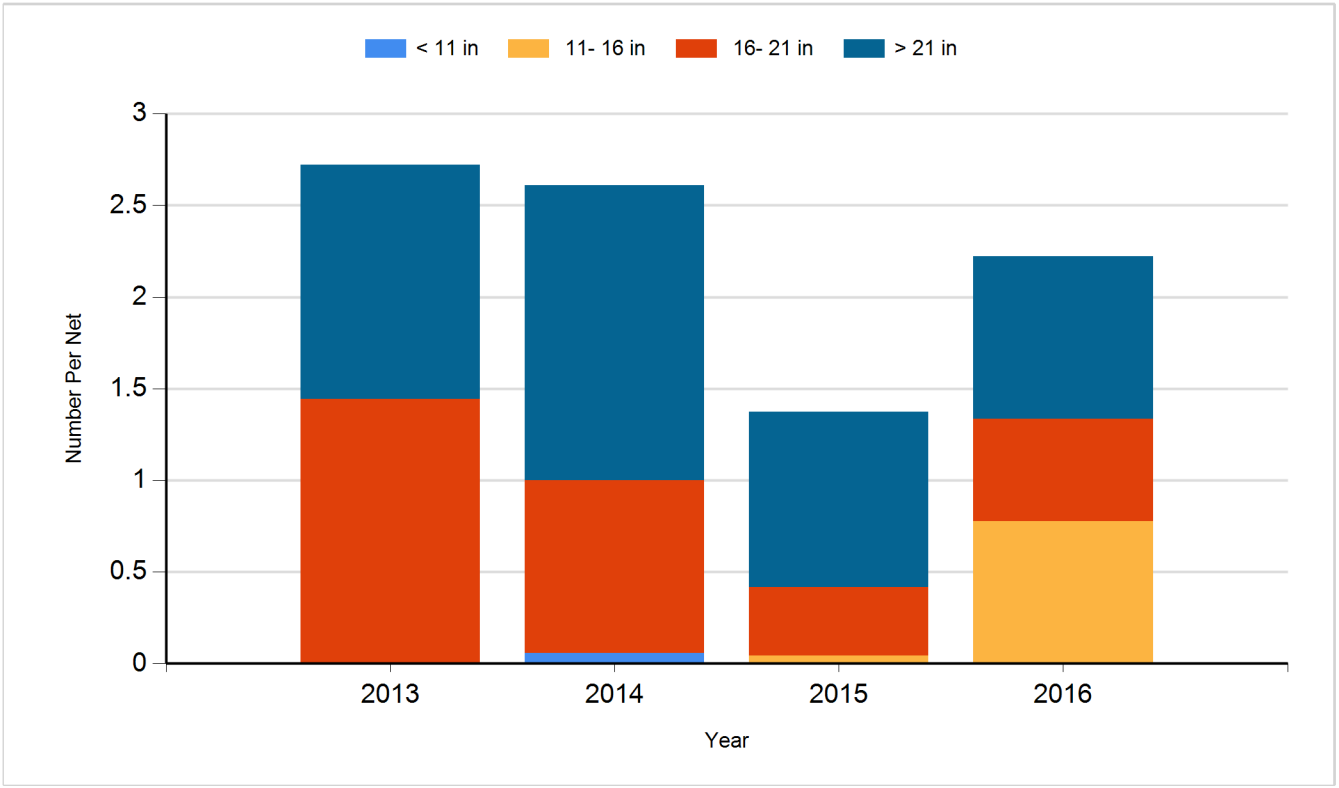
Species: Channel Catfish
Gear: suspended gill net



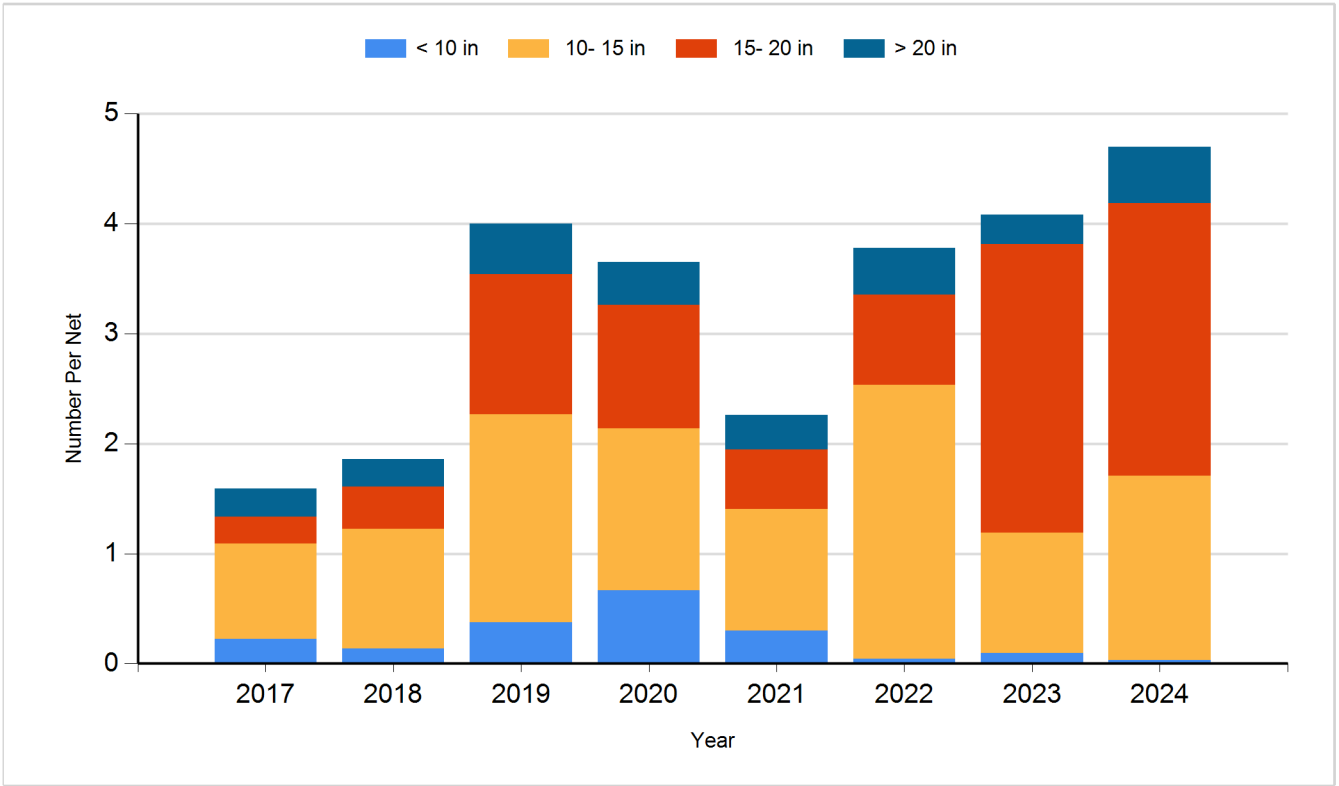
Species: Common Carp
Gear: AFS std gill net



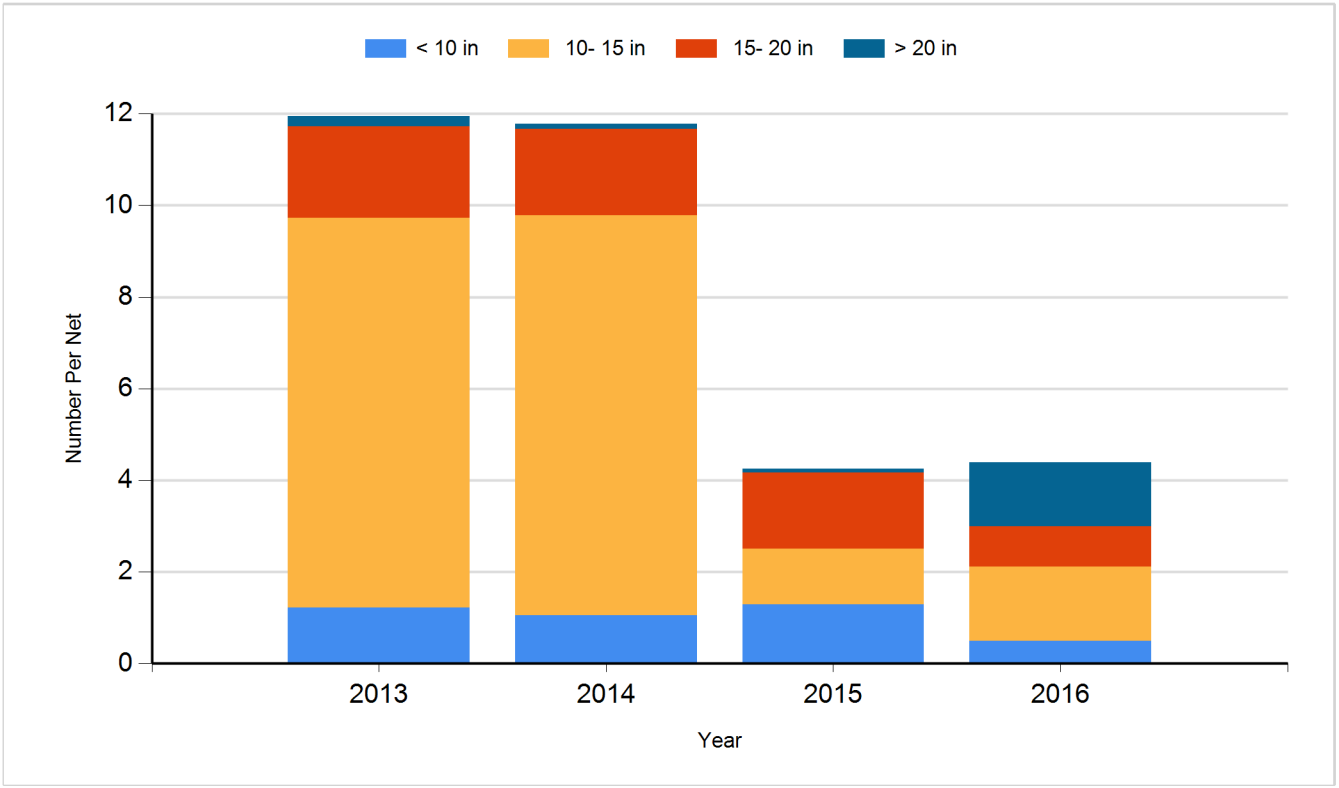
Species: Common Carp
Gear: std exp gill net



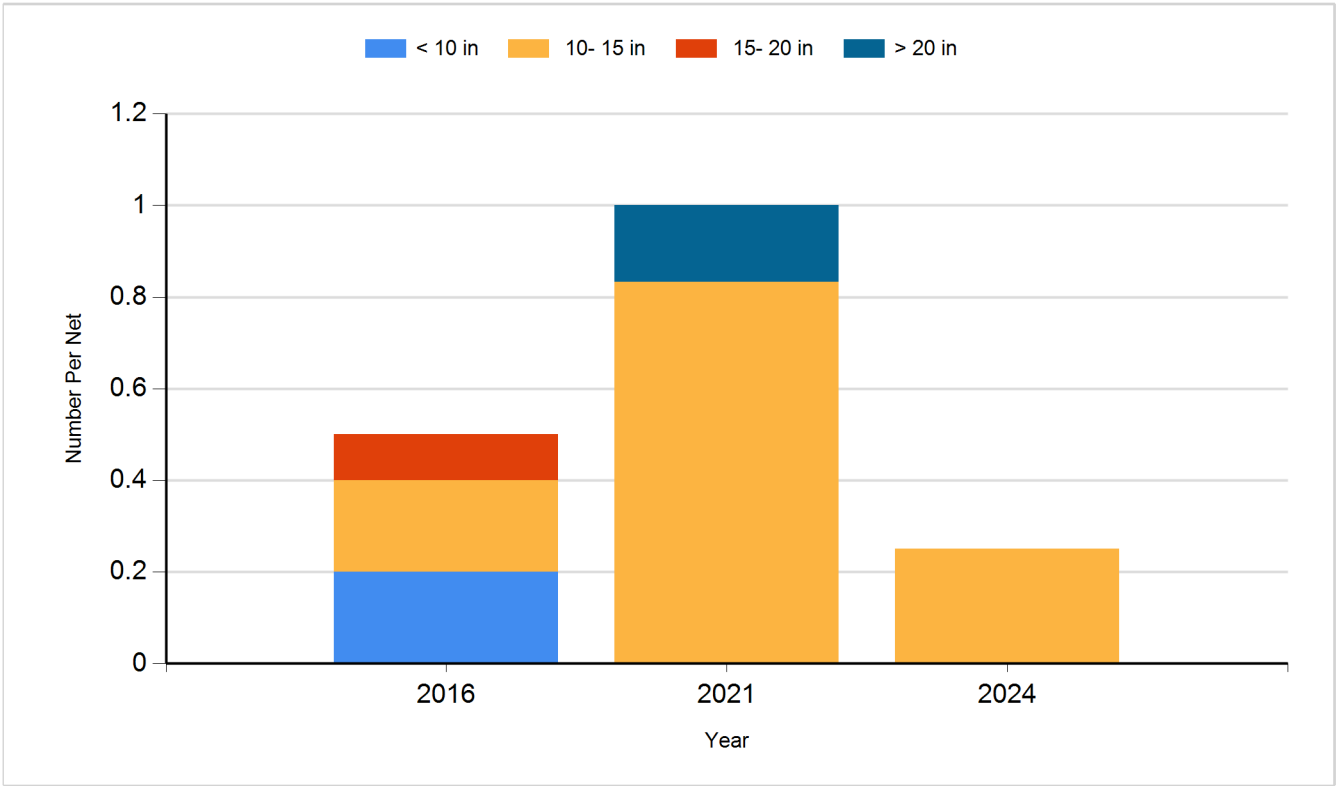
Species: Walleye
Gear: AFS std gill net



Species: Walleye
Gear: std exp gill net



Species: Walleye
Gear: suspended gill net



Fish Stocking

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

Year	Species	Size	Number
2013	Chinook Salmon (Oahe)	Fingerling	61,584
2013	Chinook Salmon (Oahe)	Large Fingerling	5,000
2013	Gizzard Shad	Adult	616
2013	Rainbow Trout (Erwin x Arlee)	Fingerling	32,904
2014	Chinook Salmon (Oahe)	Fingerling	80,125
2014	Chinook Salmon (Oahe)	Large Fingerling	4,932
2014	Chinook Salmon (Oahe)	Small Fingerling	31,104
2014	Gizzard Shad	Adult	642
2015	Chinook Salmon (Oahe)	Fingerling	71,308
2015	Gizzard Shad	Adult	168
2017	Chinook Salmon (Oahe)	Fingerling	79,242
2017	Walleye	Fry	3,700,000
2017	Walleye	Small Fingerling	300,820
2018	Chinook Salmon (Oahe)	Fingerling	99,426
2018	Walleye	Small	144,460
2018	Walleye	Small Fingerling	1,830,546
2019	Burbot	Fingerling	30,550
2019	Chinook Salmon (Oahe)	Catchable 11"	10,332
2019	Chinook Salmon (Oahe)	Fingerling	62,046
2019	Walleye	Small Fingerling	364,500
2020	Chinook Salmon (Oahe)	Large Fingerling	33,975
2021	Atlantic Salmon	Adult	2,247
2021	Atlantic Salmon	Catchable 11"	3,389
2021	Atlantic Salmon	Juvenile	4,198
2021	Chinook Salmon (Oahe)	Juvenile	89,052
2021	Gizzard Shad	Adult	599
2021	Walleye	Juvenile	615,990
2022	Chinook Salmon (Oahe)	Juvenile	69,470
2022	Gizzard Shad	Adult	520
2023	Chinook Salmon (Oahe)	Juvenile	45,240
2023	Walleye	Juvenile	611,888
2024	Chinook Salmon (Oahe)	Juvenile	9,788
2024	Gizzard Shad	Adult	1,383
2024	Walleye	Juvenile	2,887,992