SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Kampeska, Codington County
UBS-Lake-171-000
2020

Lake Information

Name:	Kampeska	**Maximum Depth:**	16 Feet
County:	Codington	**Mean Depth:**	7 Feet
		OHWM Elevation:	1,718
Surface Area:	4,987 Acres	**Outlet Elevation:**	1,718

Surveys and Investigations

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

Gear	Date	Effort
fall night EF-WAE	Sep 22, 2020	3000 seconds

Common Fish Species Present

White Crappie

Walleye

Smallmouth Bass

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

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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
AFS std frame net	Bigmouth Buffalo							0.6				0.60
	Black Bullhead							0.7				0.70
	Black Crappie							1.2				1.20
	Bluegill							0.5				0.50
	Channel Catfish							0.1				0.10
	Common Carp							0.1				0.10
	Northern Pike							0.2				0.20
	Smallmouth Bass							0.4				0.40
	Walleye							0.1				0.10
	White Bass							3.1				3.10
	White Crappie							0.1				0.10
	Yellow Bullhead							1.6				1.60
	Yellow Perch							0.1				0.10
AFS std gill net	Bigmouth Buffalo						0.0	0.0	8.3	5.6		3.48
	Black Bullhead						0.4	0.4	0.3	0.0		0.28
	Black Crappie						0.0	0.1	0.0	0.0		0.03
	Bluegill						0.0	0.1	0.0	0.0		0.03
	Channel Catfish						1.0	0.9	0.3	0.4		0.65
	Common Carp						0.1	0.0	0.3	0.6		0.25
	Northern Pike						0.5	0.2	0.7	0.8		0.55
	Shorthead Redhorse						0.2	0.0	0.1	0.2		0.13
	Smallmouth Bass						0.8	1.3	0.6	0.0		0.68
	Walleye						4.6	2.7	2.6	4.0		3.48
	White Bass						1.8	1.5	1.4	2.0		1.68
	White Crappie						1.1	0.5	0.2	2.6		1.10
	White Sucker						0.6	0.6	0.8	0.3		0.58
	Yellow Bullhead						1.1	0.7	0.6	0.3		0.68
	Yellow Perch						5.3	5.3	3.3	4.3		4.55
boat shocker (day)	Smallmouth Bass									97.0		97.00
boat shocker (night)	Walleye*	342.0	0.9	110.0	179.0	7.0	7.0	41.0				98.13
boat shocker (night, DC)	Smallmouth Bass		203.0		171.0		159.8					177.93
fall night EF-WAE*	Walleye								75.0	54.2		64.60

		CPUE										
Gear	Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
frame net (std 3/4 in)	Bigmouth Buffalo	0.3	0.2	0.2	0.4							0.28
	Black Bullhead	0.1	18.2	22.7	15.5							14.13
	Black Crappie	0.5	1.2	0.6	0.5							0.70
	Bluegill	1.5	1.2	1.6	1.4							1.43
	Channel Catfish	0.2	0.1	0.2	0.0							0.13
	Common Carp	0.1	0.0	0.1	0.1							0.08
	Northern Pike	0.5	1.3	0.4	0.2							0.60
	Rock Bass	0.2	0.1	0.0	0.0							0.08
	Shorthead Redhorse	0.1	0.1	0.0	0.0							0.05
	Smallmouth Bass	1.6	4.0	1.1	0.5							1.80
	Stonecat	0.0	0.0	0.0	0.0							0.00
	Walleye	0.5	0.5	1.0	0.6							0.65
	White Bass	3.0	8.5	7.2	3.0							5.43
	White Crappie	1.5	0.3	0.2	0.7							0.68
	White Sucker	1.0	0.8	0.5	0.5							0.70
	Yellow Bullhead	2.7	21.6	15.4	3.9							10.90
	Yellow Perch	0.1	2.9	0.0	0.1							0.78
std exp gill net	Black Bullhead	0.0	3.2	8.0	1.8	2.3						3.06
	Channel Catfish	0.1	0.0	0.2	0.7	0.2						0.24
	Common Carp	0.0	0.2	0.2	0.3	0.0						0.14
	Northern Pike	0.4	2.5	2.5	0.2	1.0						1.32
	Shorthead Redhorse	0.1	0.2	0.0	0.0	0.3						0.12
	Smallmouth Bass	0.2	0.2	0.5	0.0	1.2						0.42
	Walleye	8.1	12.2	7.5	9.3	11.5						9.72
	White Bass	1.5	4.8	4.3	3.8	4.7						3.82
	White Crappie	1.1	3.2	2.5	1.3	0.3						1.68
	White Sucker	1.8	3.8	1.5	1.8	2.2						2.22
	Yellow Bullhead	0.3	6.7	2.2	1.5	0.8						2.30
	Yellow Perch	0.9	3.5	5.7	2.7	13.0						5.16

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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
AFS std frame net	Black Crappie	PSD							65			
		PSD-P							17			
		Wr							104			
	Smallmouth Bass	PSD							57			
		PSD-P							0			
		Wr							93			
	Walleye	PSD							0			
		PSD-P							0			
		Wr							76			
	White Crappie	PSD							100			
		PSD-P							100			
		Wr							82			
AFS std gill net	Black Crappie	PSD							100			
		PSD-P							100			
		Wr							73			
	Smallmouth Bass	PSD						33	57	100		
		PSD-P						0	21	14		
		Wr						88	90	88		
	Walleye	PSD						18	7	3	69	
		PSD-P						2	3	0	2	
		Wr						79	75	85	88	
	White Crappie	PSD						100	100	100	6	
		PSD-P						100	100	100	6	
		Wr						90	91	97	112	
boat shocker (day)	Smallmouth Bass	PSD									66	
		PSD-P									13	
		Wr									90	
boat shocker (night)	Walleye	PSD	0	0	0	0	0	0	0			
		PSD-P	0	0	0	0	0	0	0			
		Wr	87	74	93	89	91	92	90			
boat shocker (night, DC)	Smallmouth Bass	PSD		60		87		61				

			Year									
Gear	Species	Index	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
boat shocker (night, DC)	Smallmouth Bass	PSD-P		15		15		18				
		Wr		90		98		96				
frame net (std 3/4 in)	Black Crappie	PSD	100	79	83	91						
		PSD-P	67	50	17	55						
		Wr	97	101	104	100						
	Smallmouth Bass	PSD	26	34	38	64						
		PSD-P	6	13	8	9						
		Wr	90	88	92	91						
	Walleye	PSD	11	20	36	17						
		PSD-P	0	0	0	0						
		Wr	99	76	80	76						
	White Crappie	PSD	100	100	75	100						
		PSD-P	93	17	0	67						
		Wr	88	90	96	91						
std exp gill net	Smallmouth Bass	PSD	75	0	100		71					
		PSD-P	25	0	0		14					
		Wr	88	90	84		89					
	Walleye	PSD	31	53	51	25	12					
		PSD-P	0	0	0	0	1					
		Wr	84	80	82	78	82					
	White Crappie	PSD	37	42	87	100	100					
		PSD-P	37	21	13	38	50					
		Wr	103	101	97	97	94					

Length at Capture

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

Species: Smallmouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	91		196 (20)	248 (10)	284 (24)	333 (28)	339 (10)	384 (1)			
2016	160		196 (5)	256 (45)	278 (24)	310 (32)	337 (26)	341 (20)	386 (2)	414 (5)	
2014	171			279 (41)	315 (51)	322 (28)	318 (29)	363 (7)	361 (6)	414 (8)	
2012	202		199 (2)	253 (76)	291 (73)	318 (26)	352 (8)	386 (15)	401 (2)	451 (1)	

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	67	211 (20)	348 (8)	396 (1)	367 (2)	410 (23)	426 (6)	446 (1)	463 (6)		
2018	38	232 (7)		324 (2)	319 (14)	325 (10)	354 (2)	367 (2)			
2017	30			276 (12)	313 (10)		359 (7)			659 (1)	
2016	58	205 (1)	260 (14)	305 (19)		365 (20)		480 (1)	608 (1)	404 (1)	432 (1)
2015	88	198 (17)	264 (35)		334 (29)	351 (2)	555 (1)	432 (2)	422 (1)	414 (1)	
2014	62	193 (5)	223 (1)	305 (39)	353 (4)	382 (2)	418 (7)	427 (3)		457 (1)	
2013	59		248 (24)	369 (11)	401 (13)	409 (4)	447 (4)		423 (1)		414 (2)
2012	75	205 (2)	316 (11)	369 (12)	394 (25)	388 (12)	394 (2)	406 (8)		473 (1)	498 (1)
2011	150	250 (11)	325 (28)	359 (50)	384 (13)	425 (1)	392 (43)	432 (1)			498 (1)

Fish Condition

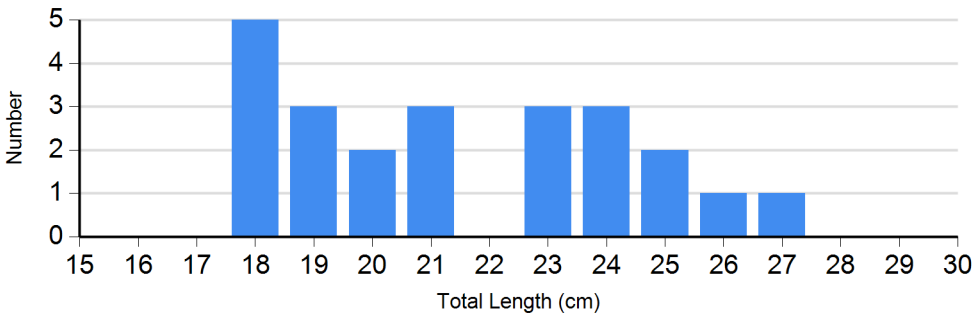
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2017	8	107 (2.7)	11	104 (1.4)	4	98 (4.1)	0	
Smallmouth Bass Electro Fishing	2016	63	97 (0.8)	69	95 (0.7)	27	94 (1.4)	1	101
	2019	33	97 (1.1)	51	86 (0.9)	13	86 (2.1)	0	
Walleye Gill Net	2016	45	78 (0.6)	9	81 (1.6)	1	80	0	
	2017	28	75 (1.0)	1	74	0		1	85
	2018	30	85 (1.0)	1	91	0		0	
	2019	15	88 (2.3)	32	89 (0.9)	1	86	0	
White Crappie Frame Net	2017	0		0		2	82 (2.8)	0	

Length Frequency Distribution

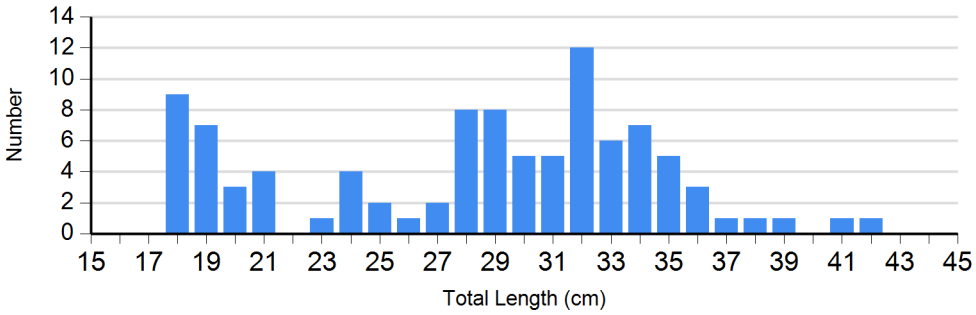
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: AFS std frame net



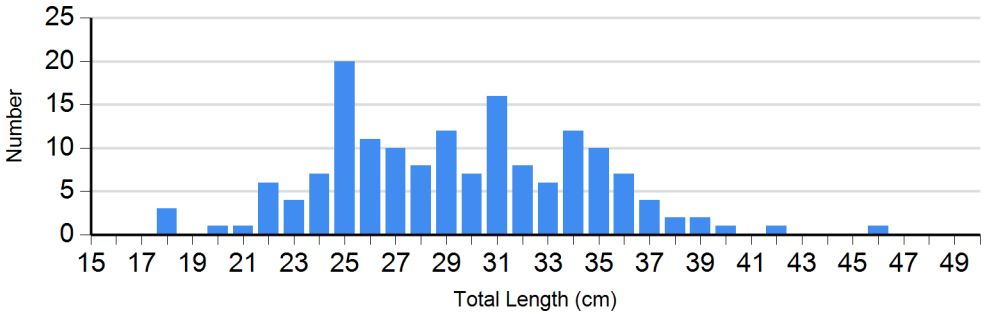
2017

Species: Smallmouth Bass
Gear: boat shocker (day)



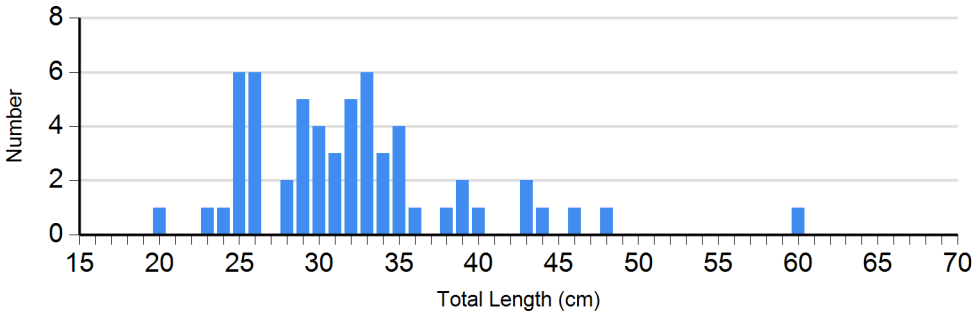
2019

Species: Smallmouth Bass
Gear: boat shocker (night, DC)

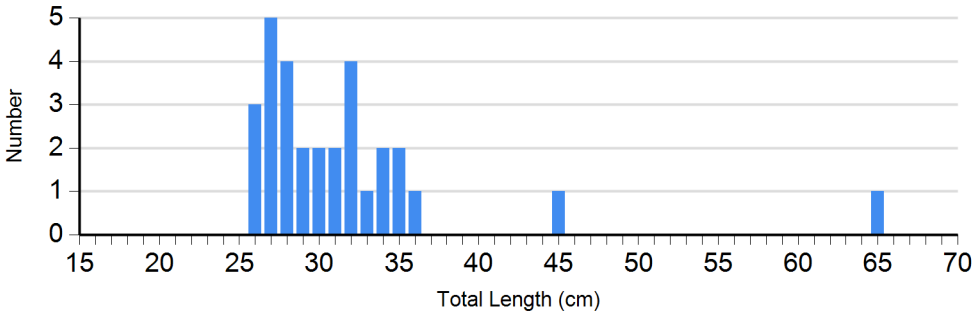


2016

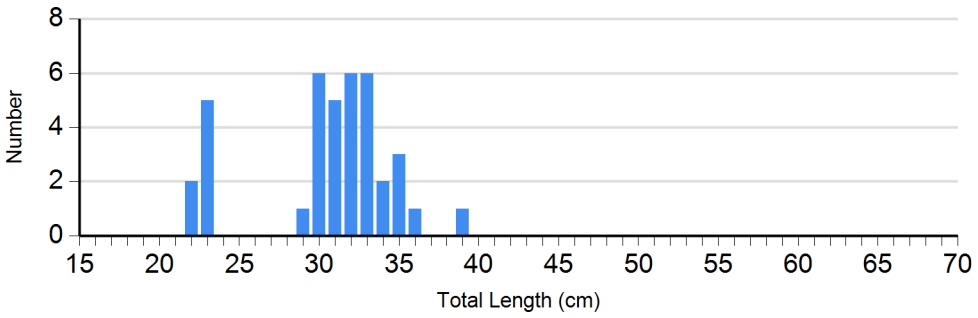
Species: Walleye
Gear: AFS std gill net



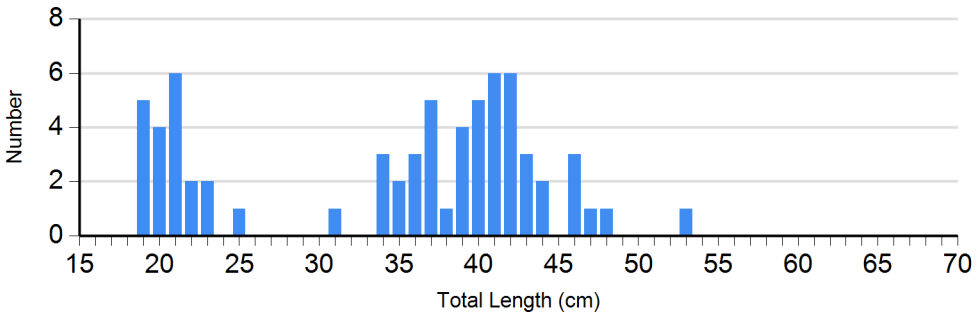
2016



2017

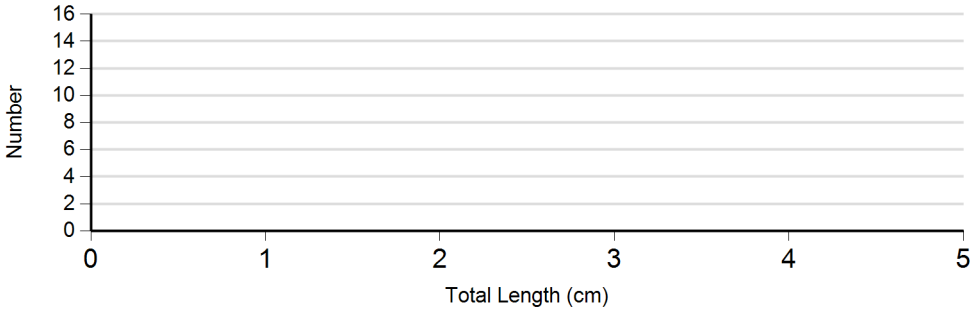


2018



2019

Species: Walleye
Gear: std exp gill net

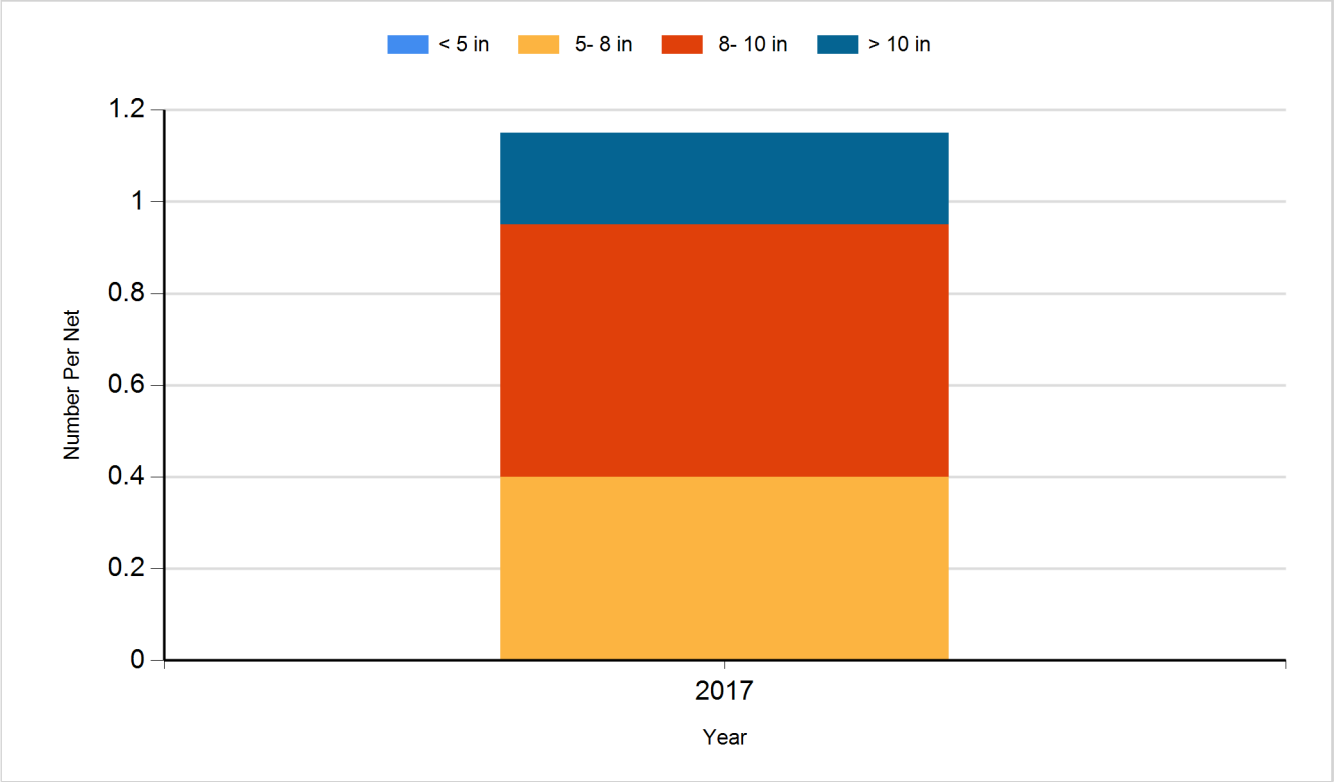


2015

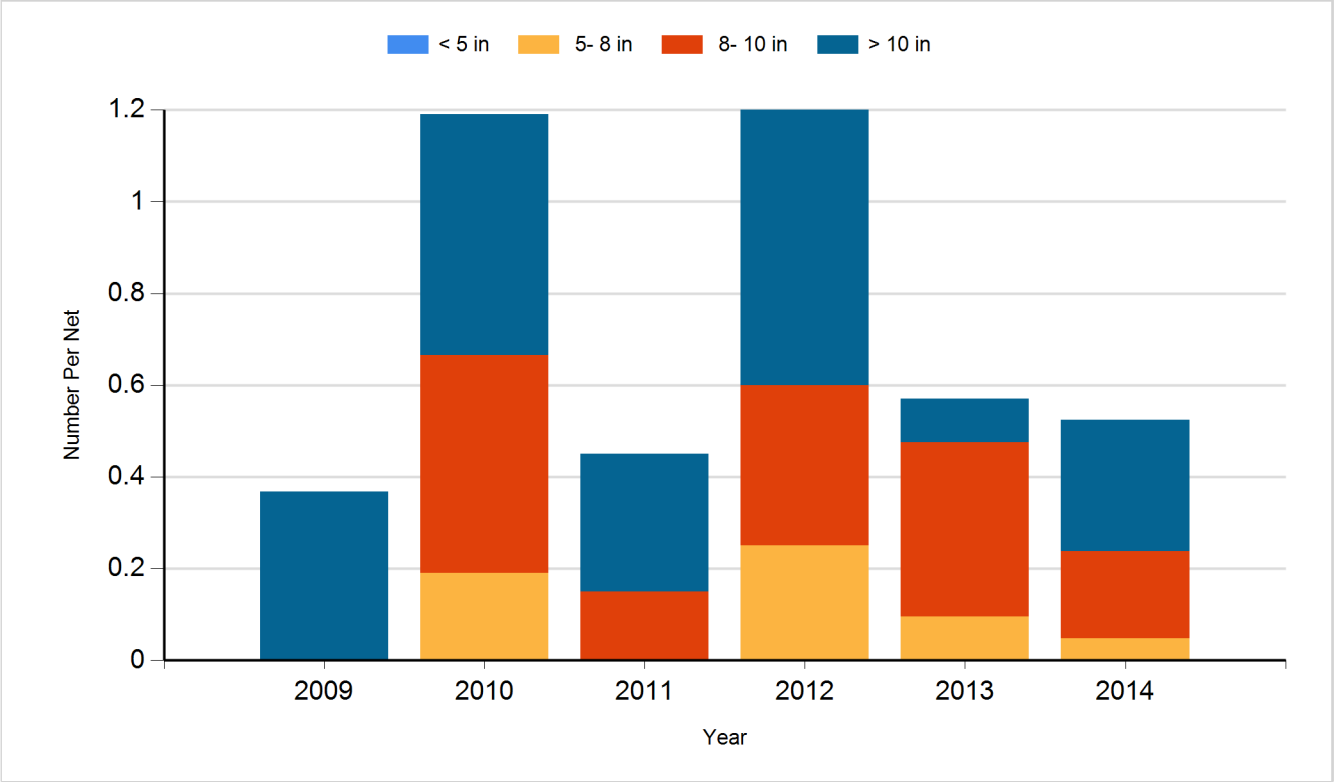
Historic Fish Sizes and Relative Abundance

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

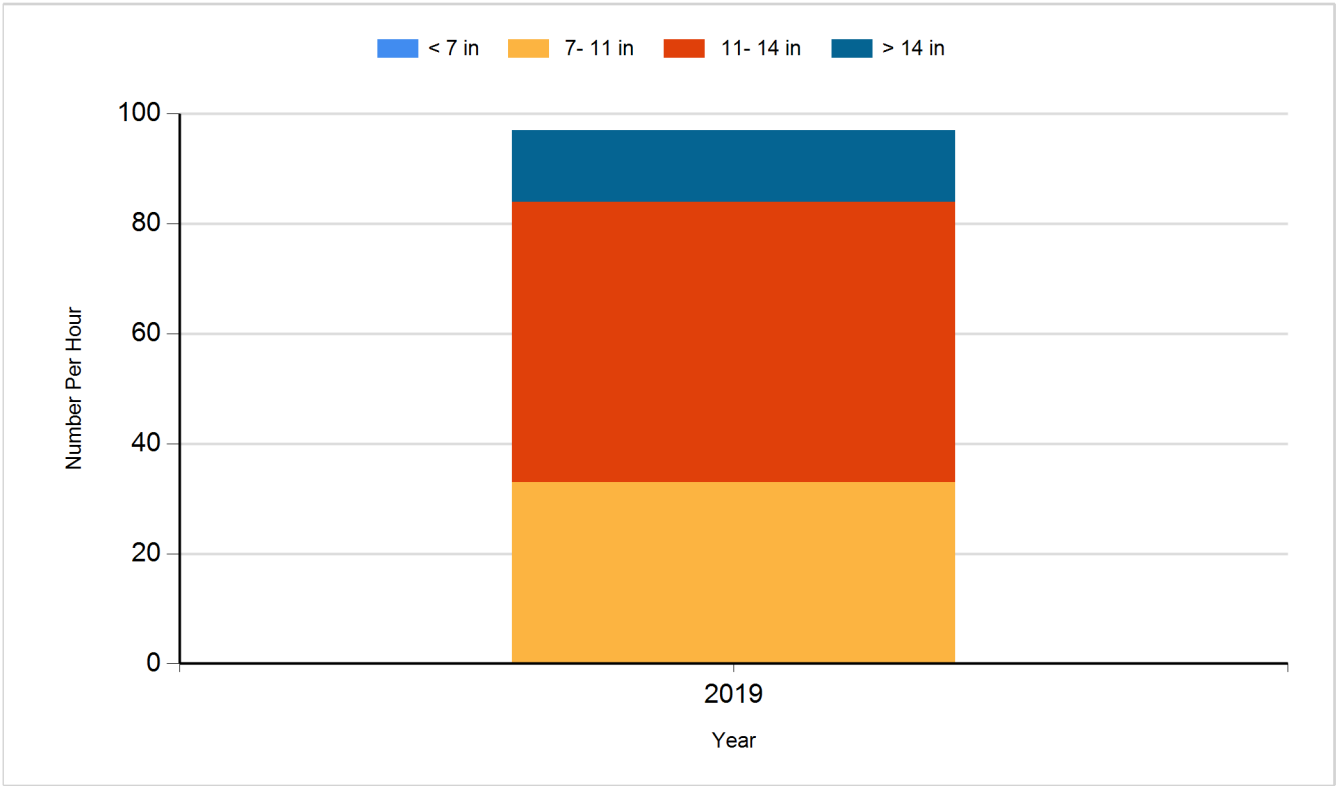
Species: Black Crappie
Gear: AFS std frame net



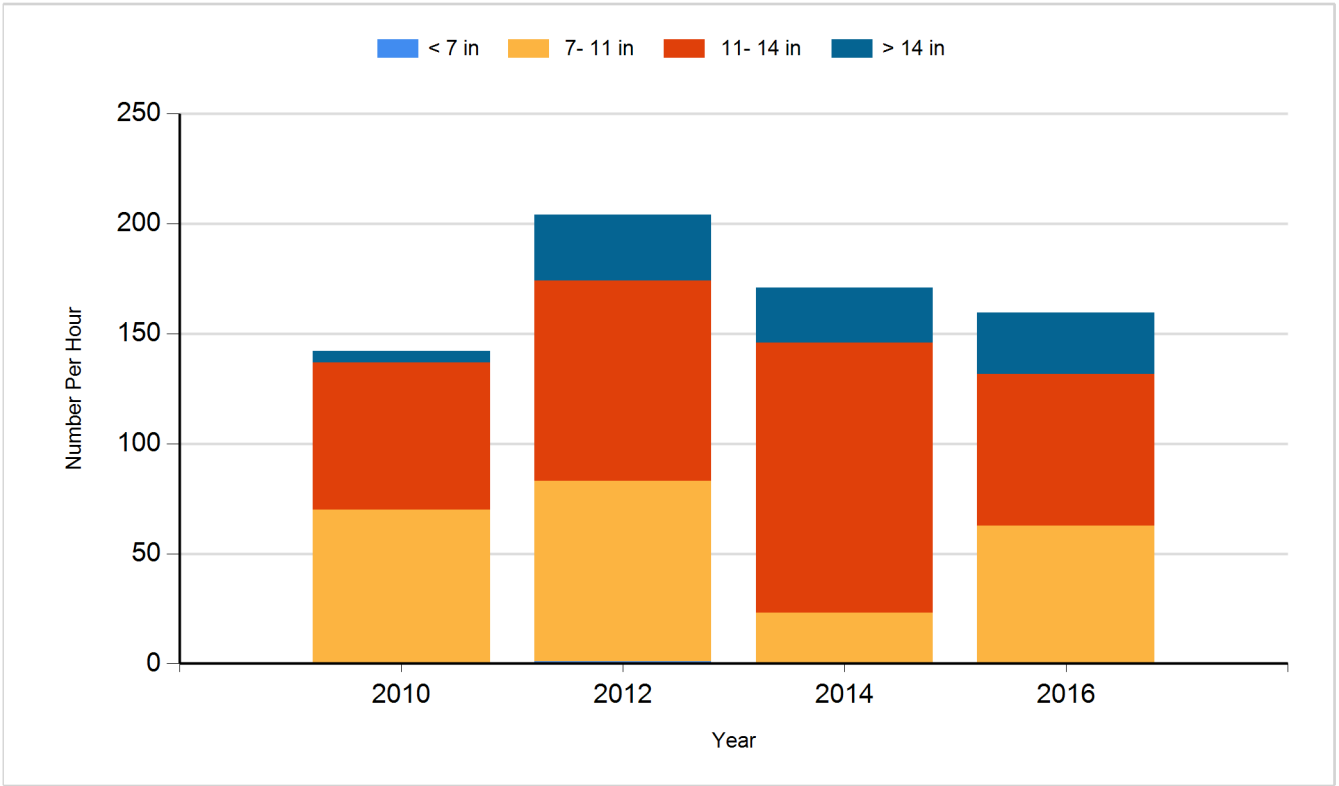
Species: Black Crappie
Gear: frame net (std 3/4 in)



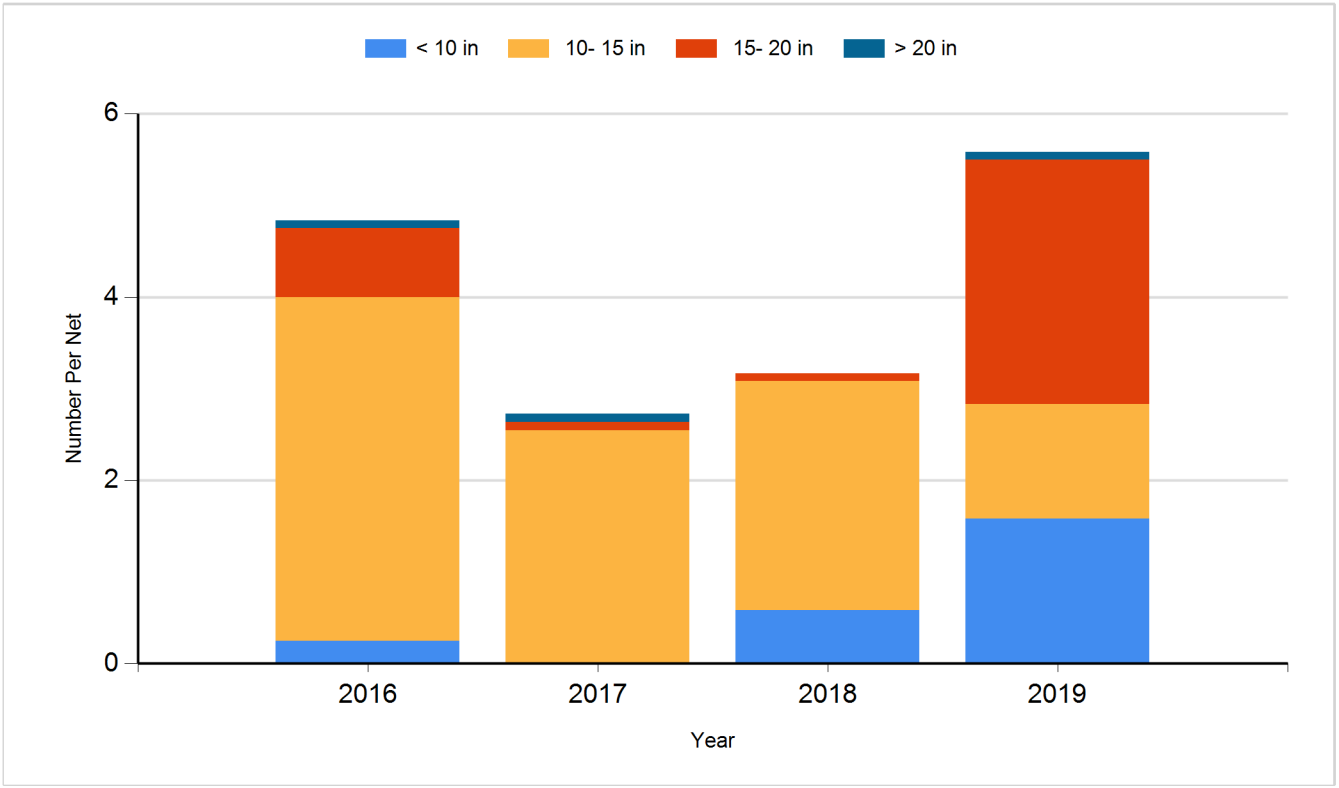
Species: Smallmouth Bass
Gear: boat shocker (day)



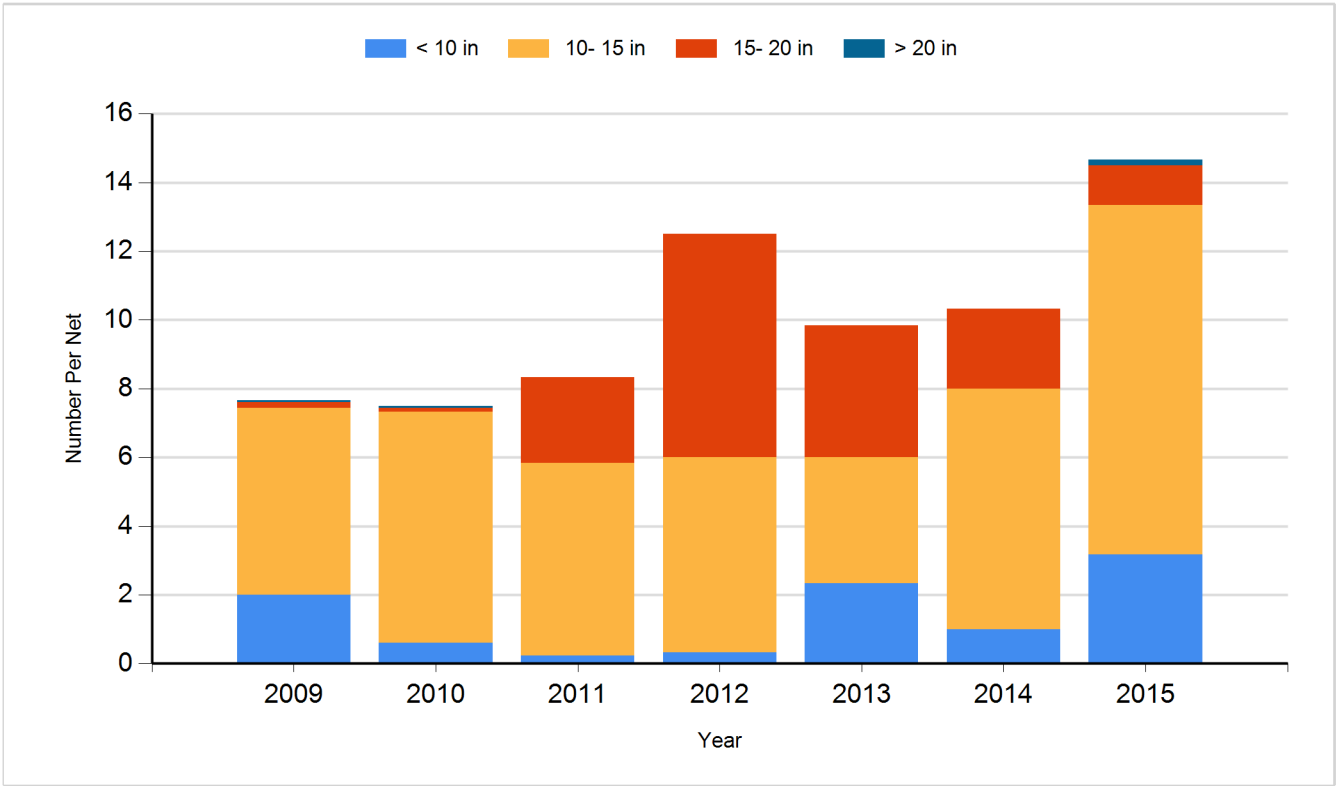
Species: Smallmouth Bass
Gear: boat shocker (night, DC)



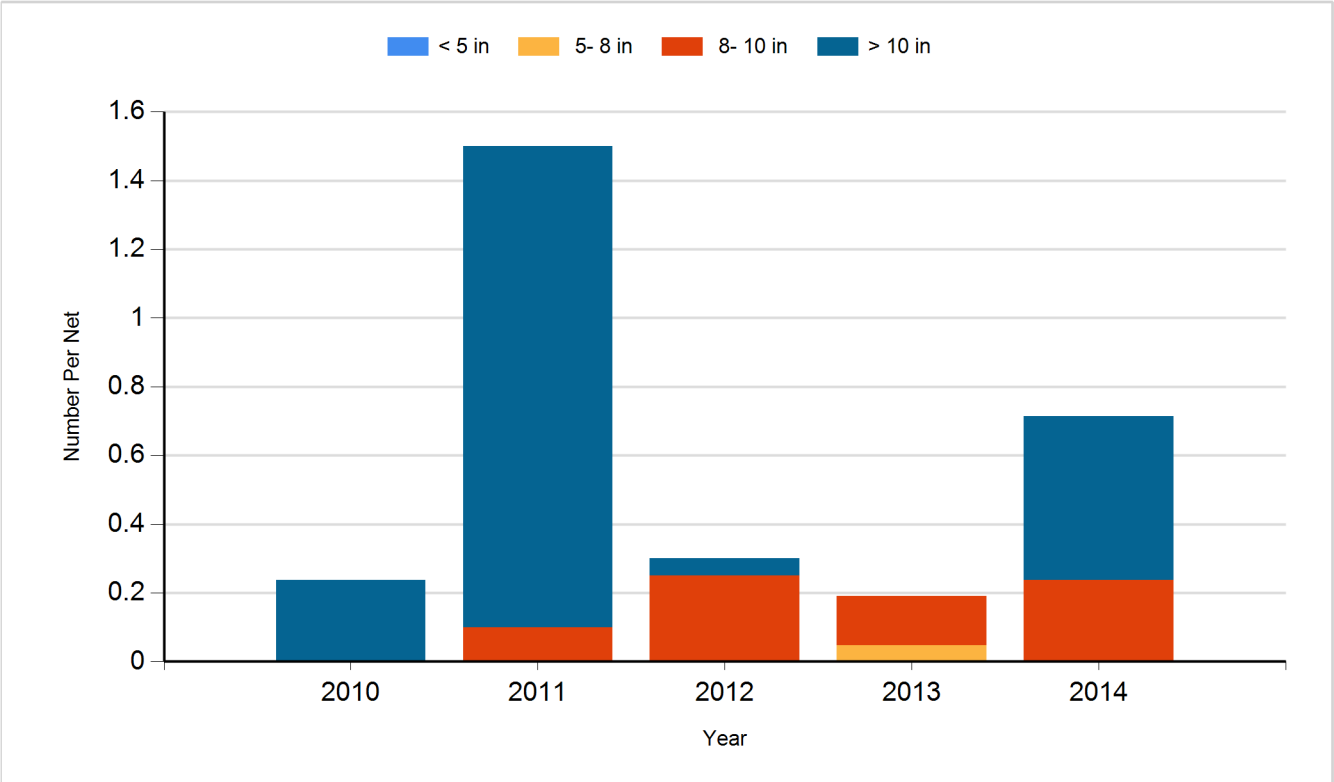
Species: Walleye
Gear: AFS std gill net



Species: Walleye
Gear: std exp gill net



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



Fish Stocking

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

Year	Species	Size	Number
2009	Walleye	Fry	2,500,000
2013	Walleye	Fry	2,400,000
2014	Walleye	Fry	2,500,000
2016	Walleye	Fry	2,400,000
2017	Walleye	Fry	2,400,000
2018	Walleye	Fry	2,400,000
2019	Walleye		2,400,000