Note: Curlyleaf pondweed, an invasive species, has been found in Pickerel Lake. Care should be taken by all user groups to prevent its spread. For information regarding curlyleaf pondweed and other aquatic invasive species please visit https://sdleastwanted.sd.gov/

Pickerel Survey Summary

Pickerel Lake, located 6.0 miles northeast of Grenville, is managed as a multi-species fishery including panfish (i.e., black crappie, bluegill, and yellow perch), smallmouth bass and walleye; other fish species (e.g., northern pike, white bass, etc.) also contribute to the fishery.

- **Black crappie.** Black crappies were not abundant (0.7/frame net) in 2019. Sampled fish ranged in length from 4.7 to 12.2 inches and four cohorts (2004, 2010, 2016, and 2017) were represented, each by eight or fewer individuals.

- **Bluegill.** The 2019 frame net CPUE was the highest recorded in surveys from 2010 to 2019. At 24.5/frame net, relative abundance was considered moderate to high. Sampled bluegills ranged in length from 3.5 to 8.7 inches; 92% were ≥6.0 inches and 15% were ≥8.0 inches. Fish from three consecutive year classes (2015 - 2017) were present; those from the 2016 cohort were the most abundant accounting for 80% of bluegills in the sample. Growth appears to be good with a mean length at capture value of 8.3 inches at age 4.

- **Northern pike.** Northern pike numbers were higher in 2019 than 2018. At 2.5/gill net, relative abundance was considered moderate to high. Sampled northern pike ranged in length from 18.1 to 29.9 inches, 87% were ≥21.0 inches and 3% were 28 inches and longer.

- **Smallmouth bass.** More **s**mallmouth bass were sampled in 2019 (59.0/hour) than 2018 (6.0/hour). The increase was likely not related to population changes but rather improved sampling conditions in 2019. Sampled smallmouth bass ranged in length from 8.7 to 19.3 inches, 83% were ≥11.0 inches and 37% were 14.0 inches or longer. Of those ≤14.0 inches nearly 70% (30 of 43 individuals) were from the 2015 (age-4) year class. In 2019, age-4 fish had a mean length at capture of 13.0 inches, which is higher than age-4 mean lengths at capture reported from 2011 to 2015 (11.1 to 12.0 inches).

- **Walleye.** At 5.2/gill net, relative abundance was considered moderate in 2019. Gill net captured walleyes ranged in length from 10.2 to 28.0 inches, most (74%) were ≥15.0 inches and 18% were 20.0 inches or longer. Individuals from 10 year classes (2004, 2006, 2008, 2010, 2011, and 2013 – 2017) were present; those from the 2013 (age 6), 2015 (age 4) and 2017 (age 2) cohorts, which coincided with small fingerling stockings, were the most abundant accounting for >70% of fish in the sample. Since 2010, mean length at capture of age-4 fish has ranged from 12.7 to 17.4 inches. In 2019, the mean length at capture for age-4 fish was 16.5 inches.

- **Yellow perch**. The 2019 mean gill net CPUE of 16.1 suggested moderate relative abundance. Sampled yellow perch ranged in length from 4.7 to 11.8 inches, of those ≥5.0 inches 32% were ≥8.0 inches and 4% were 10.0 inches or longer. Individuals from five year classes (2012 and 2014 - 2017) were present, those from the 2016 (age-3) cohort were the most abundant accounting for more than half (51%) of fish in the sample. Growth tends to be slow to moderate as mean length at capture values for age-3 yellow perch have ranged from 7.6 to 8.8 inches since 2010. In 2019, the mean length of age-3 fish was 7.6 inches.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Pickerel, Day County
UBS-Lake-358-000
2019

Lake Information

Name:	Pickerel	**Maximum Depth:**	41 Feet
County:	Day	**Mean Depth:**	16 Feet
		OHWM Elevation:	1,846
Surface Area:	989 Acres	**Outlet Elevation:**	1,845

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	Jun 17, 2019	4 net-nights
AFS std gill net	Jun 18, 2019	4 net-nights
AFS std gill net	Jun 19, 2019	4 net-nights
boat shocker (day)	Jun 06, 2019	3600 seconds
frame net (std 3/4 in)	Jun 17, 2019	6 net-nights
frame net (std 3/4 in)	Jun 18, 2019	6 net-nights
frame net (std 3/4 in)	Jun 19, 2019	6 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Smallmouth Bass

Northern Pike

Bluegill

Black Crappie

Black Bullhead

Rock Bass

White Bass

White Sucker

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 Bullhead	2	0.2	0.2	100		50		97	13
	Black Crappie	7	0.6	0.4	86		57		101	5
	Bluegill	25	2.1	1.4	100		28	14	117	6
	Common Carp	2	0.2	0.2	100		100		91	1
	Northern Pike	30	2.5	0.6	87		3		85	1
	Rock Bass	2	0.2	0.2	100		0		106	1
	Smallmouth Bass	16	1.3	0.5	94		81		92	2
	Walleye	62	5.2	1.3	74	8	18	7	88	1
	White Bass	21	1.8	0.7	100		100		88	1
	White Sucker	19	1.6	0.6	100		100		106	3
	Yellow Perch	195	16.1	4.3	32	5	4	2	103	2
boat shocker (day)	Smallmouth Bass	59	59.0	17.2	83	7	37	9	96	1
frame net (std 3/4 in)	Black Bullhead	120	6.6	1.6	82	5	51	6	95	1
	Black Crappie	14	0.7	0.3	42	24	17		106	6
	Bluegill	441	24.5	12.6	92	2	15	2	120	1
	Common Carp	1	0.1	0.1	100		100			
	Northern Pike	8	0.4	0.2	100		13		79	2
	Rock Bass	62	3.4	1.6	40	9	6		115	2
	Smallmouth Bass	53	2.6	1.1	63	11	39	11	90	1
	Walleye	4	0.2	0.2	75		25		73	
	White Bass	11	0.6	0.2	100		100		86	3
	White Sucker	2	0.1	0.1	100		100		95	6
	Yellow Perch	11	0.6	0.3	18		9		89	5

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.

***Night sampling completed prior to 2018; ** Methods/Species that ignore stock length; ***AFS standard nets used in 2017**

		CPUE										
Gear	Species	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg
AFS std gill net	Black Bullhead							0.1	1.3	0.0	0.2	0.4
	Black Crappie							0.2	0.2	0.9	0.6	0.5
	Bluegill							0.2	0.1	1.3	2.1	0.9
	Common Carp							0.1	0.2	0.4	0.2	0.2
	Northern Pike							0.5	1.3	1.5	2.5	1.5
	Rock Bass							0.0	0.1	0.5	0.2	0.2
	Smallmouth Bass							2.1	1.4	2.0	1.3	1.7
	Walleye							2.3	2.5	4.3	5.2	3.6
	White Bass							2.9	1.9	1.5	1.8	2.0
	White Sucker							1.1	1.7	1.8	1.6	1.6
	Yellow Perch							8.9	5.0	21.8	16.1	13.0
boat shocker (day)*	Smallmouth Bass		51.0		207.0		110.0			6.0	59.0	86.6
fall night EF-WAE**	Walleye				139.0	10.0	44.4	0.0	28.0	76.0		49.6
frame net (std 3/4 in)***	Black Bullhead	4.6	2.8	4.1	6.2	10.1	10.9		1.3		6.6	5.8
	Black Crappie	4.0	3.8	2.5	9.3	1.0	0.9		0.1		0.7	2.8
	Bluegill	3.5	2.6	5.4	12.8	0.6	0.4		11.6		24.5	7.7
	Common Carp	0.0	0.0	0.1	0.0	0.0	0.1		0.0		0.1	0.0
	Northern Pike	0.3	0.0	0.6	0.1	0.2	0.5		0.2		0.4	0.3
	Rock Bass	4.3	1.2	2.6	3.4	6.0	8.5		1.2		3.4	3.8
	Smallmouth Bass	1.9	1.6	5.1	3.2	2.3	2.3		0.9		2.6	2.5
	Walleye	0.8	0.1	1.8	0.4	0.6	0.3		0.2		0.2	0.6
	White Bass	0.0	3.4	1.9	0.1	0.1	0.2		0.2		0.6	0.8
	White Sucker	0.3	0.0	0.1	0.0	0.2	0.2		0.1		0.1	0.1
	Yellow Perch	0.2	0.5	1.4	0.2	0.2	0.1		0.3		0.6	0.4
std exp gill net	Black Bullhead	0.1	0.2	1.0	1.0	0.2	3.2					1.0
	Black Crappie	2.8	0.7	4.5	2.0	7.2	2.5					3.3
	Bluegill	0.1	0.0	0.5	1.3	0.0	0.0					0.3
	Common Carp	0.0	0.0	0.0	0.2	0.2	0.3					0.1
	Northern Pike	0.9	1.3	3.3	4.7	3.0	3.3					2.8
	Rock Bass	0.0	0.2	0.2	0.0	0.0	0.0					0.1
	Smallmouth Bass	0.1	0.2	0.8	1.0	2.2	1.7					1.0
	Spottail Shiner*	0.7	0.5	0.2	0.3	0.0	0.0					0.3
	Walleye	3.1	4.5	8.0	17.3	12.3	18.5					10.6
	White Bass	0.2		3.2	1.8	3.0	4.0					2.4
	White Sucker	0.6	0.7	1.5	1.7	1.5	1.7					1.3
	Yellow Perch	7.0	11.9	27.5	56.0	23.2	27.8					25.6

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.

***Night sampling completed prior to 2018; **AFS standard nets used in 2017**

			Year									
Gear	Species	Index	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AFS std gill net	Walleye	PSD							57	60	71	74
		PSD-P							7	3	10	18
		Wr							83	88	85	88
	Yellow Perch	PSD							98	60	48	32
		PSD-P							52	33	11	4
		Wr							109	101	100	103
boat shocker (day)*	Smallmouth Bass	PSD		27		35		60			83	83
		PSD-P		4		7		12			33	37
		Wr		98		89		91			89	96
frame net (std 3/4 in)**	Black Crappie	PSD	100	100	56	100	100	94		100		42
		PSD-P	58	88	47	69	94	94		100		17
		Wr	99	95	111	96	100	95		86		106
	Bluegill	PSD	87	43	61	99	82	71		2		92
		PSD-P	56	15	6	39	73	43		0		15
		Wr	113	129	125	125	118	129		123		120
std exp gill net	Walleye	PSD	4	36	25	16	16	52				
		PSD-P	0	4	0	1	1	1				
		Wr	82	90	83	83	86	87				
	Yellow Perch	PSD	40	23	41	63	86	79				
		PSD-P	0	5	4	7	12	40				
		Wr	104	114	107	107	108	110				

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+
2019	14		141 (8)	215 (4)						314 (1)	314 (1)
2017	15	82 (13)									321 (2)
2015	16			175 (1)		273 (10)				300 (1)	313 (4)
2014	18				253 (8)					298 (10)	
2013	163			222 (45)	239 (6)				293 (111)		320 (1)
2012	45		176 (22)	226 (2)			264 (1)	280 (20)			
2011	71	88 (3)				246 (2)	263 (65)				296 (1)

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	441		97 (21)	175 (355)	212 (65)						
2010	63		115 (5)	169 (18)	204 (12)	217 (23)	235 (5)				

Species: Smallmouth Bass; *age structures collected only from those $\leq$ 14.0 inches

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019*	43		229 (1)	259 (8)	331 (30)	335 (3)	335 (1)				
2018	6			254 (1)		341 (4)	355 (1)				
2015	110		193 (7)	255 (38)	304 (13)	330 (35)	341 (6)	365 (1)	391 (6)	415 (2)	467 (2)
2013	207		197 (8)	260 (129)	300 (44)	336 (12)	351 (5)	368 (4)	407 (5)		443 (1)
2011	51		188 (5)	248 (30)	282 (5)	328 (9)	354 (2)				

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	62		295 (14)	378 (2)	419 (21)	459 (4)	502 (9)		490 (3)	502 (5)	571 (4)
2018	52	180 (1)	311 (3)	367 (16)	443 (1)	460 (15)	474 (2)	457 (5)	463 (7)		677 (2)
2017	30		325 (10)	376 (3)	420 (9)		478 (3)	450 (4)	414 (1)		
2016	32	197 (4)	296 (1)	356 (10)	372 (1)	420 (9)	422 (6)				645 (1)
2015	114	186 (3)	298 (28)	373 (25)	388 (37)	410 (19)		604 (1)	427 (1)		
2014	75	184 (1)	307 (5)	351 (41)	367 (23)	463 (1)	416 (1)	406 (1)	443 (1)		556 (1)
2013	106	186 (1)	276 (19)	345 (68)	383 (6)	412 (4)	422 (3)	442 (4)			676 (1)
2012	53	207 (7)	277 (26)	312 (4)	376 (4)	405 (4)	417 (7)		483 (1)		508 (1)
2011	86	178 (5)	277 (3)	333 (25)	377 (10)	385 (37)	366 (2)	385 (1)			546 (3)
2010	59		258 (17)	312 (14)	322 (26)		433 (1)	398 (1)			

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	195		142 (62)	194 (100)	233 (30)	243 (2)		302 (1)			
2018	263		153 (122)	216 (108)	249 (10)	266 (8)	280 (2)	273 (10)	310 (3)	274 (1)	
2017	60		171 (25)	223 (11)	257 (12)	266 (2)	266 (4)	286 (3)	290 (3)		
2016	107		164 (1)	209 (10)	237 (18)	247 (26)	258 (26)	272 (24)	294 (1)		
2015	168	100 (1)	157 (16)	196 (24)	238 (50)	255 (46)	260 (23)	249 (4)			
2014	139		146 (6)	202 (27)	229 (67)	240 (38)	234 (3)				
2013	340	99 (1)	137 (27)	192 (127)	222 (150)	247 (31)		264 (4)	276 (2)		
2012	186	102 (22)	150 (44)	195 (79)	224 (25)	241 (3)	237 (8)	249 (2)	268 (3)		
2011	254	95 (30)	146 (130)	192 (65)	224 (7)	239 (11)	248 (7)	255 (3)	252 (1)		
2010	149	96 (22)	148 (68)	193 (11)	221 (24)	223 (20)	230 (4)				

Fish Condition

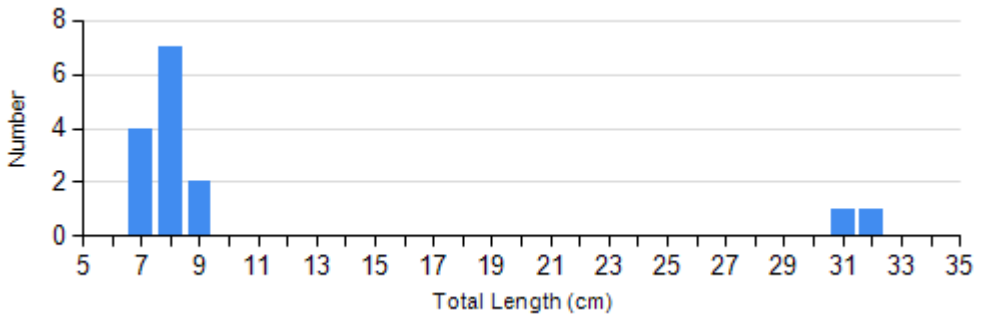
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2015	1	112	0		10	97 (1.6)	5	87 (1.6)
	2017	0		0		0		2	86 (1.0)
	2019	7	114 (4.7)	3	104 (5.4)	0		2	80 (2.3)
Bluegill Frame Net	2015	2	111 (7.3)	2	127 (6.6)	3	142 (3.7)	0	
	2017	205	123 (1.6)	4	120 (7.2)	0		0	
	2019	37	105 (1.8)	336	122 (0.7)	68	122 (1.3)	0	
Smallmouth Bass Electro Fishing	2015	44	93 (0.8)	53	90 (0.6)	9	90 (1.3)	4	90 (3.4)
	2018	1	91	3	89 (1.1)	2	88 (4.5)	0	
	2019	10	95 (2.2)	27	97 (1.0)	21	95 (1.5)	1	97
Walleye Gill Net	2015	53	90 (0.6)	57	84 (0.6)	1	87	0	
	2016	12	85 (1.5)	14	81 (1.5)	1	79	1	88
	2017	12	88 (1.0)	17	87 (1.3)	1	93	0	
	2018	15	84 (1.5)	31	86 (1.1)	3	84 (2.5)	2	87 (2.8)
	2019	16	87 (1.2)	35	88 (1.0)	9	90 (1.2)	2	93 (4.7)
Yellow Perch Gill Net	2015	35	107 (1.3)	66	111 (0.9)	66	110 (1.1)	0	
	2016	2	117 (10.4)	49	109 (1.1)	56	109 (0.8)	0	
	2017	24	101 (1.3)	16	102 (2.7)	20	102 (2.0)	0	
	2018	136	100 (0.6)	97	100 (0.7)	26	98 (1.0)	3	94 (3.1)
	2019	132	106 (2.2)	54	98 (0.9)	6	91 (2.1)	1	95

Length Frequency Distribution

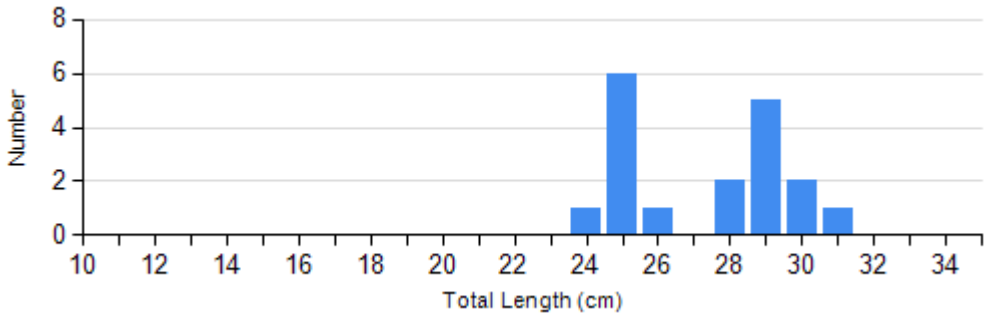
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: AFS std frame net

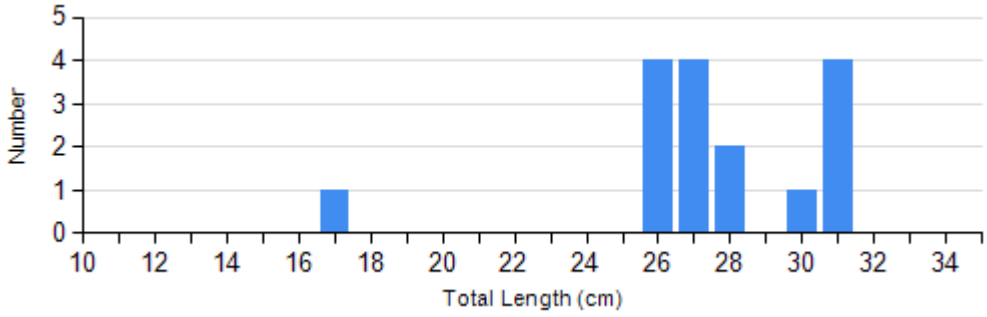


2017

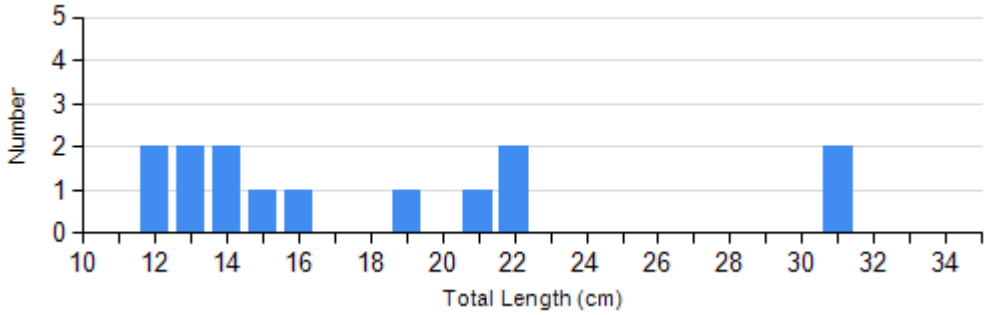
Species: Black Crappie
Gear: frame net (std 3/4 in)



2014

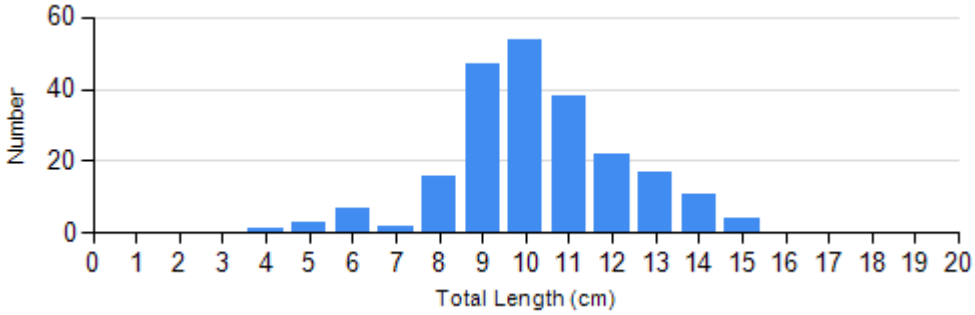


2015



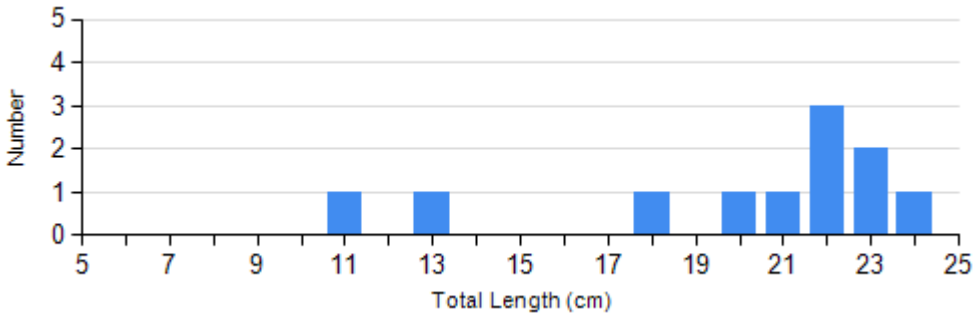
2019

Species: Bluegill
Gear: AFS std frame net

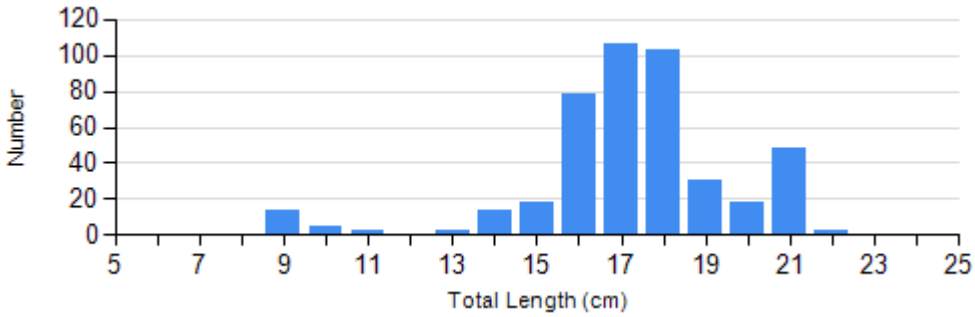


2017

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

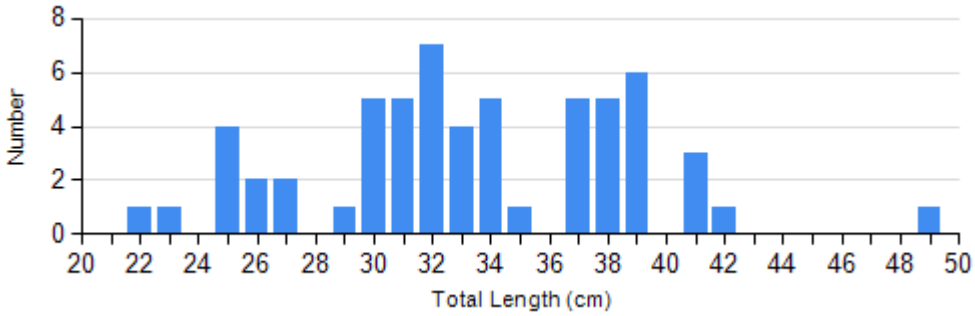


2014



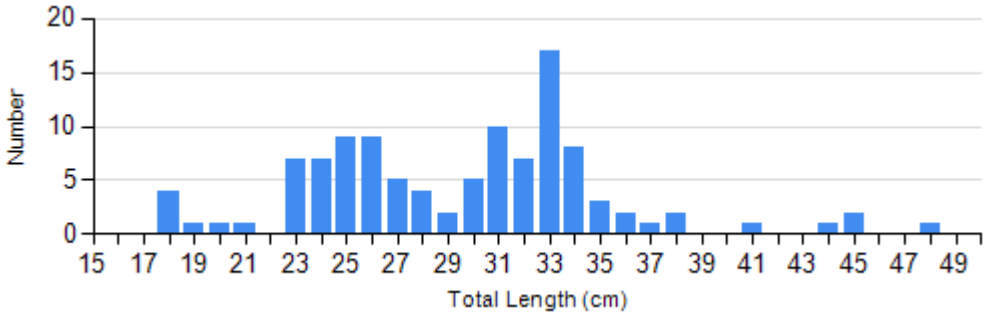
2019

Species: Smallmouth Bass
Gear: boat shocker (day)



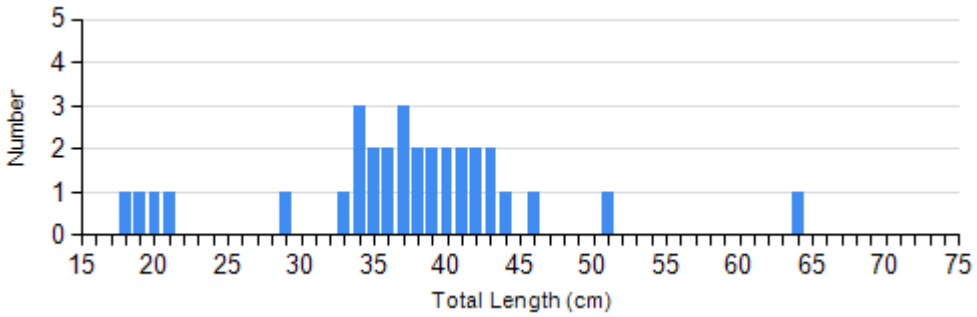
2019

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

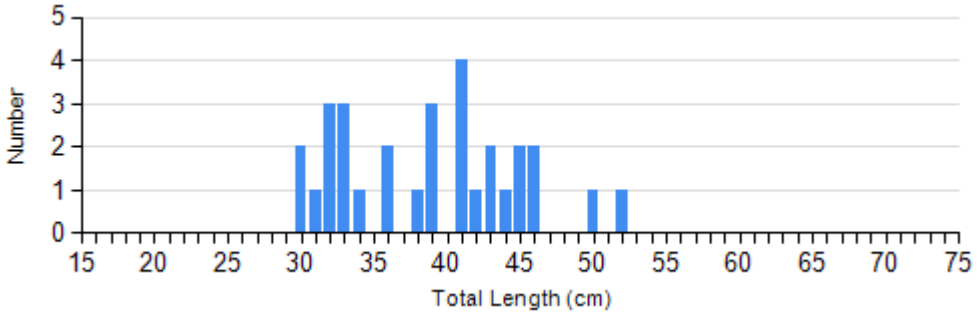


2015

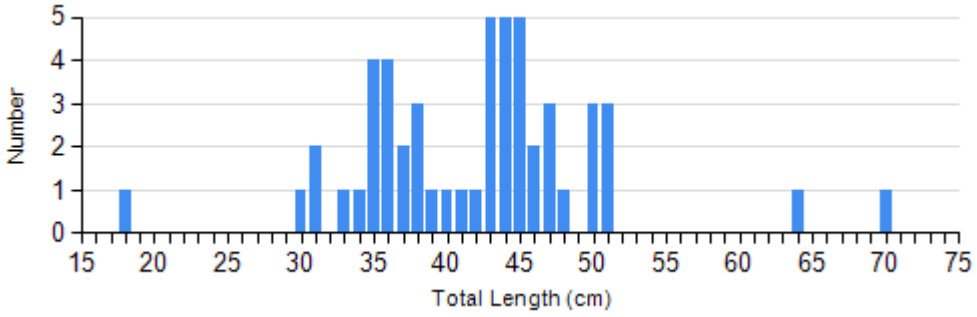
Species: Walleye
Gear: AFS std gill net



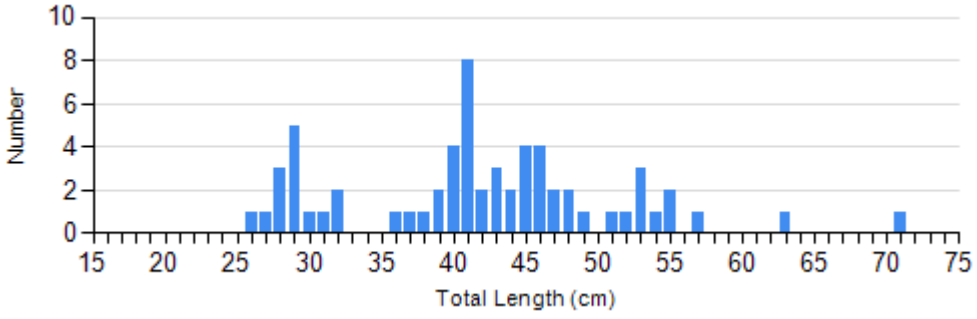
2016



2017

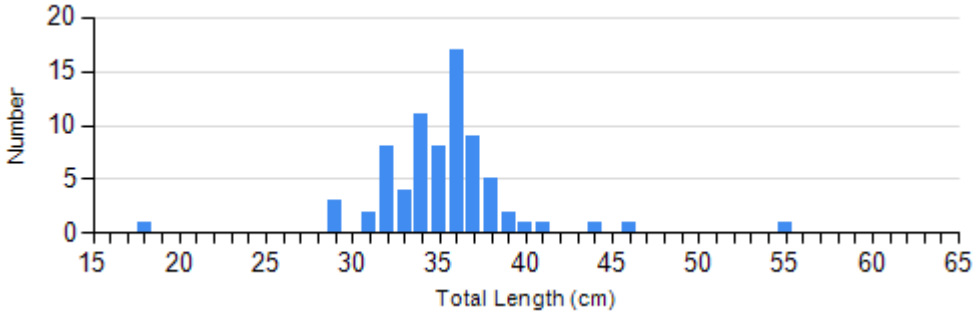


2018

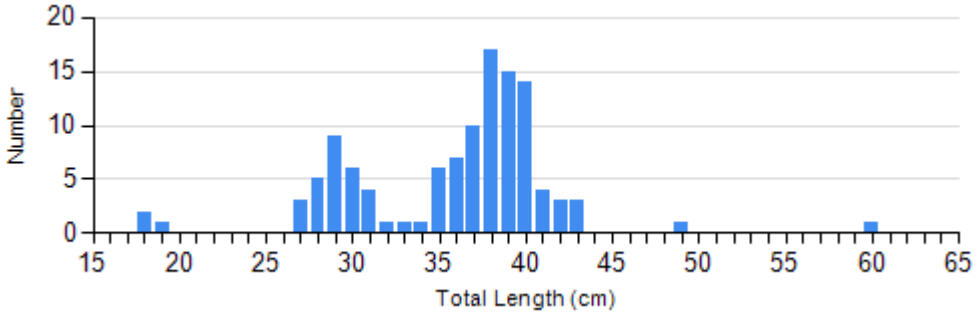


2019

Species: Walleye
Gear: std exp gill net

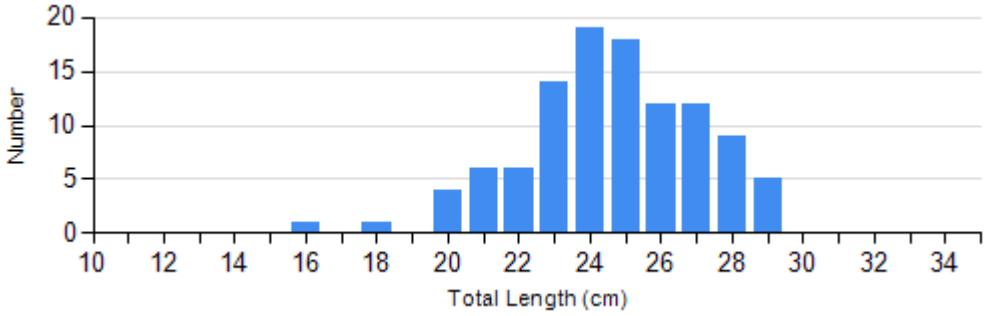


2014

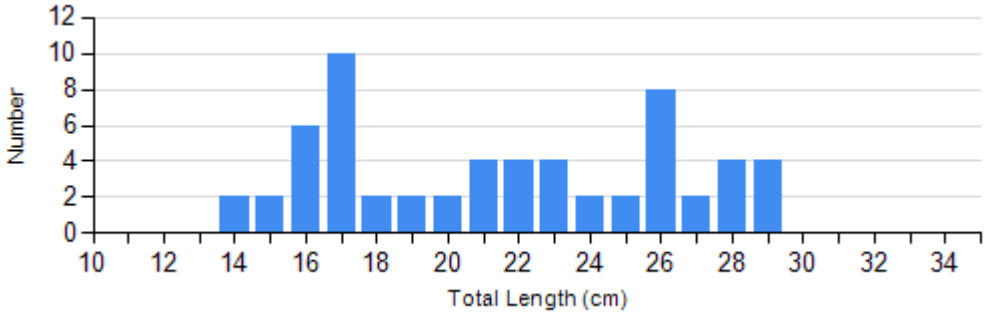


2015

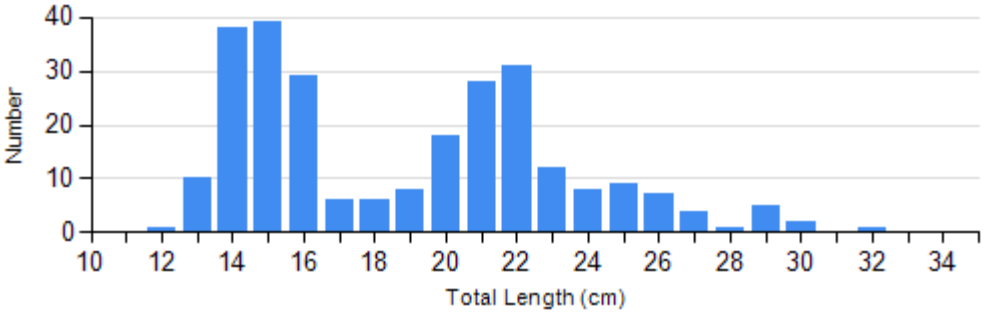
Species: Yellow Perch
Gear: AFS std gill net



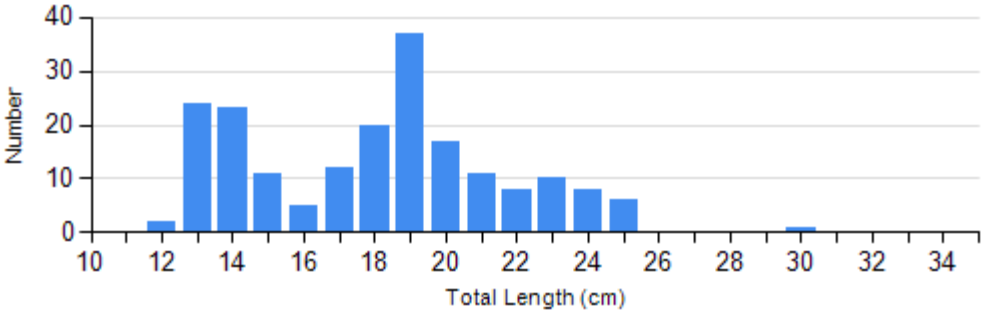
2016



2017

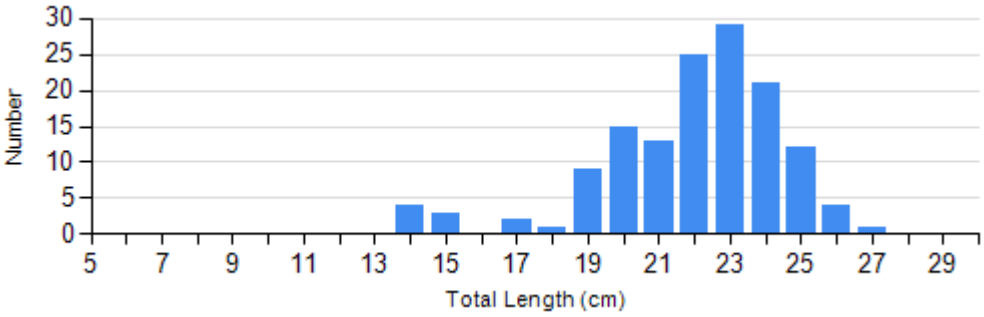


2018

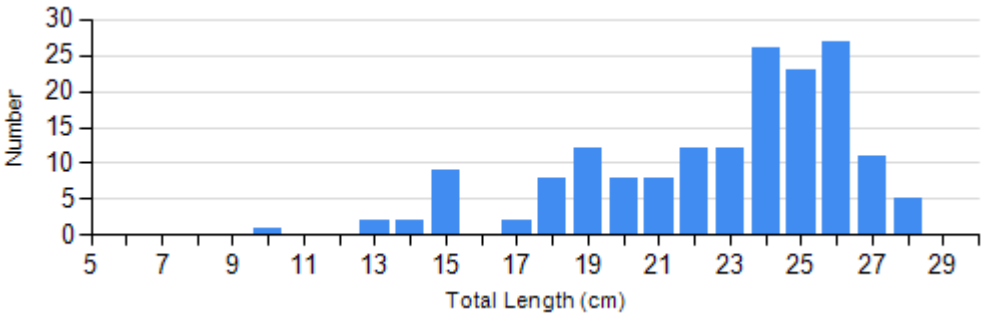


2019

Species: Yellow Perch
Gear: std exp gill net



2014

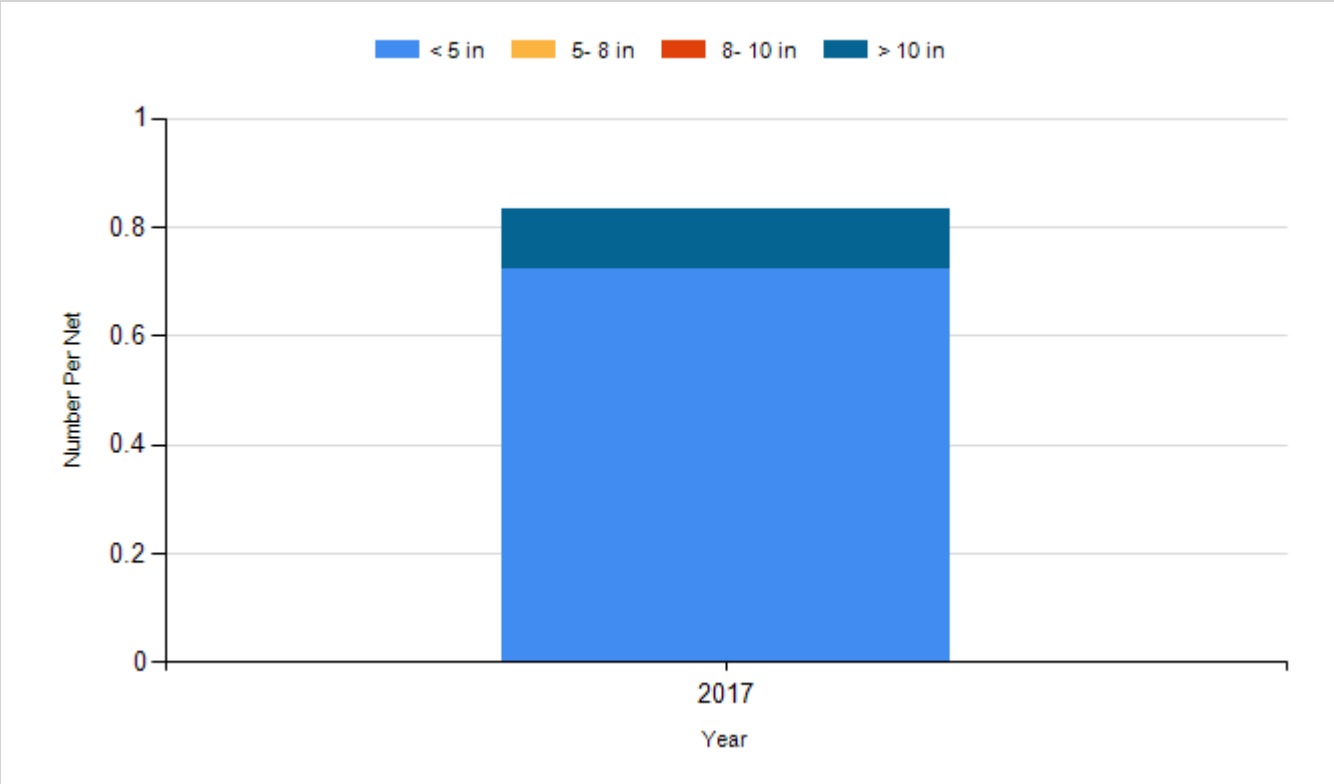


2015

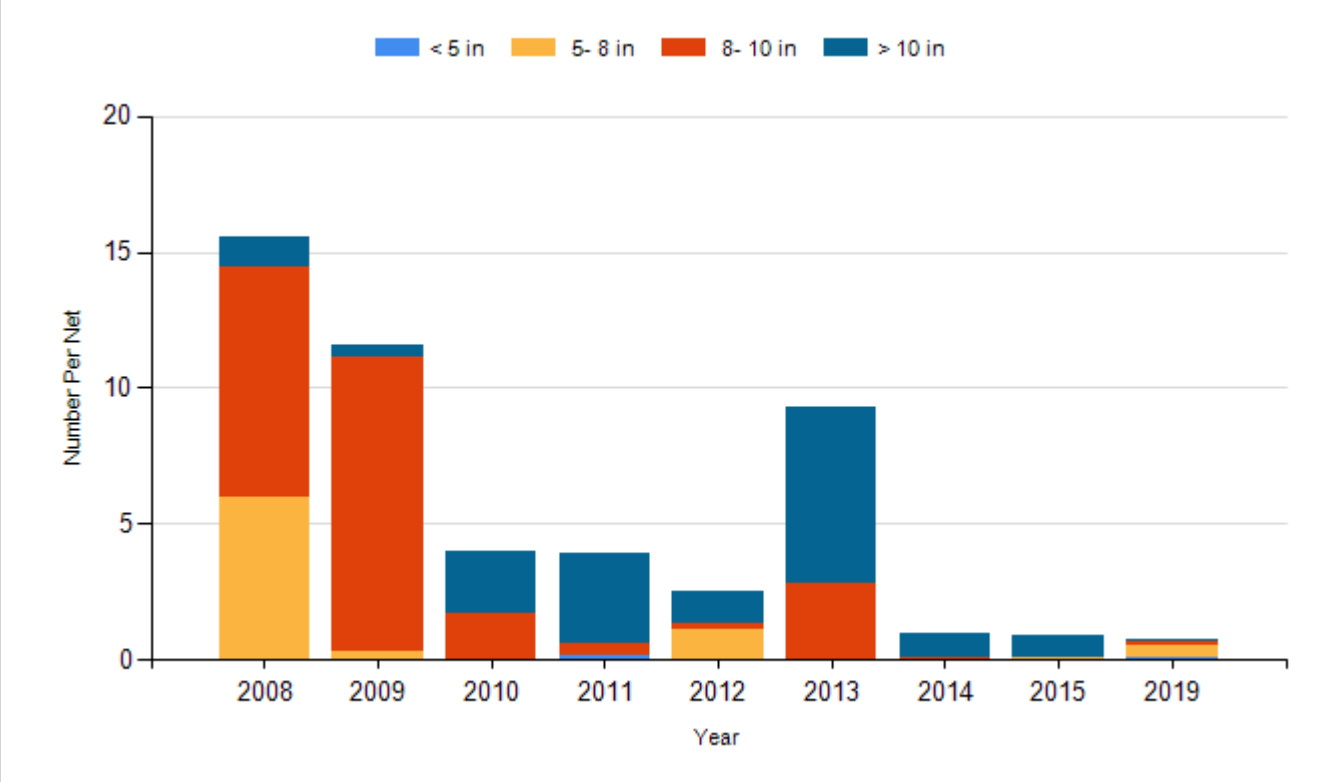
Historic Fish Sizes and Relative Abundance

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

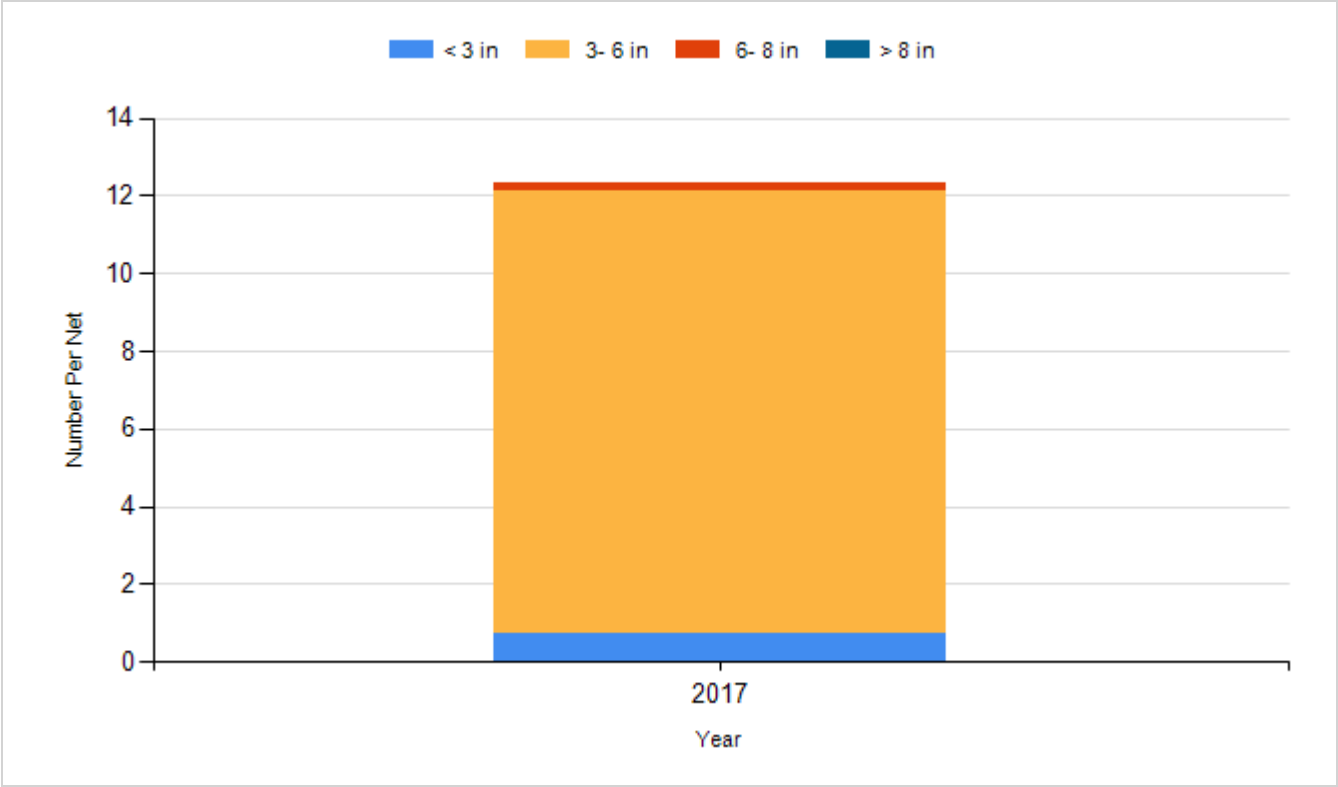
Species: Black Crappie
Gear: AFS std frame net



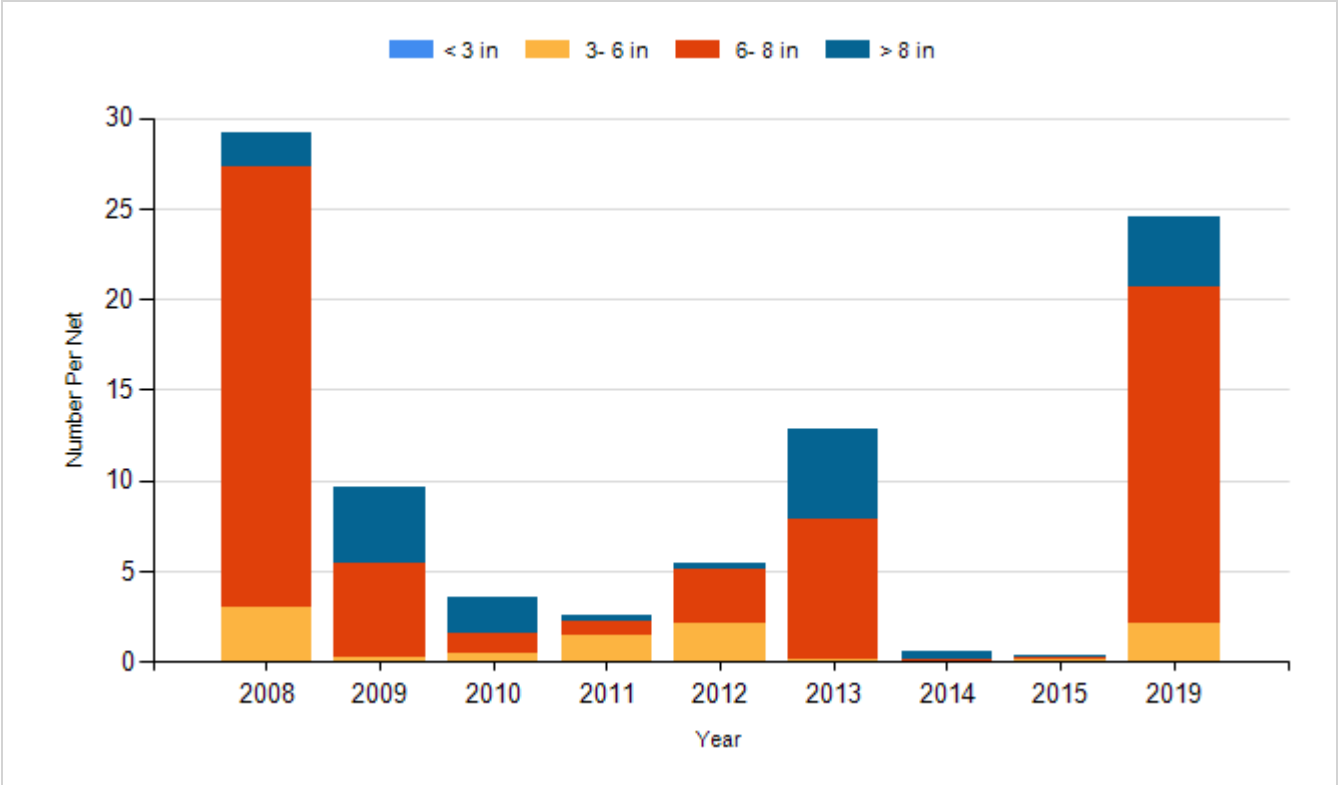
Species: Black Crappie
Gear: frame net (std 3/4 in)



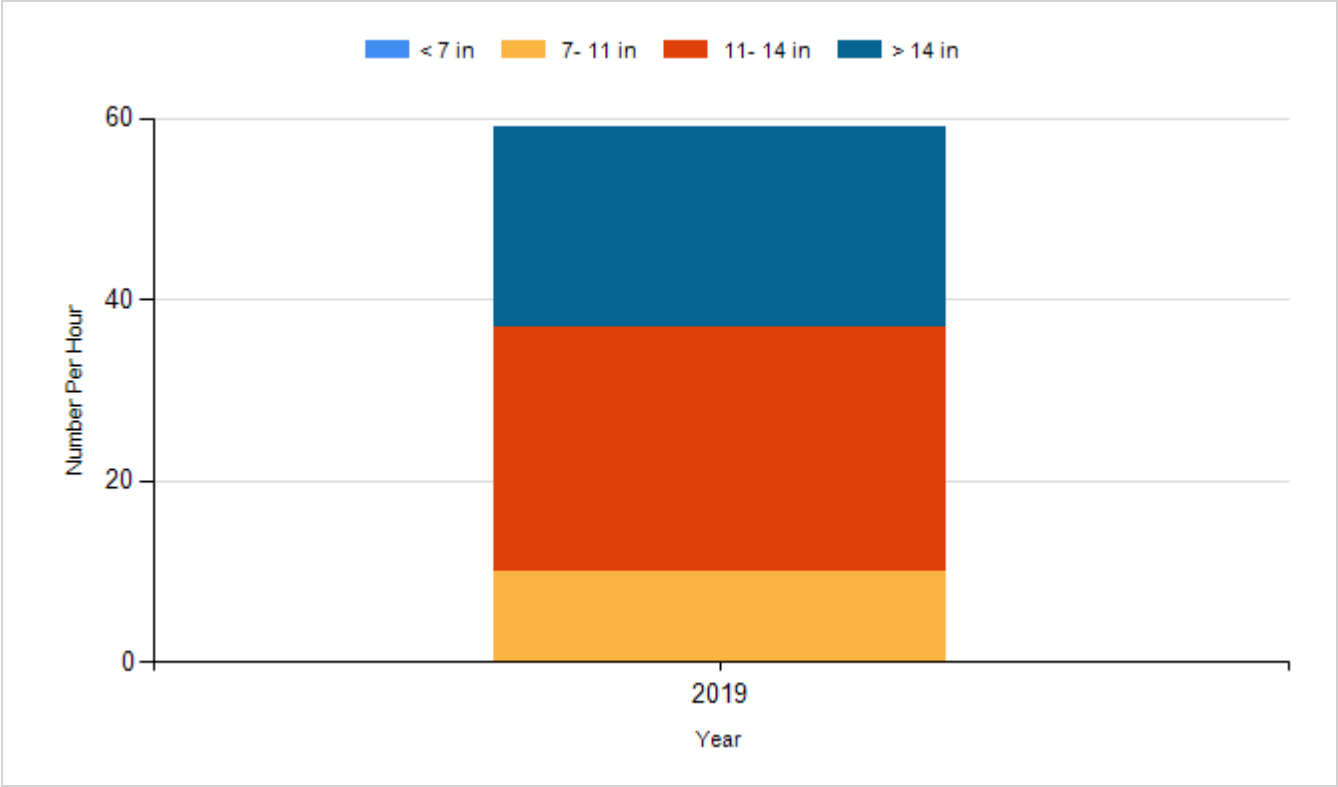
Species: Bluegill
Gear: AFS std frame net



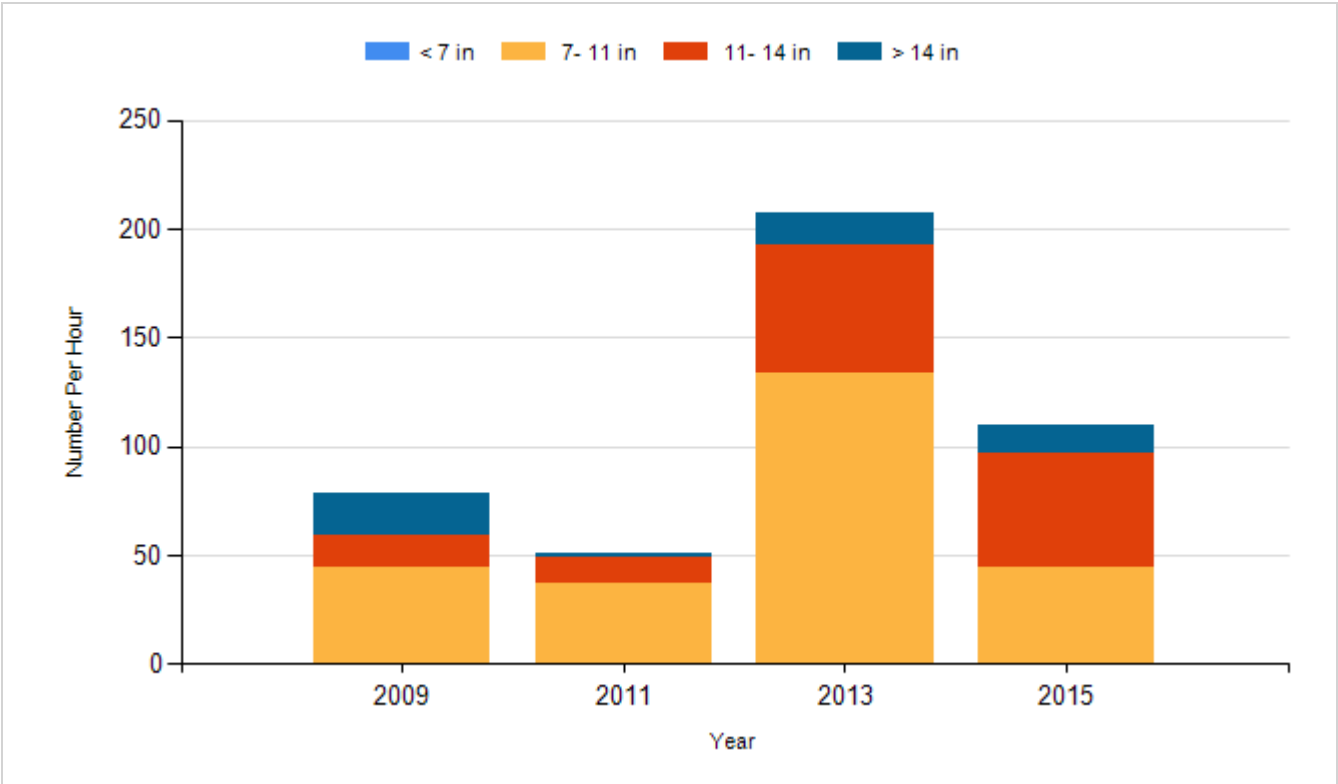
Species: Bluegill
Gear: frame net (std 3/4 in)



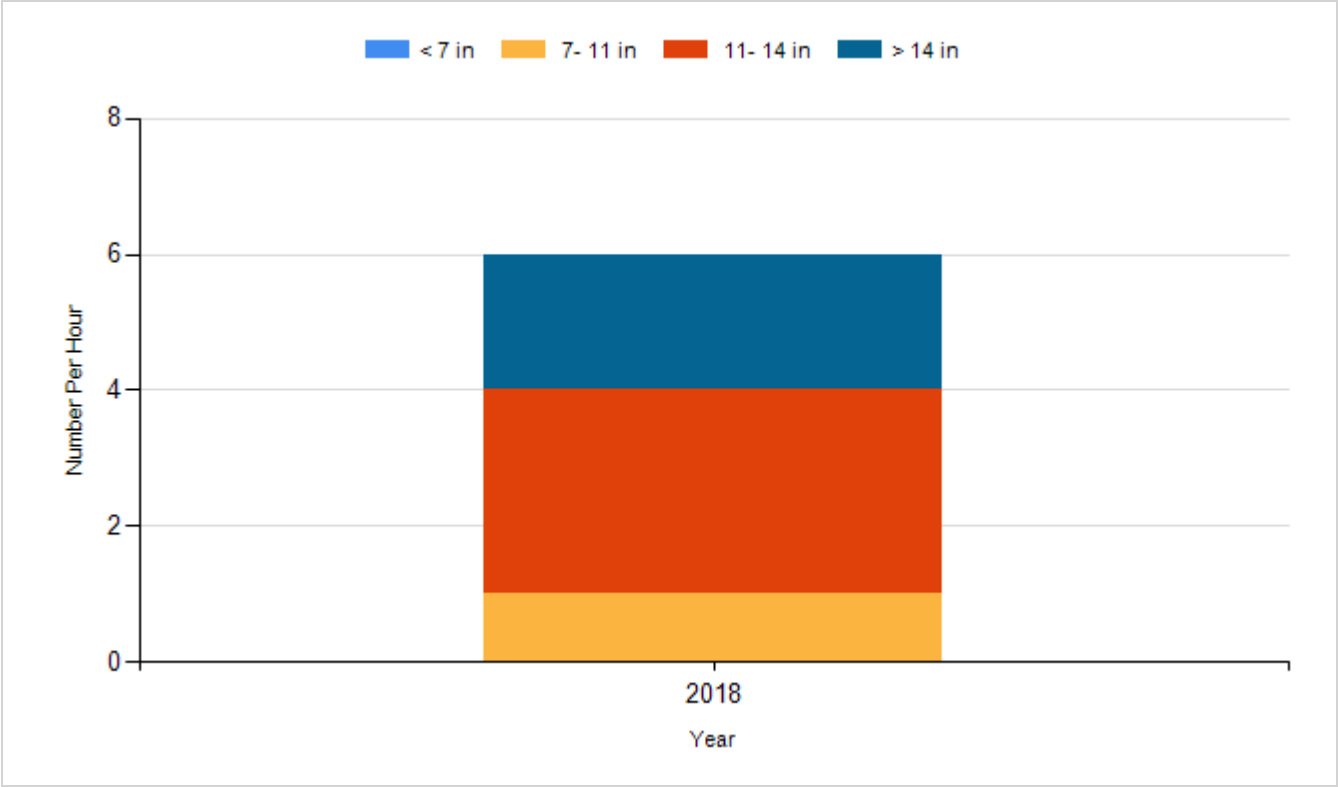
Species: Smallmouth Bass
Gear: boat shocker (day)



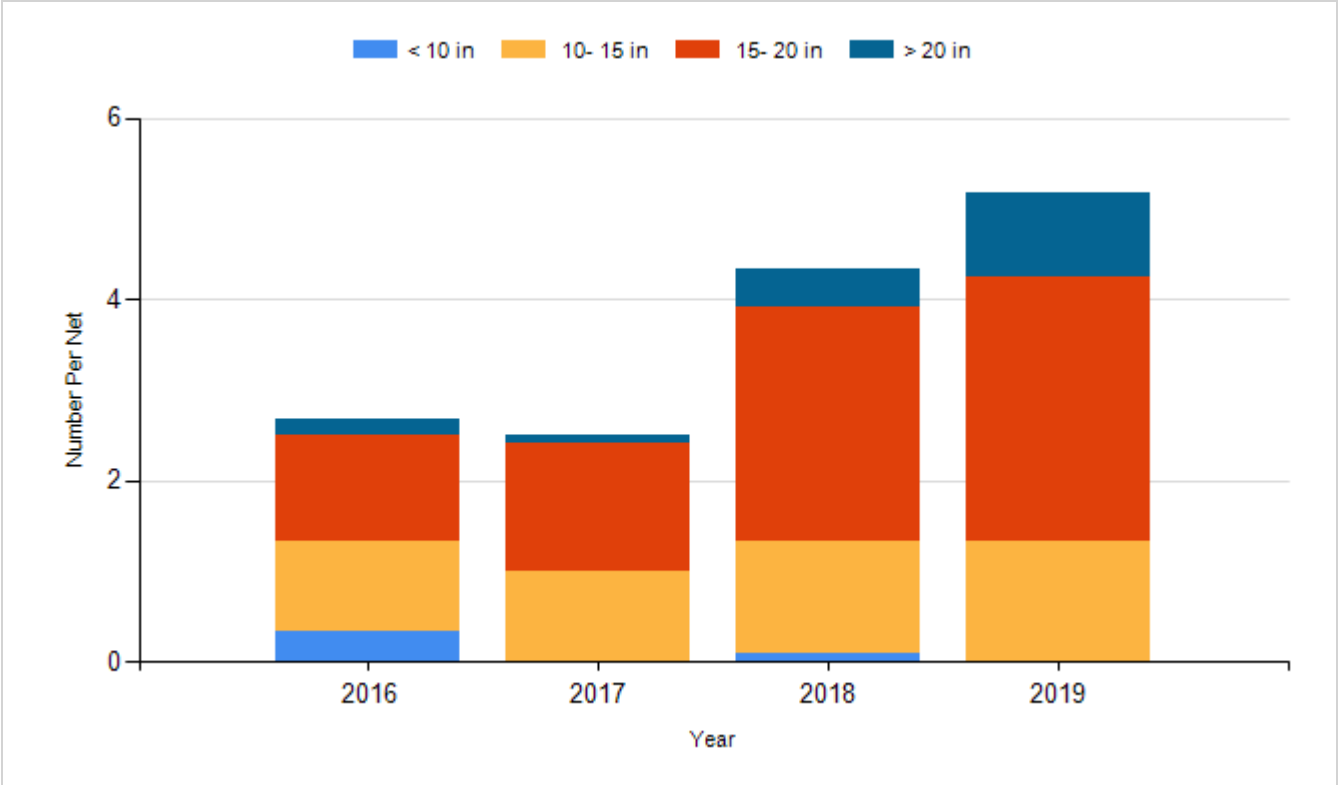
Species: Smallmouth Bass
Gear: boat shocker (night, DC)



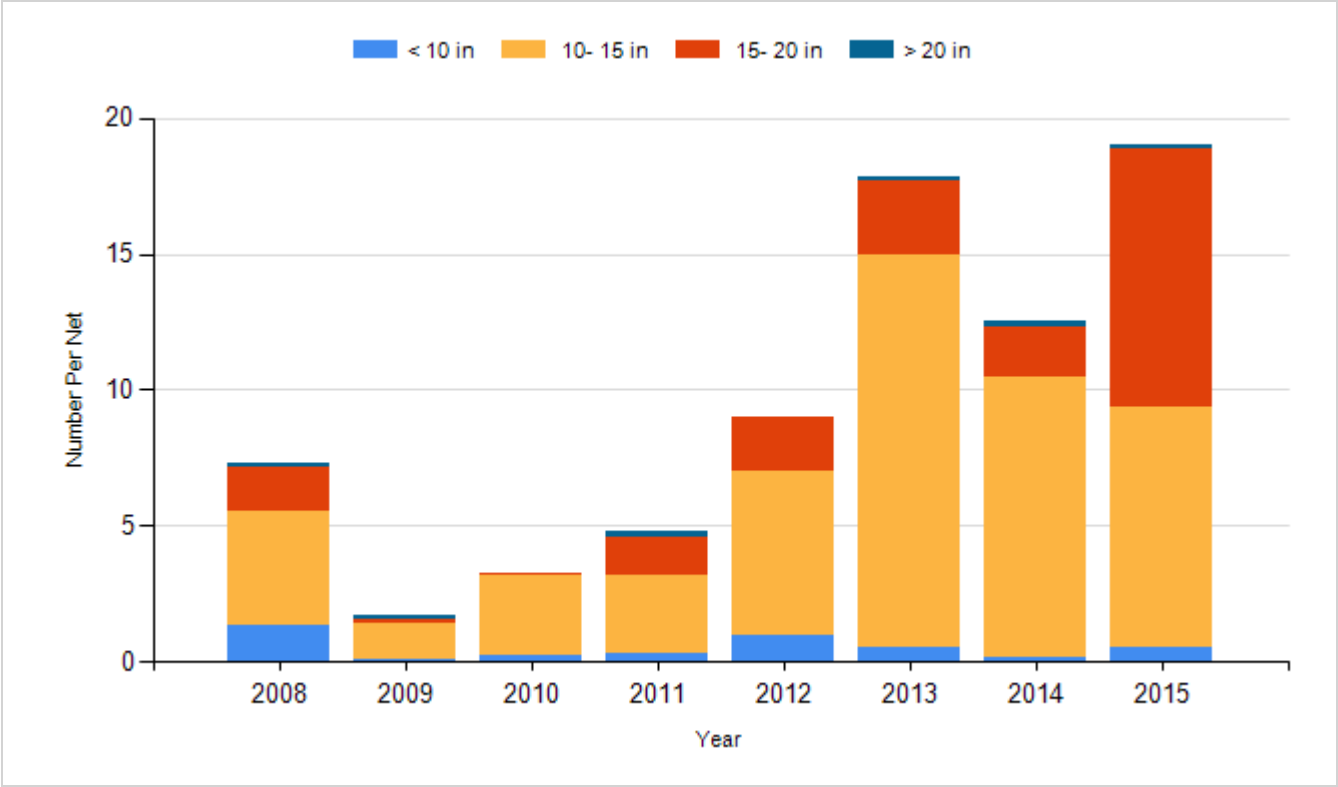
Species: Smallmouth Bass
Gear: spring night EF-SMB



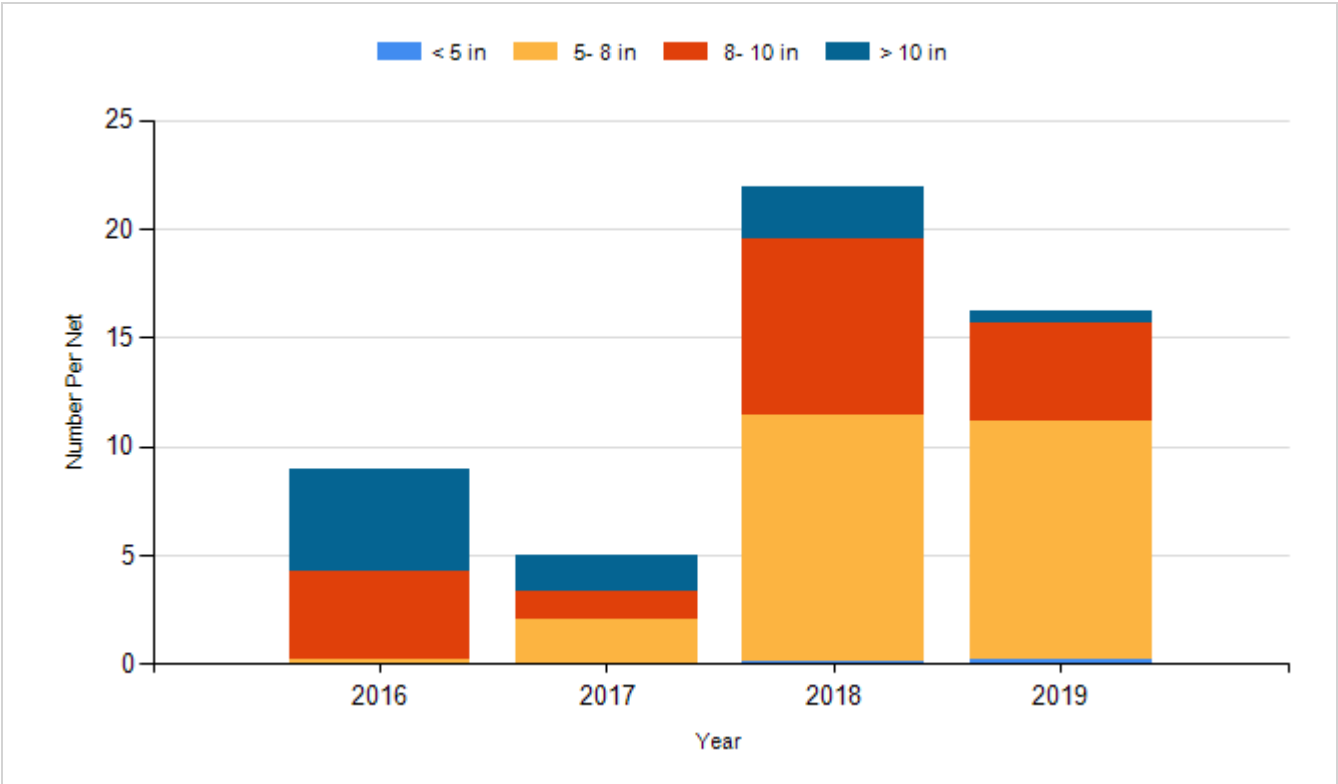
Species: Walleye
Gear: AFS std gill net



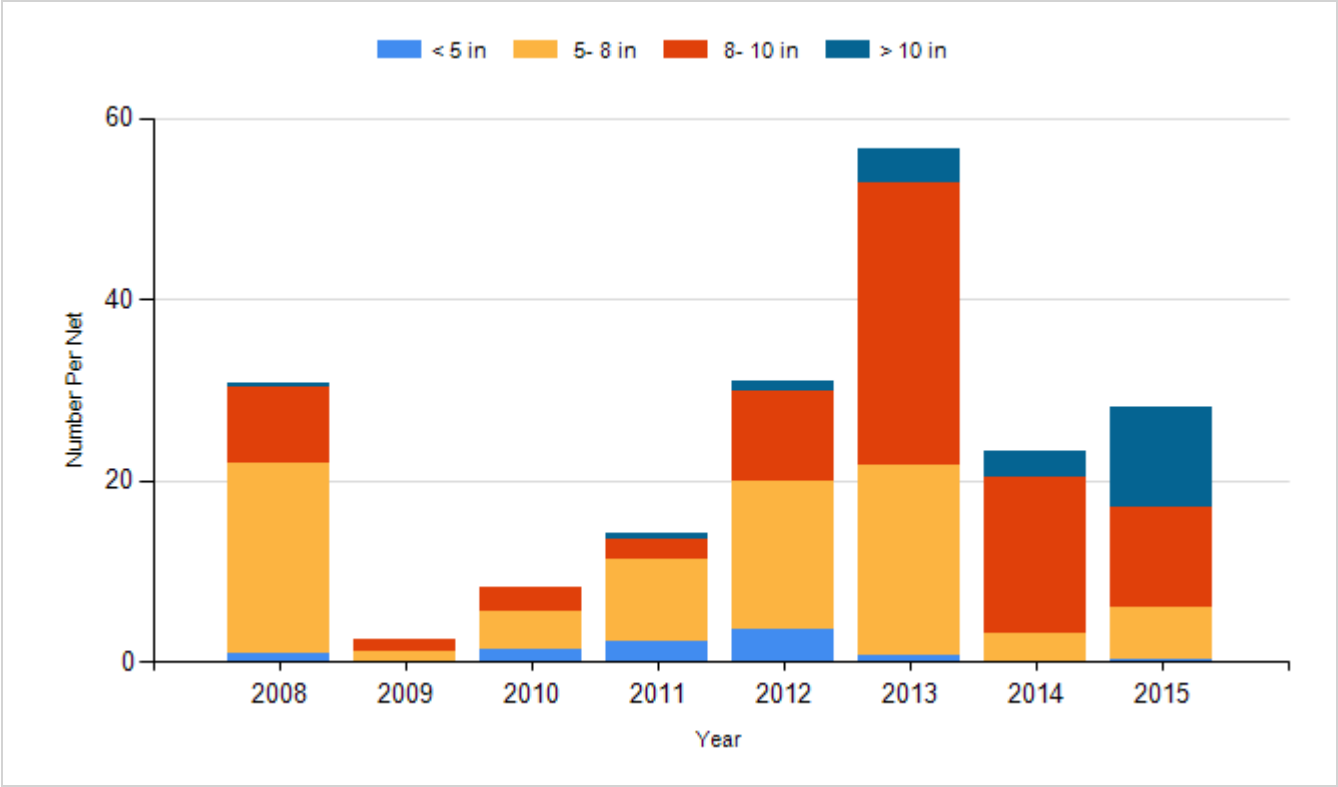
Species: Walleye
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std gill net



Species: Yellow Perch
Gear: std exp gill net



Fish Stocking

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

Year	Species	Size	Number
2008	Walleye	Large Fingerling	15,135
2010	Walleye	Large Fingerling	17,442
2011	Walleye	Large Fingerling	18,585
2013	Walleye	Small Fingerling	93,410
2015	Walleye	Small Fingerling	91,850
2017	Walleye	Small Fingerling	71,130
2018	Walleye	Fry	470,000