Note: Curlyleaf pondweed and zebra mussels have been found in Pickerel Lake. Care should be taken by all user groups to prevent their spread. For more information regarding 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 (0.5/frame net) in 2020. Sampled fish ranged in length from 5.3 to 13.1 inches

- **Bluegill.** Fewer bluegills were sampled in 2020 than in 2019. However, at 20.3/frame net, relative abundance remained moderate to high. Sampled bluegills ranged in length from 3.5 to 9.4 inches; 94% were $\geq$6.0 inches and 44% were $\geq$8.0 inches. Individuals from four consecutive year classes (2015 - 2018) contributed to the catch, those from the 2016 (age-4) and 2017 (age-3) cohorts were the most abundant accounting for 89% of bluegills in the sample. Growth appears to be good with a mean length at capture of 8.3 inches at age 4.

- **Northern pike.** Northern pike numbers were slightly higher in 2020 than in 2019. At 3.0/gill net, relative abundance was considered moderate to high. Sampled northern pike ranged in length from 15.0 to 33.9 inches, 58% were $\geq$21.0 inches and 6% were $\geq$28 inches.

- **Smallmouth bass.** Spring electrofishing for smallmouth bass was not completed in 2020.

- **Walleye.** At 6.2/gill net, relative abundance of walleyes $\geq$10.0 inches was considered moderate in 2020. Gill net captured walleyes ranged in length from 8.7 to 28.7 inches, most (53%) were $\geq$15.0 inches and 16% were $\geq$20.0 inches. Individuals from 10 year classes (2007, 2008, 2010, 2011, and 2013 – 2018) were present; those from the 2017 (age-3) and 2018 (age 2) cohorts, which coincided with stocking events, were the most abundant accounting for more than half (58%) of fish in the sample. Since 2011, mean length at capture of age-4 fish has ranged from 14.4 to 17.4 inches. In 2020, the mean length at capture for age-4 fish was 16.5 inches.

- **Yellow perch**. The 2020 mean gill net CPUE of 21.8 suggests moderate to high relative abundance. Sampled yellow perch ranged in length from 4.7 to 10.2 inches, of those $\geq$5.0 inches, 21% were $\geq$8.0 inches and 1% were $\geq$10.0 inches. Individuals from four year classes (2015 - 2018) were present, those from the 2017 (age-3) and 2018 (age-2) cohorts were the most numerous accounting for 74% of yellow perch sampled. Growth tends to be slow to moderate as mean length at capture values for age-3 yellow perch have ranged from 6.7 to 8.8 inches since 2011. In 2020, the mean length of age-3 fish was 6.7 inches.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Pickerel, Day County
UBS-Lake-358-000
2020

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 23, 2020	4 net-nights
AFS std gill net	Jun 24, 2020	4 net-nights
AFS std gill net	Jun 25, 2020	4 net-nights
frame net (std 3/4 in)	Jun 23, 2020	6 net-nights
frame net (std 3/4 in)	Jun 24, 2020	6 net-nights
frame net (std 3/4 in)	Jun 25, 2020	6 net-nights

__Common Fish Species Present__

Northern Pike

Bluegill

Black Crappie

Yellow Perch

Walleye

Smallmouth Bass

White Bass

Rock Bass

Black Bullhead

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.

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

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

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.

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

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 (in)	Stock (cm)	Quality (in)	Quality (cm)	Preferred (in)	Preferred (cm)	Memorable (in)	Memorable (cm)	Trophy (in)	Trophy (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

Gear	Species	Sample Size (n)	Abundance		Stock Density Indices				Condition	
			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		0		99	0
	Black Crappie	11	0.9	0.5	73		27		114	5
	Bluegill	23	1.9	1.0	100		52	16	119	3
	Common Carp	3	0.3	0.2	100		100			
	Northern Pike	36	3.0	0.6	58	12	6		89	1
	Rock Bass	13	1.1	0.9	54	23	0		112	3
	Smallmouth Bass	29	2.3	0.5	85		56	15	94	1
	Walleye	77	6.2	0.8	53	8	16	6	90	1
	White Bass	65	5.4	2.9	94		82	7	93	1
	White Sucker	9	0.8	0.4	100		100		113	2
	Yellow Perch	263	21.8	5.1	21	3	1		104	1
frame net (std 3/4 in)	Black Bullhead	30	1.7	0.6	70	13	20	12	99	3
	Black Crappie	9	0.5	0.2	89		33		105	5
	Bluegill	365	20.3	6.9	94	2	44	4	120	1
	Northern Pike	7	0.3	0.2	67		0		85	4
	Rock Bass	61	3.3	1.3	24	8	0		111	1
	Smallmouth Bass	105	2.7	1.2	47	11	29	10	94	1
	Walleye	4	0.2	0.2	75		75		81	2
	White Bass	6	0.3	0.2	100		100		93	5
	White Sucker	1	0.1	0.1	100		100		97	
	Yellow Perch	53	2.9	1.5	21	8	0		94	1

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; **AFS standard nets used in 2017

| Gear | Species | CPUE | | | | | | | | | | |
		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
AFS std gill net	Black Bullhead						0.1	1.3	0.0	0.2	0.2	0.36
	Black Crappie						0.2	0.2	0.9	0.6	0.9	0.56
	Bluegill						0.2	0.1	1.3	2.1	1.9	1.12
	Common Carp						0.1	0.2	0.4	0.2	0.3	0.24
	Northern Pike						0.5	1.3	1.5	2.5	3.0	1.76
	Rock Bass						0.0	0.1	0.5	0.2	1.1	0.38
	Smallmouth Bass						2.1	1.4	2.0	1.3	2.3	1.82
	Walleye						2.3	2.5	4.3	5.2	6.2	4.10
	White Bass						2.9	1.9	1.5	1.8	5.4	2.70
	White Sucker						1.1	1.7	1.8	1.6	0.8	1.40
	Yellow Perch						8.9	5.0	21.8	16.1	21.8	14.72
boat shocker (day/night)	Smallmouth Bass	51.0		207.0		110.0			6.0	59.0		86.60
fall night EF-WAE*	Walleye			139.0	10.0	44.4	0.0	28.0	76.0			49.57
frame net (std 3/4 in)**	Black Bullhead	2.8	4.1	6.2	10.1	10.9		1.3		6.6	1.7	5.46
	Black Crappie	3.8	2.5	9.3	1.0	0.9		0.1		0.7	0.5	2.35
	Bluegill	2.6	5.4	12.8	0.6	0.4		11.6		24.5	20.3	9.78
	Common Carp	0.0	0.1	0.0	0.0	0.1		0.0		0.1	0.0	0.04
	Northern Pike	0.0	0.6	0.1	0.2	0.5		0.2		0.4	0.3	0.29
	Rock Bass	1.2	2.6	3.4	6.0	8.5		1.2		3.4	3.3	3.70
	Smallmouth Bass	1.6	5.1	3.2	2.3	2.3		0.9		2.6	2.7	2.59
	Walleye	0.1	1.8	0.4	0.6	0.3		0.2		0.2	0.2	0.48
	White Bass	3.4	1.9	0.1	0.1	0.2		0.2		0.6	0.3	0.85
	White Sucker	0.0	0.1	0.0	0.2	0.2		0.1		0.1	0.1	0.10
	Yellow Perch	0.5	1.4	0.2	0.2	0.1		0.3		0.6	2.9	0.78
std exp gill net	Black Bullhead	0.2	1.0	1.0	0.2	3.2						1.12
	Black Crappie	0.7	4.5	2.0	7.2	2.5						3.38
	Bluegill	0.0	0.5	1.3	0.0	0.0						0.36
	Common Carp	0.0	0.0	0.2	0.2	0.3						0.14
	Northern Pike	1.3	3.3	4.7	3.0	3.3						3.12
	Rock Bass	0.2	0.2	0.0	0.0	0.0						0.08
	Smallmouth Bass	0.2	0.8	1.0	2.2	1.7						1.18
	Spottail Shiner	0.0	0.0	0.0	0.0	0.0						0.00
	Walleye	4.5	8.0	17.3	12.3	18.5						12.12
	White Bass	0.0	3.2	1.8	3.0	4.0						2.40
	White Sucker	0.7	1.5	1.7	1.5	1.7						1.42
	Yellow Perch	11.9	27.5	56.0	23.2	27.8						29.28

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.

*AFS standard nets used in 2017

Gear	Species	Index	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
AFS std gill net	Northern Pike	PSD						67	67	83	87	58
		PSD-P						33	0	11	3	6
		Wr						78	89	86	85	89
	Walleye	PSD						57	60	71	74	53
		PSD-P						7	3	10	18	16
		Wr						83	88	85	88	90
	Yellow Perch	PSD						98	60	48	32	21
		PSD-P						52	33	11	4	1
		Wr						109	101	100	103	104
frame net (std 3/4 in)*	Black Crappie	PSD	100	56	100	100	94		100		42	89
		PSD-P	88	47	69	94	94		100		17	33
		Wr	95	111	96	100	95		86		106	105
	Bluegill	PSD	43	61	99	82	71		2		92	94
		PSD-P	15	6	39	73	43		0		15	44
		Wr	129	125	125	118	129		123		120	120
std exp gill net	Northern Pike	PSD	61	50	54	56	40					
		PSD-P	4	5	7	17	5					
		Wr	86	82	78	80	80					
	Walleye	PSD	36	25	16	16	52					
		PSD-P	4	0	1	1	1					
		Wr	90	83	83	86	87					
	Yellow Perch	PSD	23	41	63	86	79					
		PSD-P	5	4	7	12	40					
		Wr	114	107	107	108	110					

Length at Capture

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

Species: Bluegill

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	365		120 (20)	173 (175)	210 (149)	231 (21)					
2019	441		97 (21)	175 (355)	212 (65)						

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	77		275 (28)	371 (17)	418 (5)	480 (6)	481 (5)	536 (6)		511 (4)	578 (6)
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)

Species: Yellow Perch

Year	N	1	2	3	4	5	6	7	8	9	10+
			Mean Length (expanded sample number) at capture by age								
2020	263		142 (107)	170 (87)	210 (52)	231 (17)					
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)		

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	N	S-Q Wr (SE)	N	Q-P Wr (SE)	N	P-M Wr (SE)	N	M Wr (SE)
Black Crappie Frame Net	2017	0		0		0		2	86 (1.0)
	2019	7	114 (4.7)	3	104 (5.4)	0		2	80 (2.3)
	2020	1	116	5	111 (2.5)	0		3	91 (3.9)
Bluegill Frame Net	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	
	2020	22	113 (3.2)	182	121 (0.6)	161	120 (0.6)	0	
Northern Pike Gill Net	2016	2	79 (0.5)	2	77 (7.7)	1	80	1	79
	2017	5	93 (7.4)	10	87 (1.8)	0		0	
	2018	3	88 (3.6)	13	85 (1.9)	2	91 (0.5)	0	
	2019	4	88 (1.7)	25	84 (1.0)	1	102	0	
	2020	15	92 (1.5)	19	87 (1.0)	1	94	1	85
Walleye Gill Net	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)
	2020	35	88 (0.8)	27	91 (0.8)	10	93 (2.0)	2	88 (3.9)
Yellow Perch Gill Net	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
	2020	206	105 (0.5)	54	100 (0.9)	2	92 (3.0)	0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

Species: Bluegill
Gear: frame net (std 3/4 in); ***AFS standard nets used in 2017**
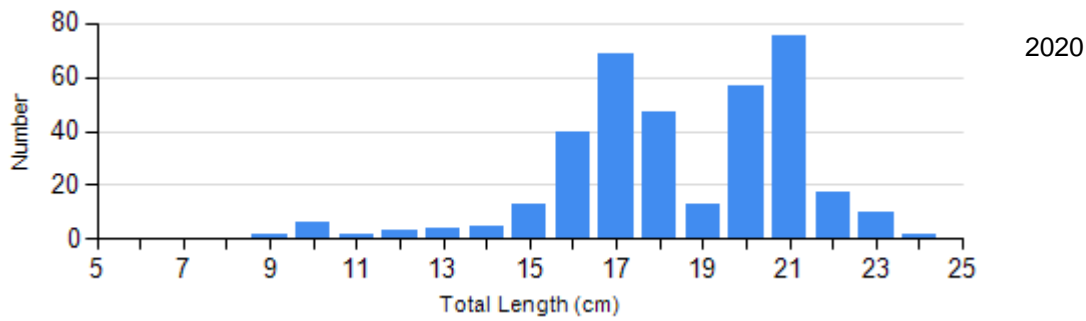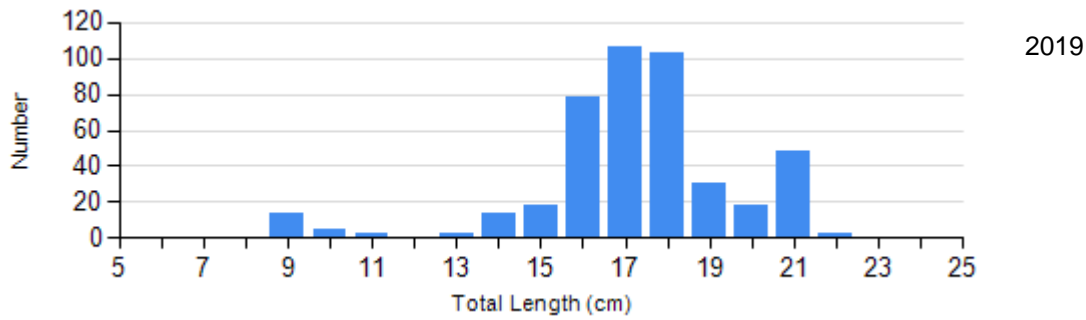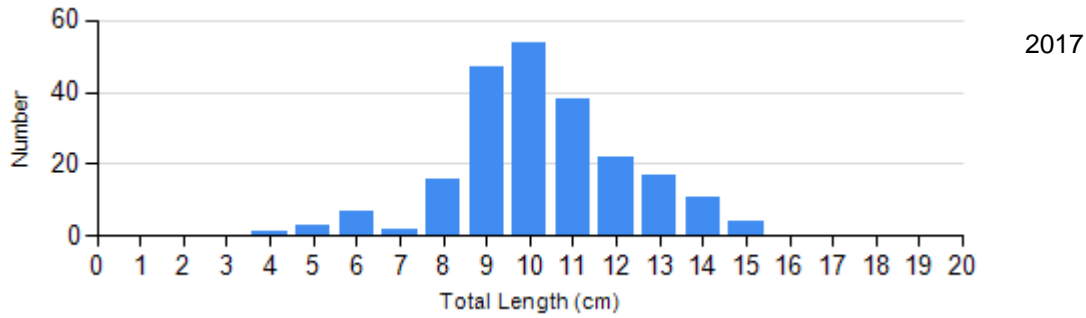
2017

2019

2020

Species: Northern Pike
Gear: AFS std gill net
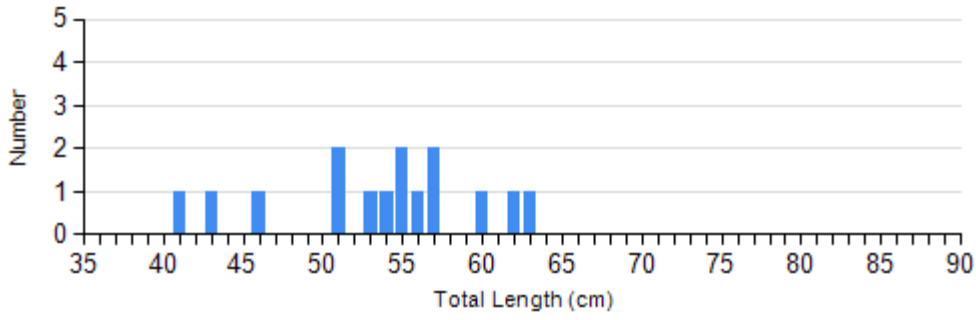
2017
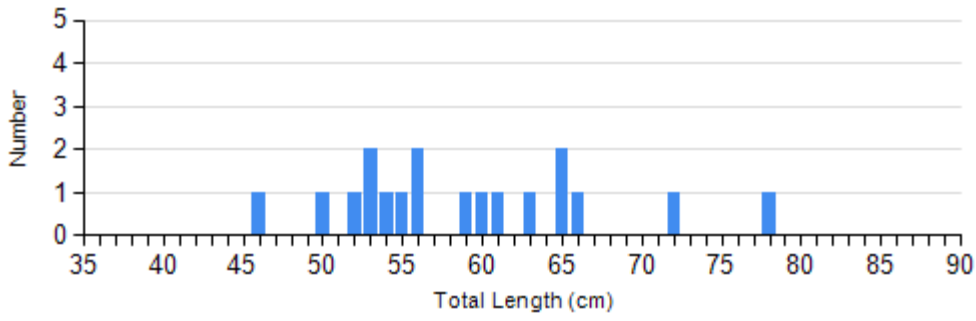
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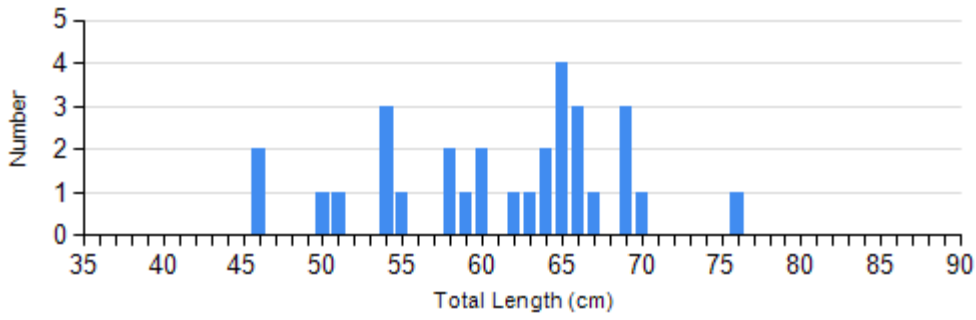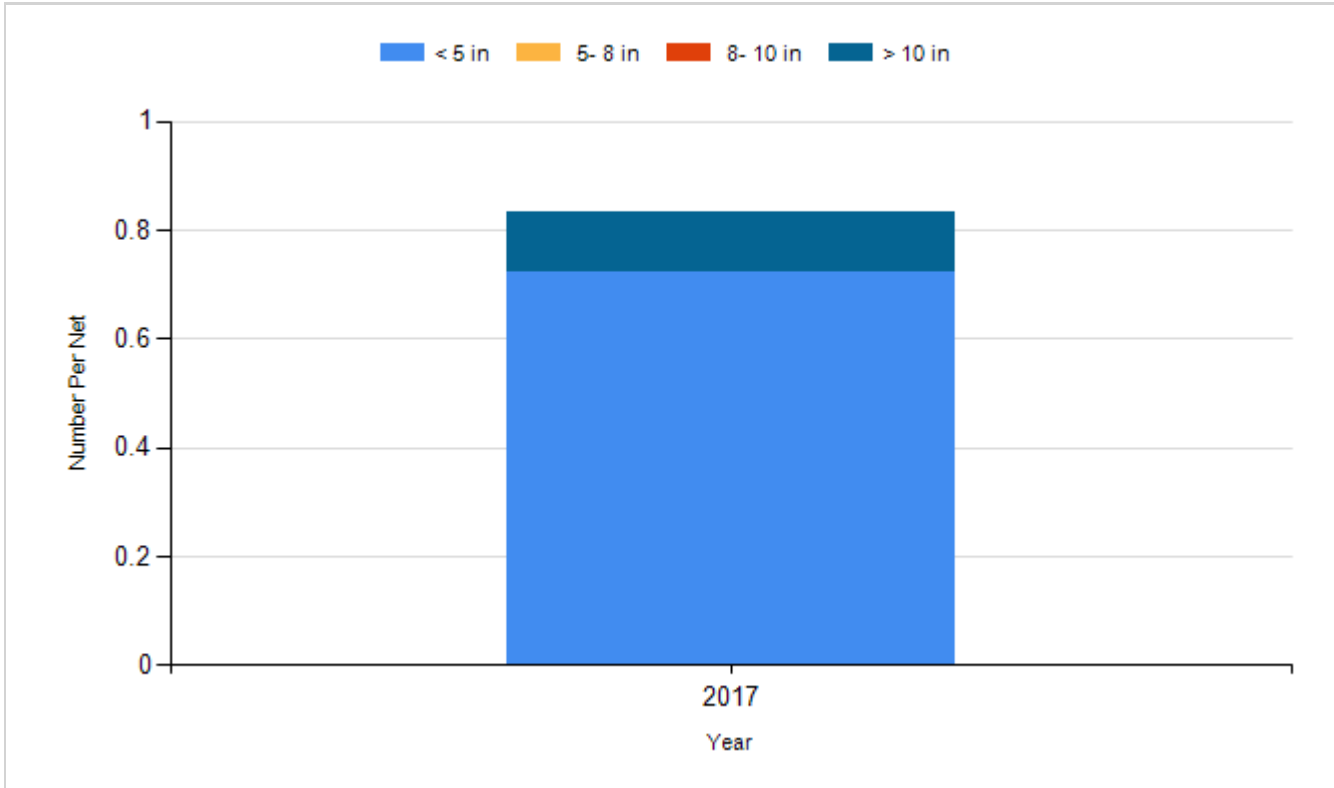

2019
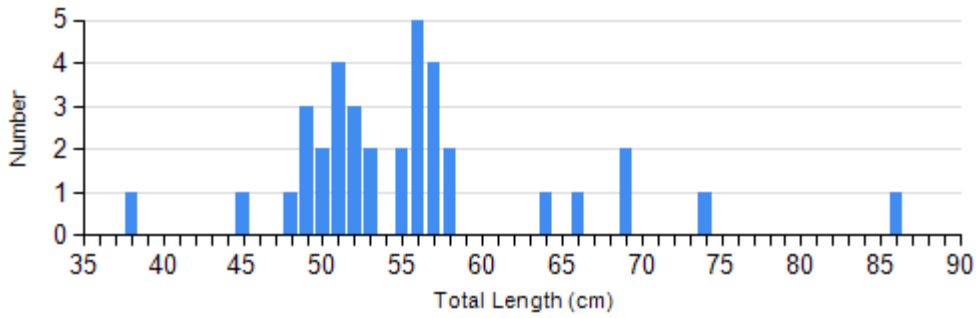
2020

Species: Walleye
Gear: AFS std gill net

2016

2017

2018

2019

2020

Species: Yellow Perch
Gear: AFS std gill net

2016

2017

2018

2019

2020
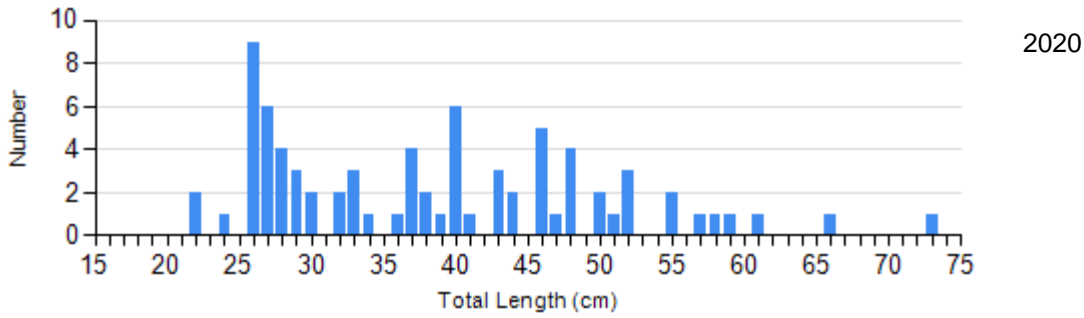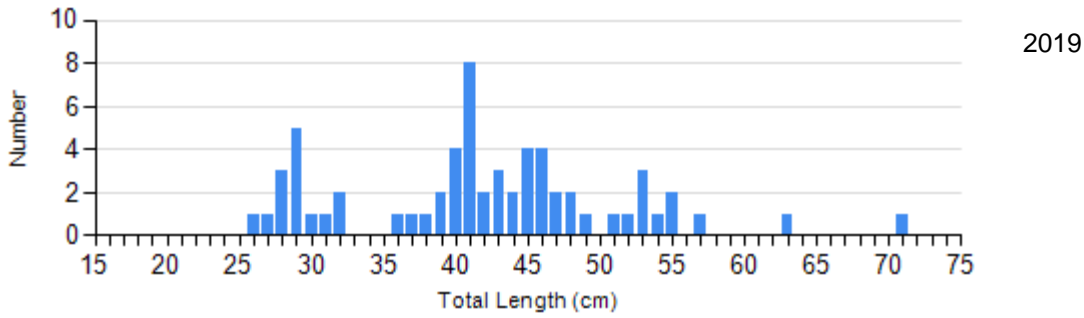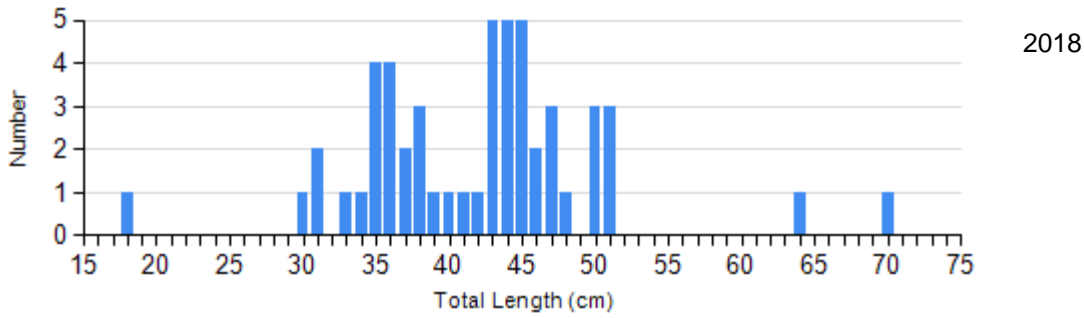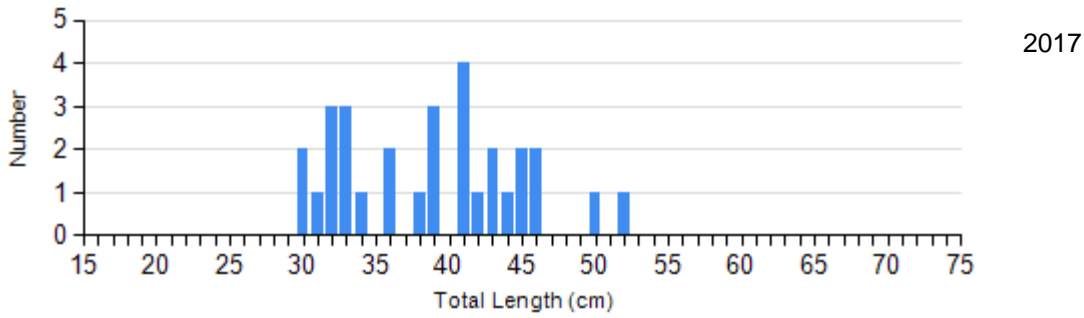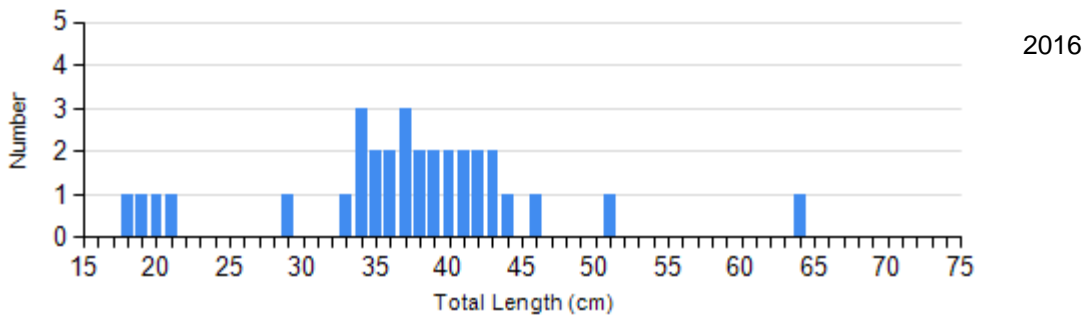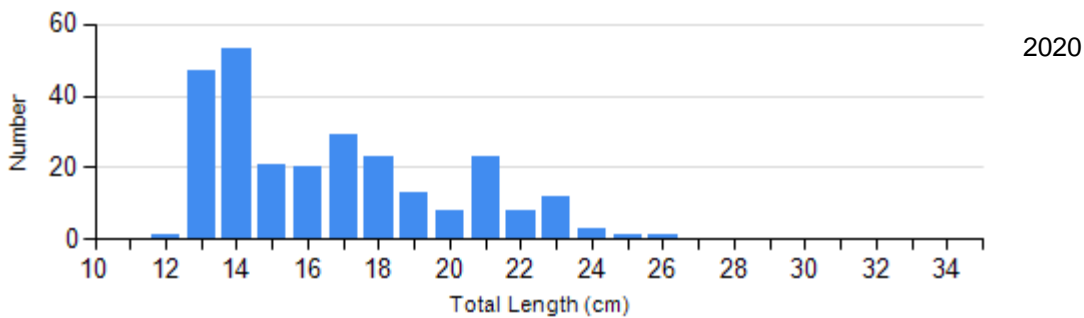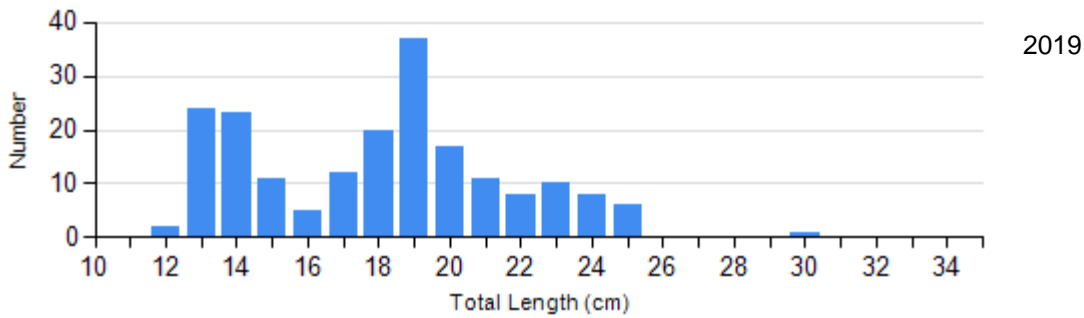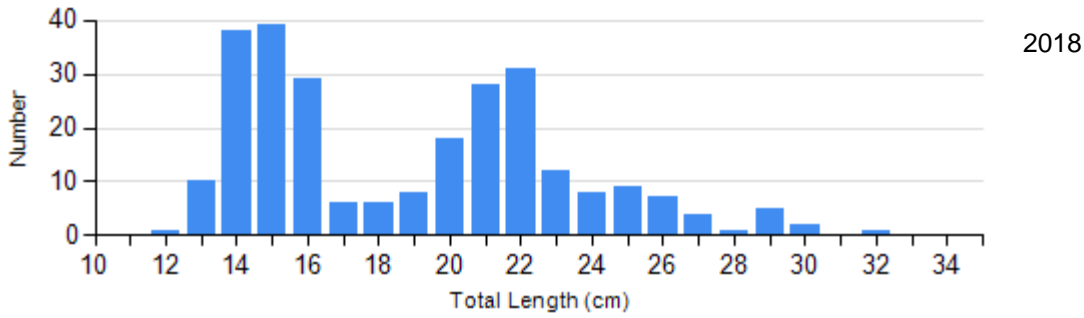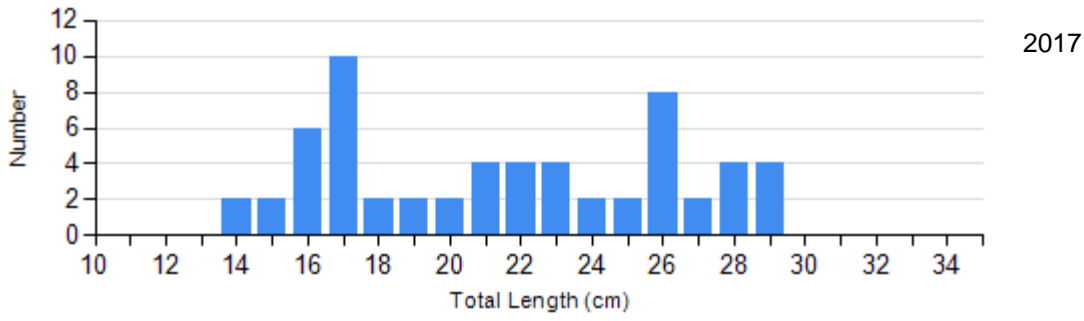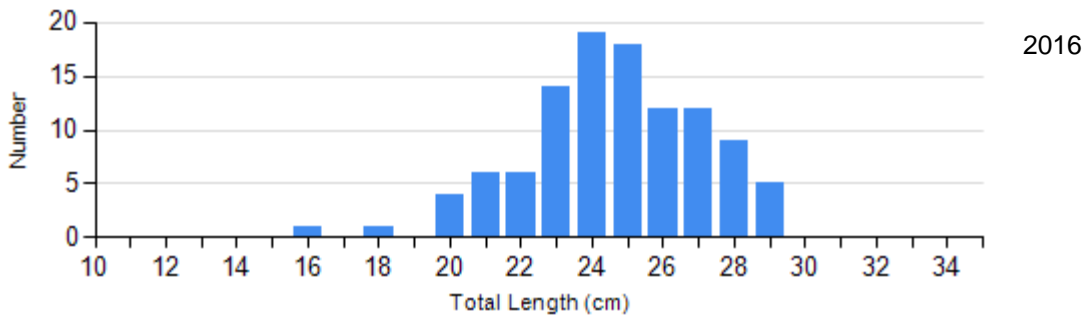
Historic Fish Sizes and Relative Abundance

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)
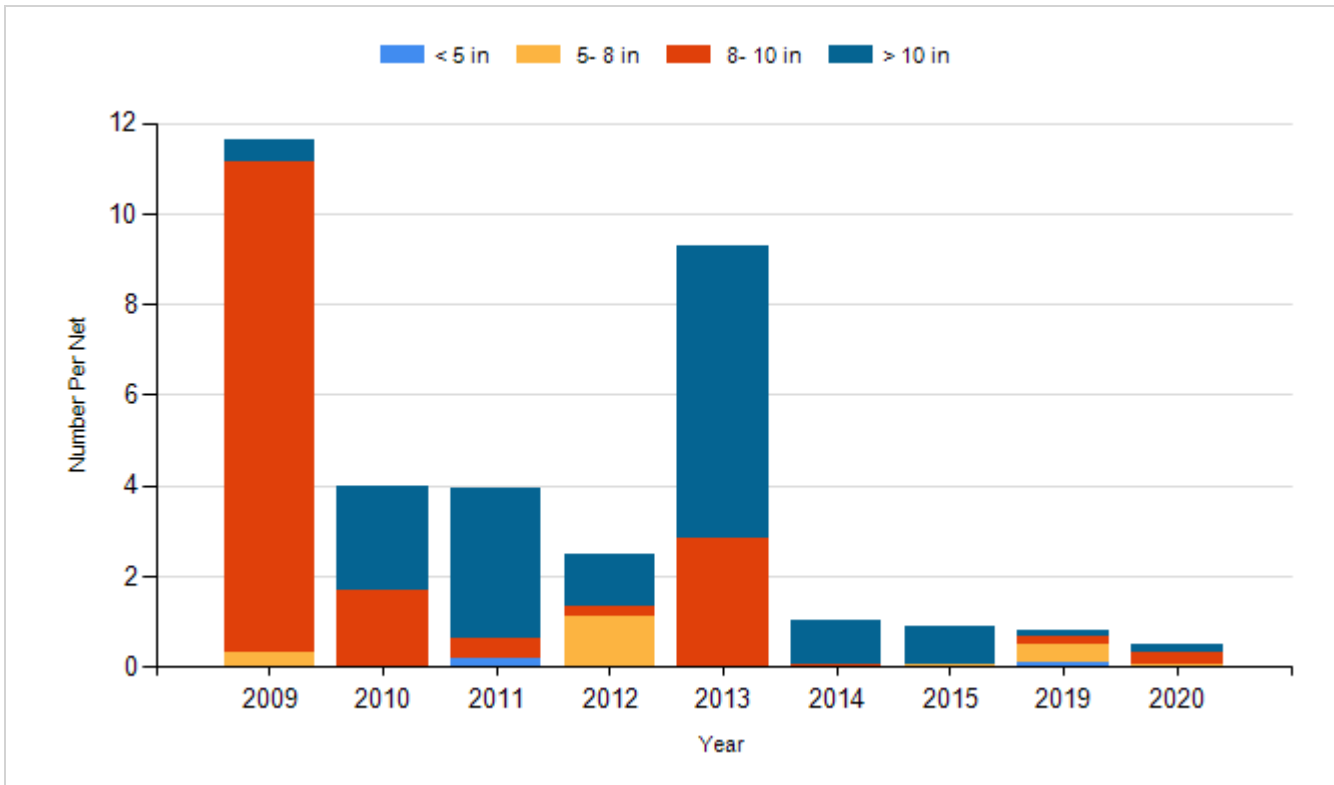
Species: Bluegill
Gear: AFS std frame net
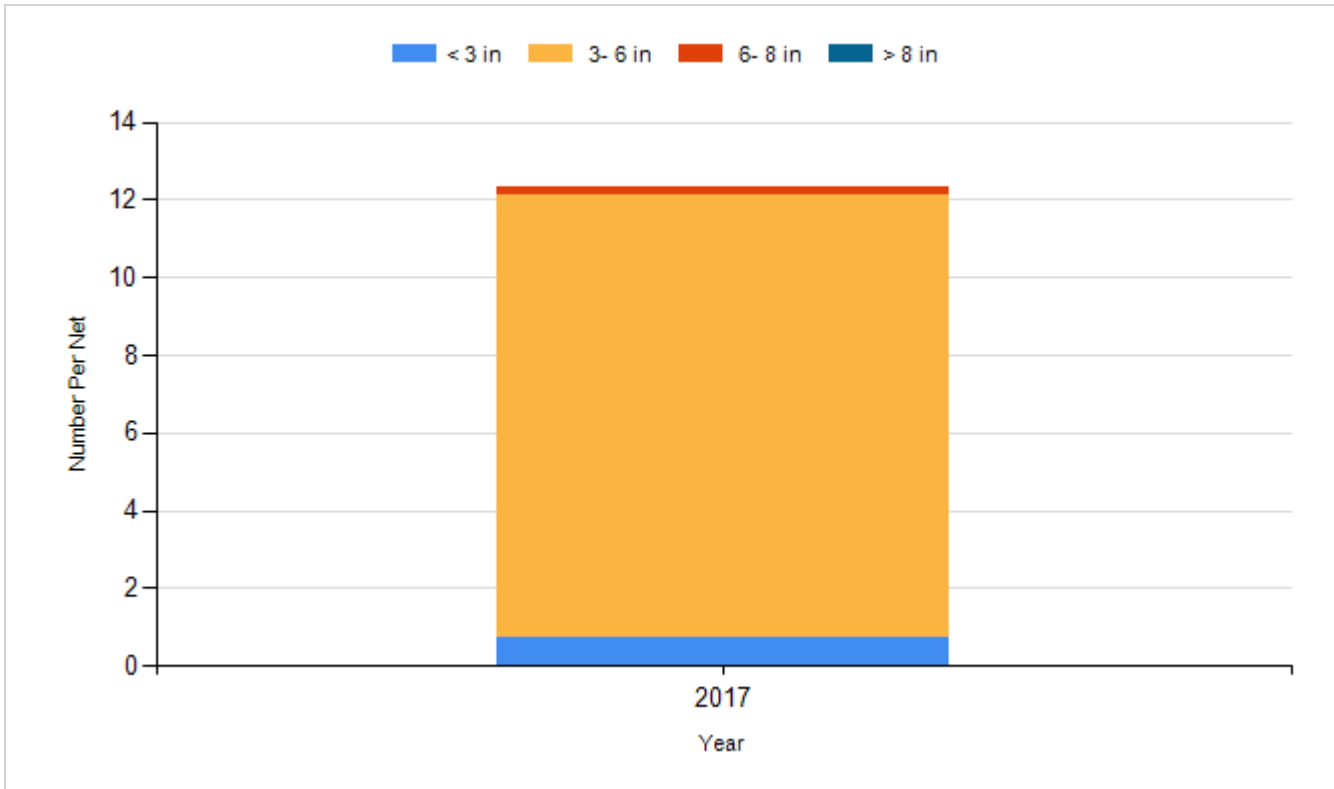
Species: Bluegill
Gear: frame net (std 3/4 in)
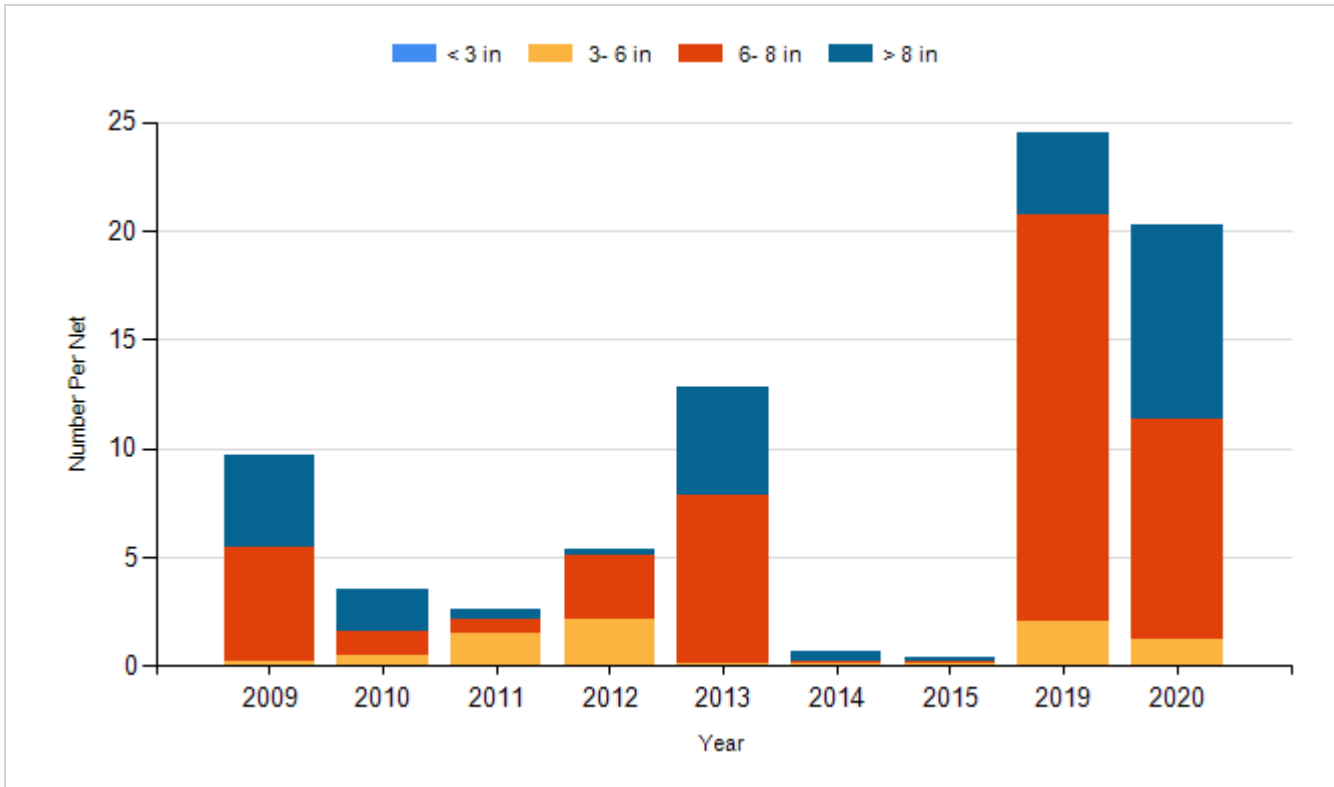
Species: Northern Pike
Gear: AFS std gill net
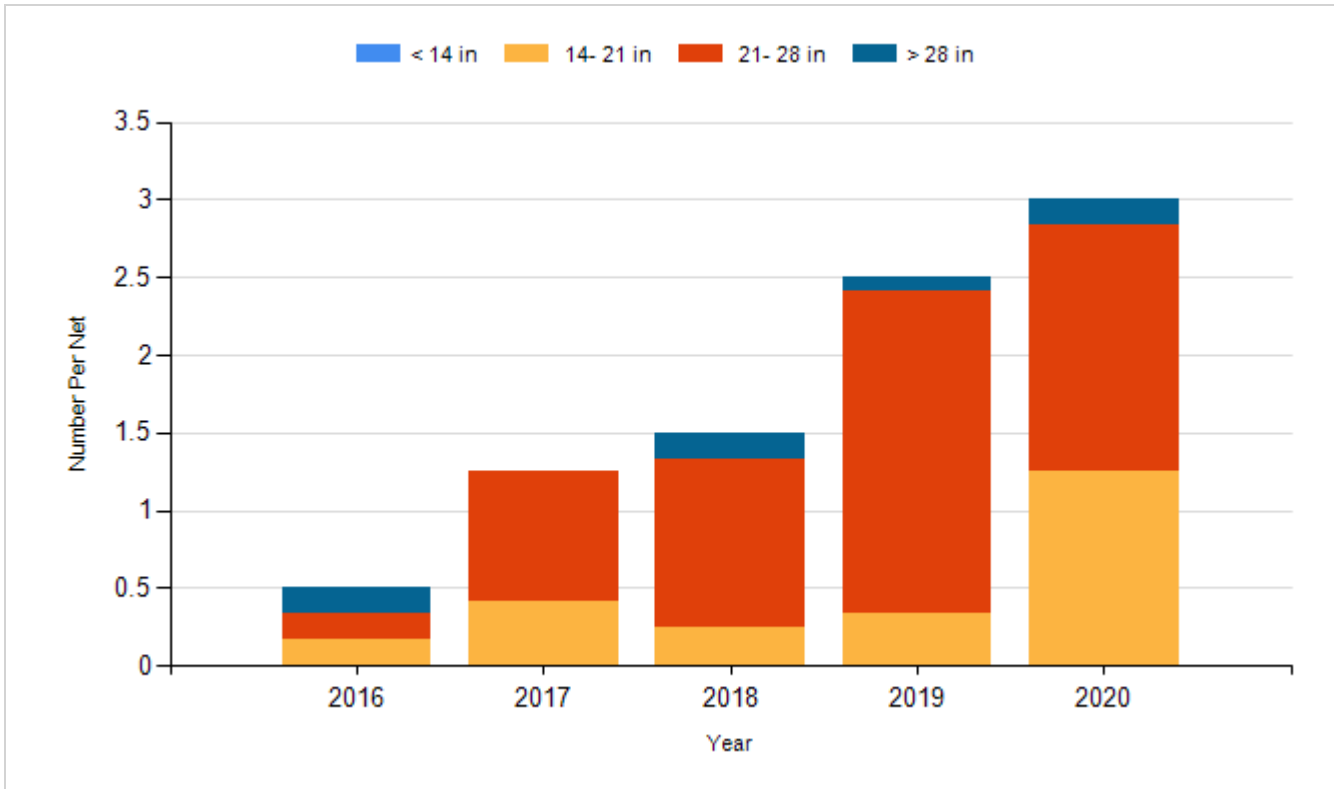
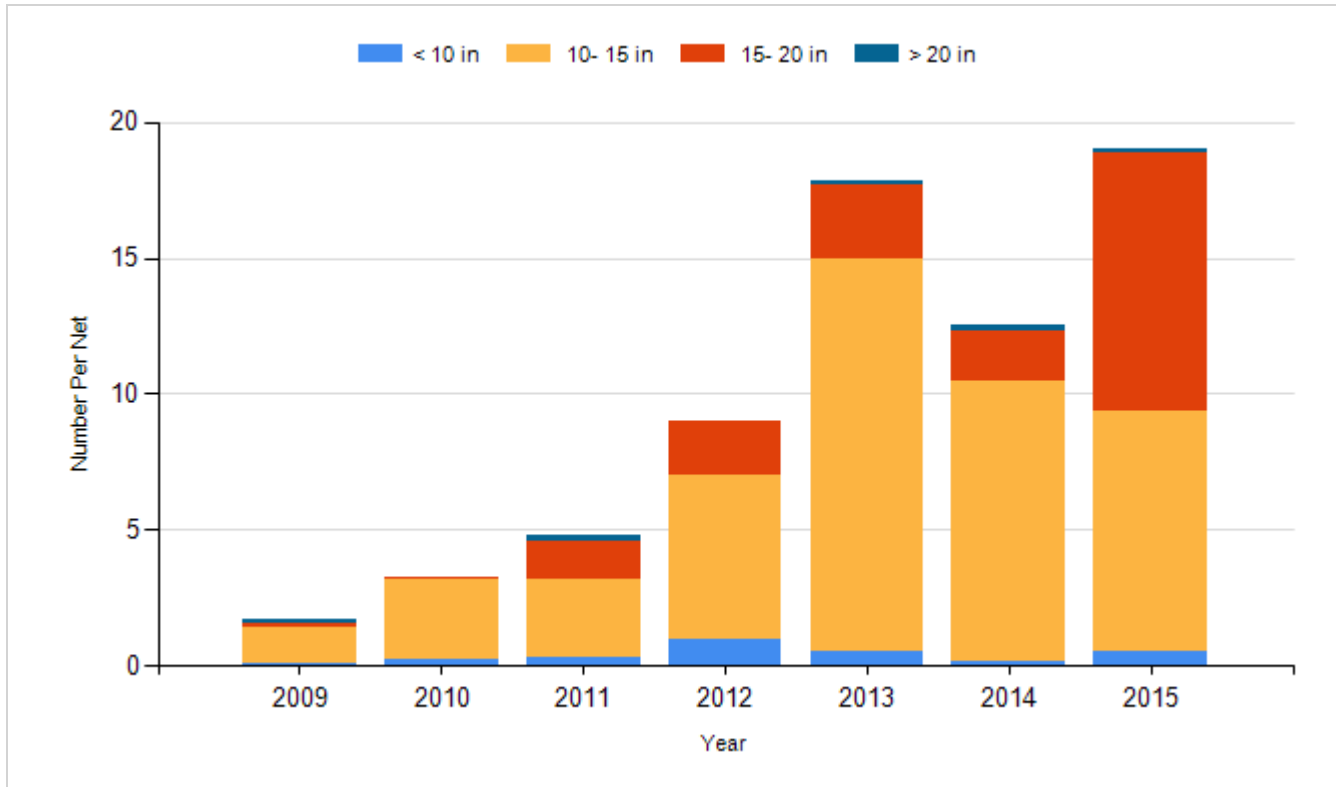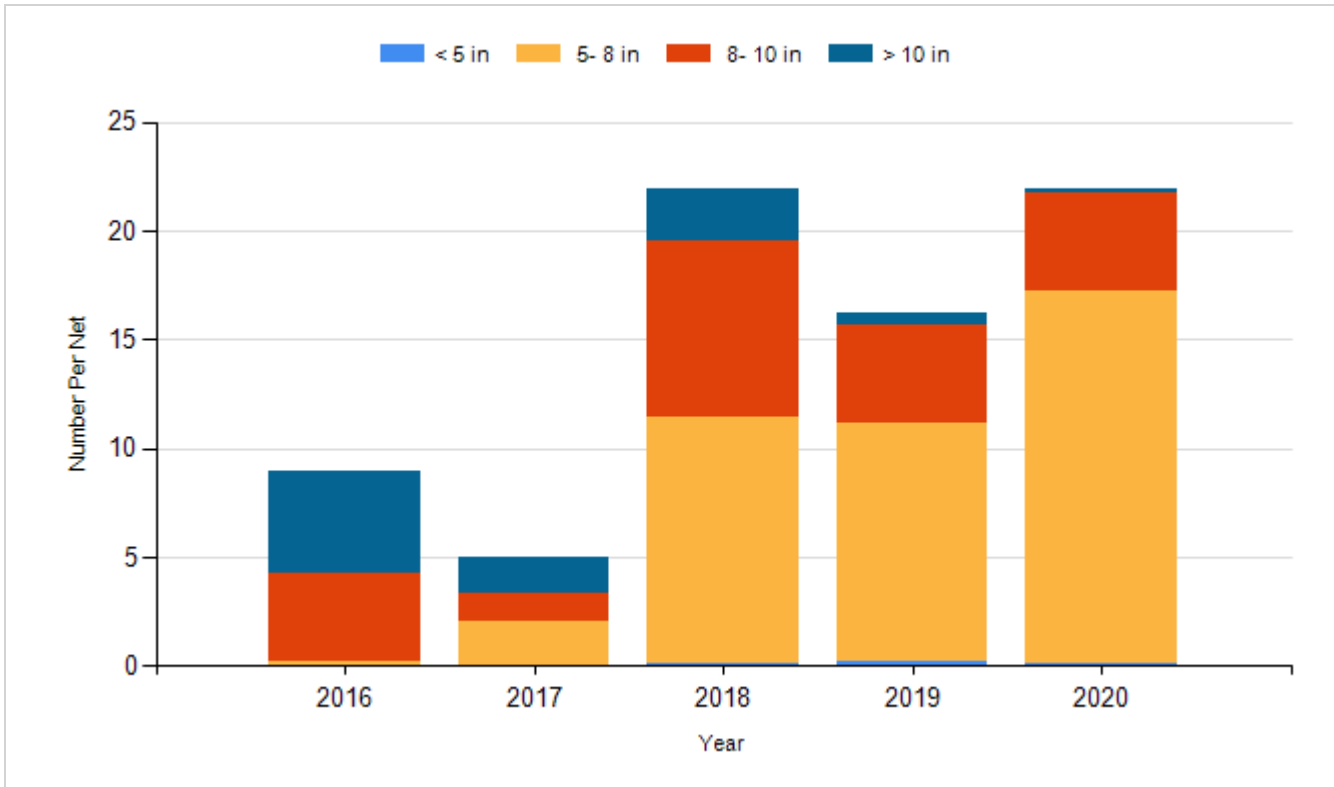Species: Northern Pike
Gear: std exp gill net
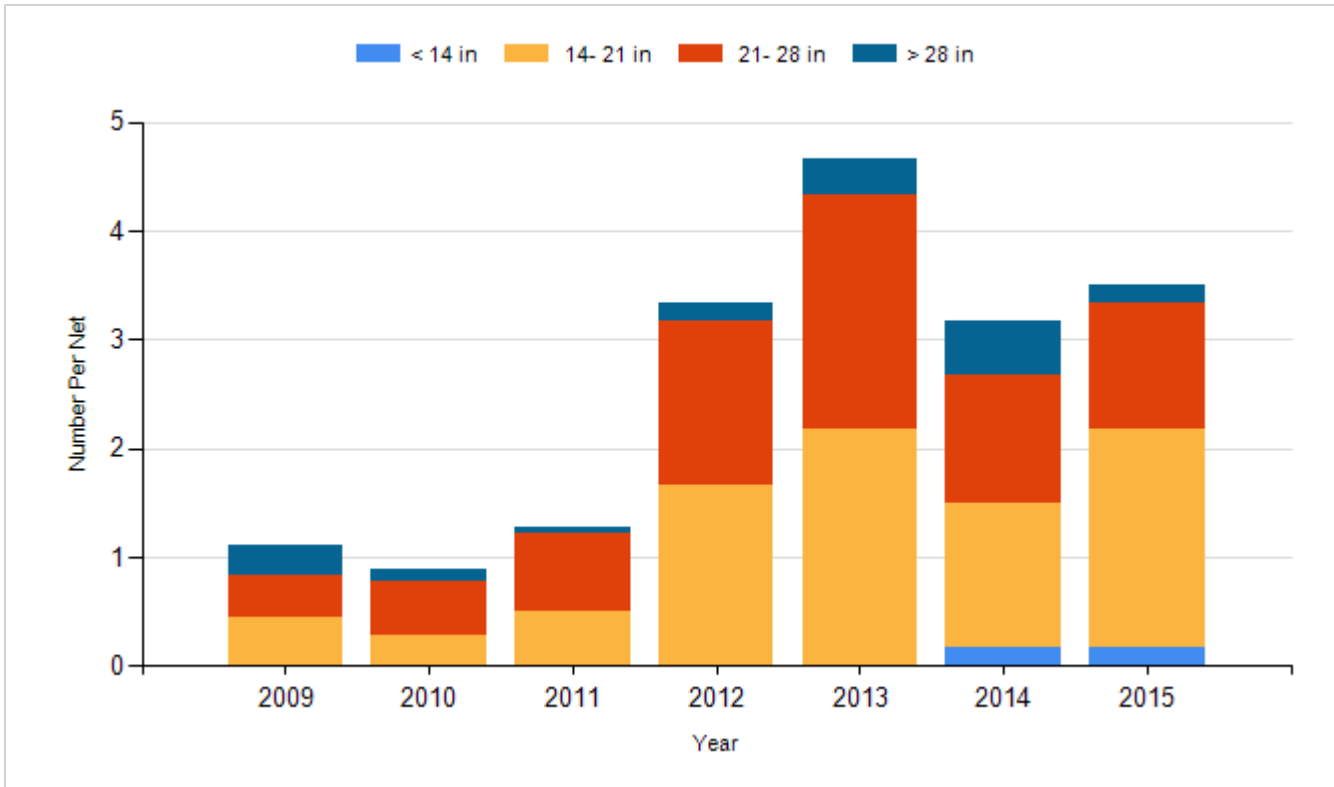
Species: Walleye
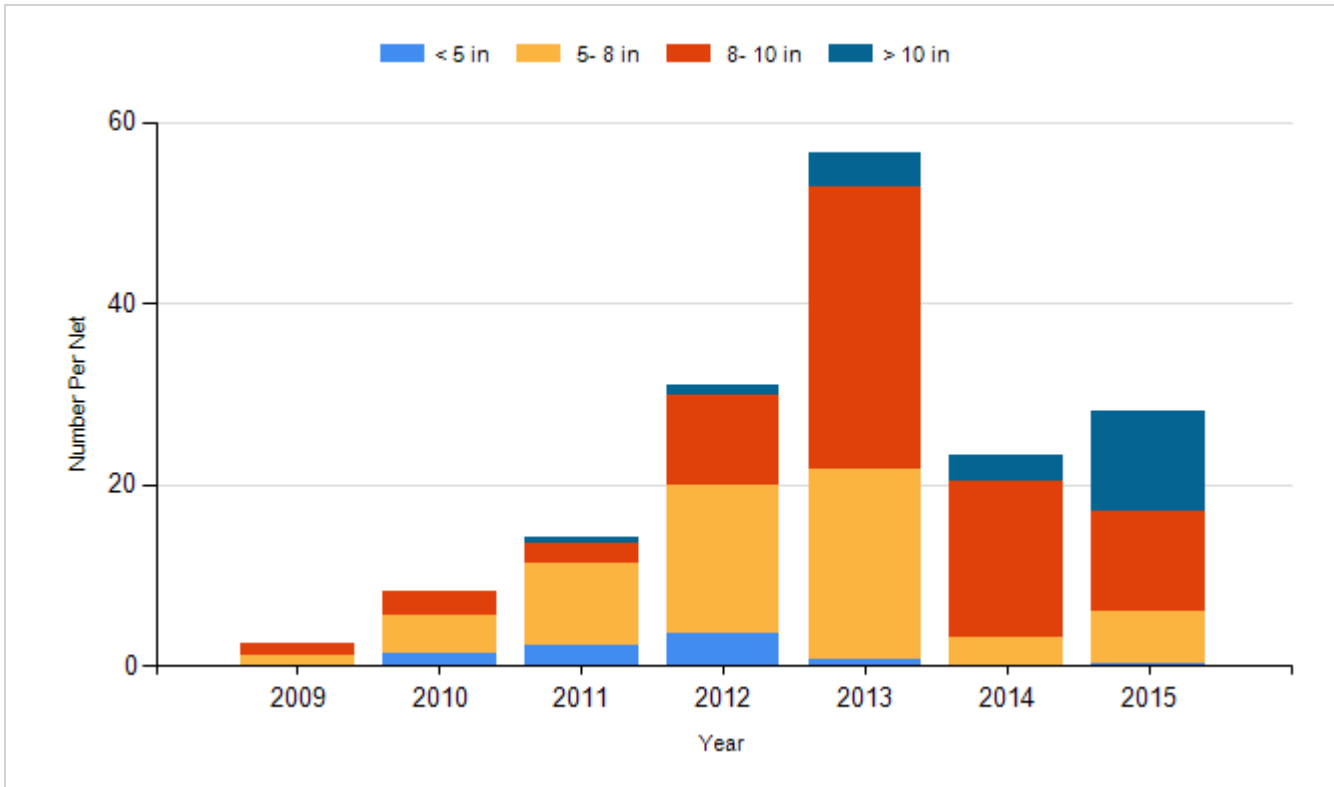Gear: AFS std gill net
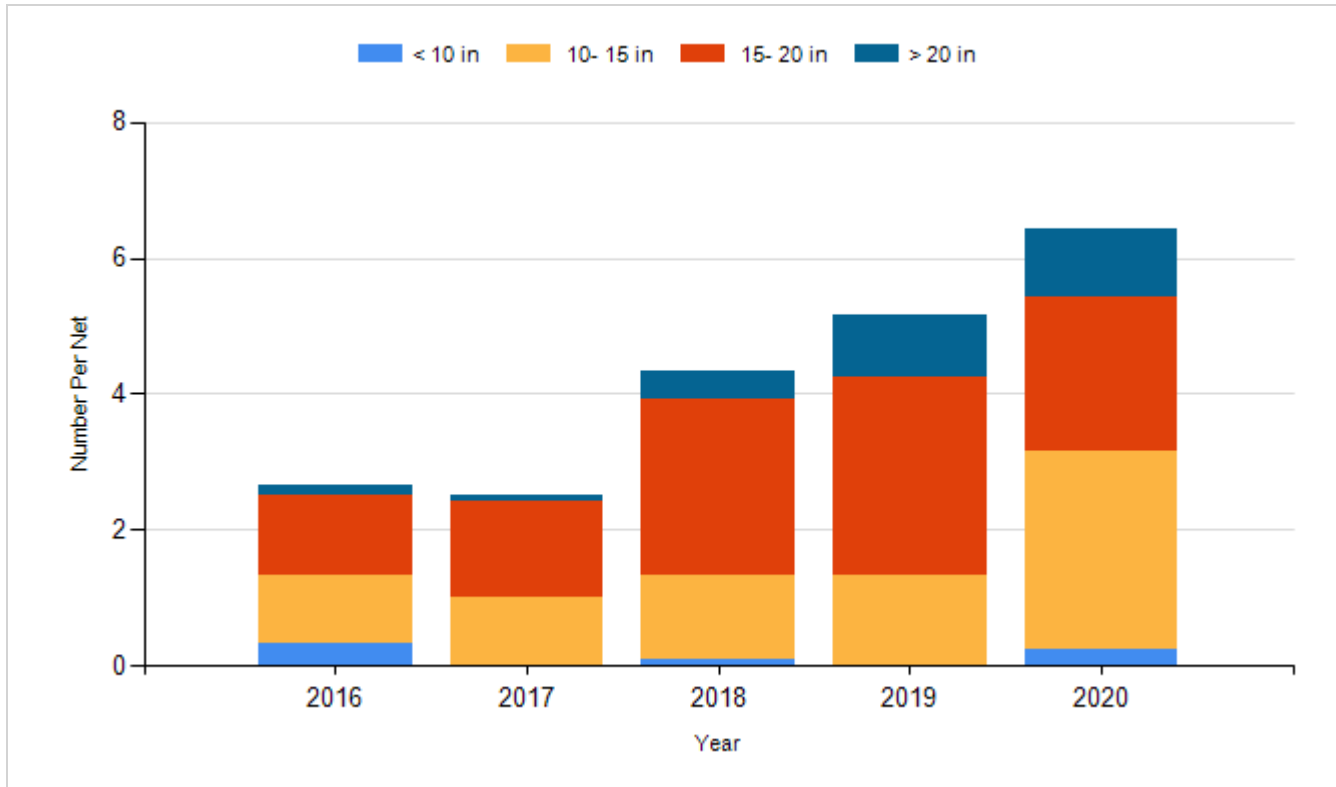
Species: Walleye
Gear: std exp gill net

Species: 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
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