

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Sheridan, Pennington County
MCS-Lake-11-000
2019

Lake Information

Name: Sheridan
County: Pennington
Surface Area: 370 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	Jun 25, 2019	2220 seconds

Common Fish Species Present

Rainbow Trout

Largemouth Bass

Black Crappie

Yellow Perch

Walleye

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.
- **std 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.

$$CPUE = \frac{\text{number of fish}}{\text{effort}}$$

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.

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

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

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.

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

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		Quality		Preferred		Memorable		Trophy	
	(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**

Gear	Species	Sample Size (n)	Abundance		Stock Density Indices			Condition		
			CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
boat shocker (night)	Largemouth Bass	55	80.4	34.1	50	11	15	8	111	6
	Walleye*	1	1.5	2.5	0		0		108	

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.

Gear	Species	CPUE										Avg
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
AFS std gill net	Black Bullhead									0.4		0.40
	Black Crappie									0.1		0.10
	Bluegill									1.0		1.00
	Golden Shiner									0.0		0.00
	Largemouth Bass									0.3		0.30
	Northern Pike									2.1		2.10
	Rainbow Trout									2.5		2.50
	Rock Bass									0.5		0.50
	Rudd									0.5		0.50
	Smallmouth Bass									0.1		0.10
	White Sucker									1.4		1.40
Yellow Perch									18.0		18.00	
boat shocker (night)	Largemouth Bass	42.0	49.5	151.5	75.0	75.0	55.0	62.0		120.0	80.4	78.93
	Smallmouth Bass	0.0	0.0	0.0	0.0	5.0	3.0	3.0		7.2	0.0	2.02
	Walleye	0.0	0.0	0.0	0.0	0.0	0.0	0.0		1.2	1.5	0.30
frame net (std 3/4 in)	Black Bullhead	2.7	4.8	0.8	2.9		6.1			2.3		3.27
	Black Crappie	2.0	3.4	1.0	0.8		9.8			2.0		3.17
	Bluegill	0.0	0.0	0.0	0.0		0.0			24.8		4.13
	Channel Catfish	0.0	0.1	0.0	0.0		0.0			0.0		0.02
	Golden Shiner	0.0	0.0	0.0	0.0		0.0			0.0		0.00
	Green Sunfish	0.0	0.4	0.3	0.5		0.6			0.3		0.35
	Largemouth Bass	0.2	0.3	0.0	0.0		0.0			0.7		0.20
	Northern Pike	0.0	0.3	0.5	0.1		0.3			0.6		0.30
	Rainbow Trout	0.2	0.8	0.1	0.1		1.8			0.1		0.52
	Rock Bass	5.8	7.0	12.8	7.9		7.8			11.9		8.87
	Rudd	4.2	7.3	1.9	1.0		3.3			30.8		8.08
Smallmouth Bass	0.0	0.0	0.0	0.0		0.3			0.0		0.05	
White Sucker	0.2	0.4	0.6	0.0		0.1			0.9		0.37	
Yellow Perch	5.3	5.5	5.1	2.5		14.6			13.7		7.78	
std exp gill net	Black Crappie	0.0	0.0	0.0	4.0	0.0	7.5	0.5				1.71
	Golden Shiner	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.00
	Largemouth Bass	0.0	2.0	0.0	0.5	0.0	0.0	0.0				0.36
	Northern Pike	0.3	6.5	1.0	3.0	0.5	1.5	1.5				2.04
	Rainbow Trout	0.8	2.0	1.5	6.0	2.5	6.0	1.0				2.83

		CPUE										
Gear	Species	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg
std exp gill net	Rock Bass	0.0	0.0	1.5	6.0	1.0	0.0	0.5				1.29
	Smallmouth Bass	0.0	0.0	0.5	1.5	0.0	0.0	1.5				0.50
	White Sucker	0.0	2.0	2.0	2.5	0.5	0.0	3.0				1.43
	Yellow Perch	3.5	73.5	104.5	81.0	40.0	40.0	56.0				56.93

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.

Gear	Species	Index	Year										
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
AFS std gill net	Black Crappie	PSD											0
		PSD-P											0
		Wr											76
	Largemouth Bass	PSD											0
		PSD-P											0
		Wr											94
	Rainbow Trout	PSD											55
		PSD-P											0
		Wr											85
	Yellow Perch	PSD											70
		PSD-P											31
		Wr											93
boat shocker (night)	Largemouth Bass	PSD	31	34	40	56	64	51	61		42	50	
		PSD-P	7	10	6	5	17	16	23		8	15	
		Wr	102	98	108	107	99	107	107		101	111	
	Walleye	PSD										0	0
		PSD-P										0	0
		Wr										103	108
	frame net (std 3/4 in)	Black Crappie	PSD	17	74	100	50		37			56	
			PSD-P	0	0	0	17		4			11	
			Wr	94	97	97	113		104			92	
Largemouth Bass		PSD	0	100	0	0		0			17		
		PSD-P	0	50	0	0		0			0		
		Wr	101								99		
Rainbow Trout		PSD	0	33	100	0		29			100		
		PSD-P	0	0	0	0		0			0		
		Wr	86	85	91	120		81			91		
Yellow Perch		PSD	72	80	54	60		56			86		
		PSD-P	9	2	7	10		6			27		
		Wr	93	83	94	102		93			94		
std exp gill net	Black Crappie	PSD			0	25		47	100				
		PSD-P			0	0		0	0				

Gear	Species	Index	Year									
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
std exp gill net	Black Crappie	Wr				104		87	99			
		Largemouth Bass	PSD		0		100					
		PSD-P		0		100						
	Rainbow Trout	Wr		102		99						
		PSD	67	50	67	17	0	25	0			
		PSD-P	0	0	0	0	0	0	0			
	Yellow Perch	Wr	92	89	81	84	90	80	84			
		PSD	93	74	79	64	40	69	82			
		PSD-P	14	10	11	19	1	3	9			
		Wr	104	103	107	101	106	101	98			

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+
2015	79		119 (1)		191 (67)	207 (8)	249 (3)	300 (1)			
2011	27			163 (2)	206 (17)	222 (8)					

Species: Largemouth Bass

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	80	330 (1)	154 (1)	181 (22)	208 (25)	263 (8)	352 (15)	387 (7)		367 (1)	
2014	100		169 (8)	179 (24)	263 (26)	303 (9)	353 (20)	350 (17)	344 (2)	422 (1)	
2013	88		169 (8)	207 (20)	291 (5)	298 (21)	310 (21)	366 (5)	356 (7)		
2012	112		156 (9)	175 (4)	256 (29)	295 (28)	319 (30)	334 (14)		382 (2)	
2011	50			173 (2)	236 (23)	281 (11)	344 (9)	346 (3)	386 (1)		462 (1)
2010	57		184 (14)	225 (22)	299 (12)	349 (2)	366 (2)	396 (4)	429 (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+
2018	144	148 (10)	151 (23)	191 (18)	253 (3)	225 (11)	250 (14)	252 (61)		281 (2)	245 (4)
2016	107	165 (1)	185 (3)	195 (19)	224 (32)	233 (32)	230 (7)	223 (2)	234 (3)	234 (6)	
2015	80	144 (2)	188 (9)	203 (43)	227 (22)	265 (2)	243 (2)				
2014	78		181 (9)	188 (47)	203 (1)	230 (6)		235 (13)			234 (2)
2013	157	153 (3)	152 (38)	195 (16)	221 (14)	233 (39)	246 (26)	255 (21)			273 (2)
2012	208		150 (5)	205 (60)	213 (76)	239 (32)	239 (35)	271 (2)			292 (1)
2011	147		154 (2)	173 (43)	226 (40)	236 (51)			241 (4)	225 (6)	
2010	14	145 (1)			233 (1)	232 (8)	276 (1)	213 (1)		233 (1)	244 (1)

Fish Condition

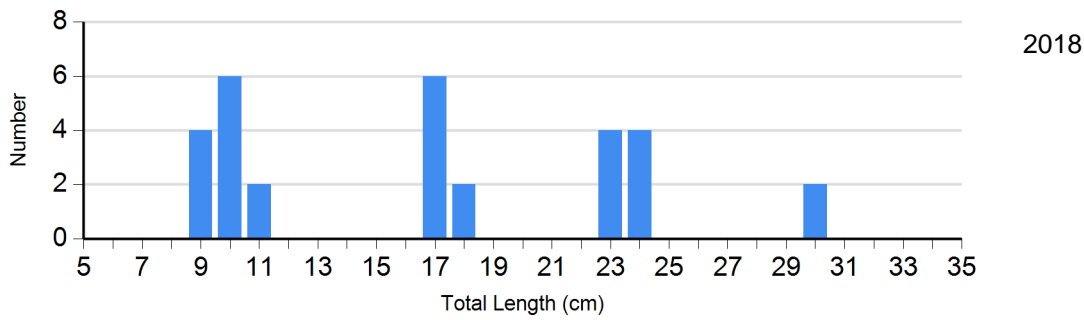
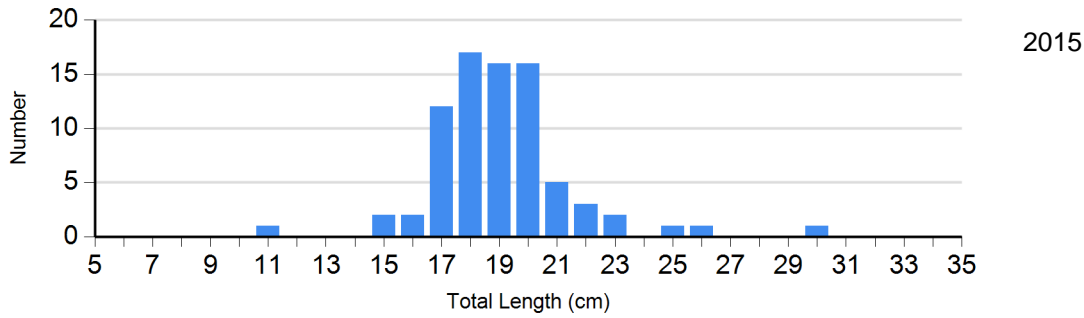
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2015	49	105 (1.2)	26	104 (2.8)	2	99 (0.4)	1	94
	2018	8	99 (1.8)	8	88 (1.7)	0		2	84
Largemouth Bass Electro Fishing	2015	27	108 (1.6)	19	105 (1.3)	9	108 (3.3)	0	
	2016	24	111 (3.5)	24	105 (2.0)	14	103 (2.8)	0	
	2018	58	97 (1.6)	34	105 (1.8)	8	109 (3.6)	0	
	2019	24	111 (9.5)	17	108 (3.8)	7	114 (5.4)	0	
Rainbow Trout Gill Net	2015	9	82 (3.6)	3	73 (4.8)	0		0	
	2016	2	84 (10.8)	0		0		0	
	2018	9	91 (2.8)	11	80 (2.4)	0		0	
Yellow Perch Gill Net	2015	25	108 (3.3)	53	98 (1.0)	2	90 (12.1)	0	
	2016	20	101 (2.0)	82	98 (0.7)	10	93 (1.6)	0	
	2018	43	94 (1.4)	57	93 (0.9)	44	90 (1.1)	0	

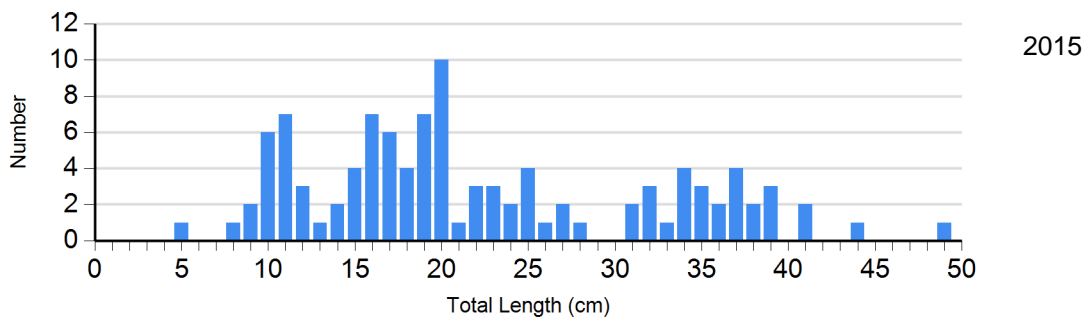
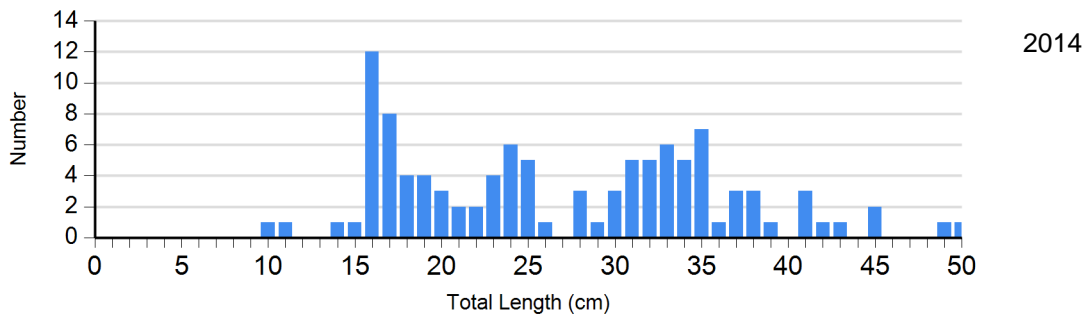
Length Frequency Distribution

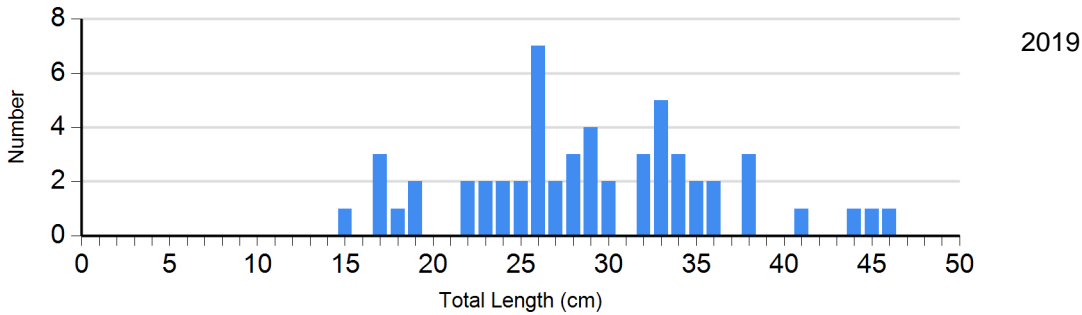
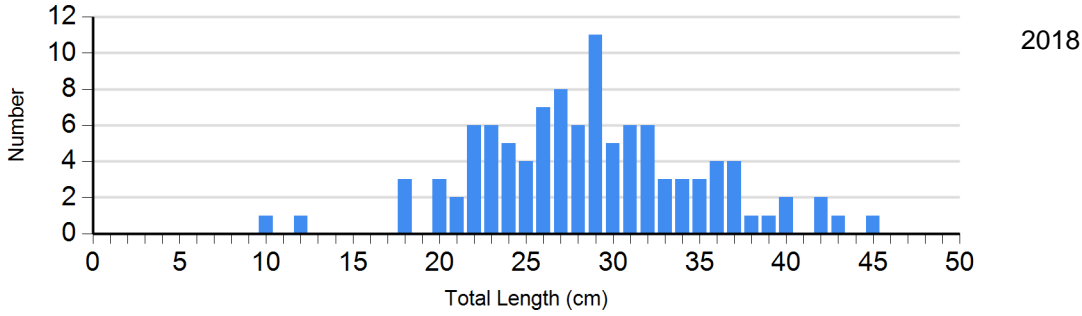
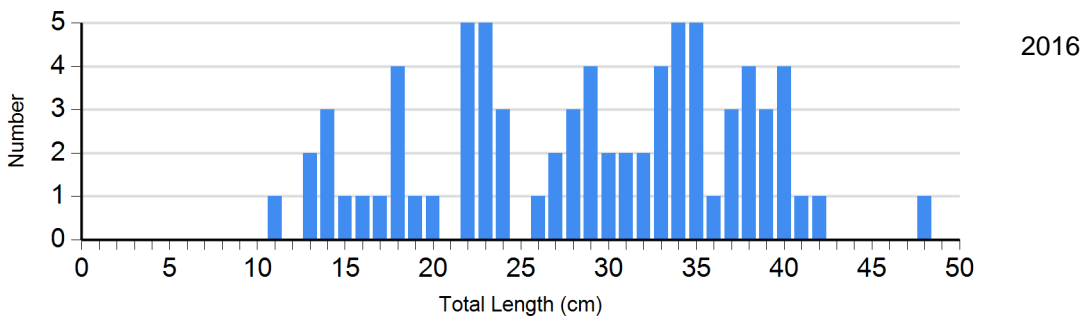
Length frequency histogram of species sampled by year.

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

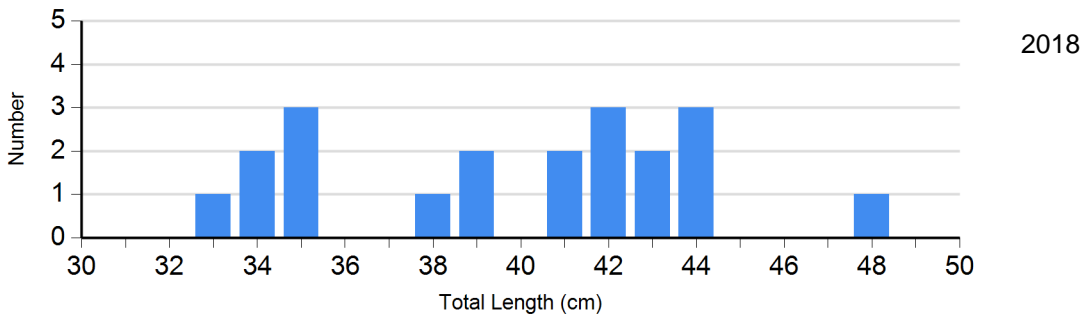


Species: Largemouth Bass
Gear: boat shocker (night)

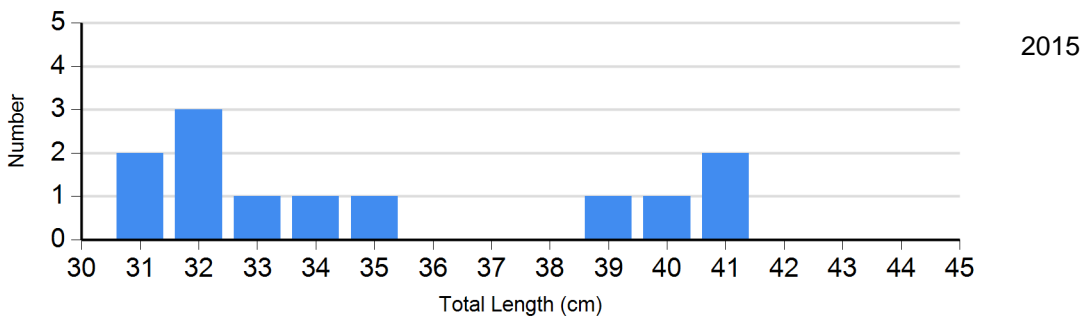




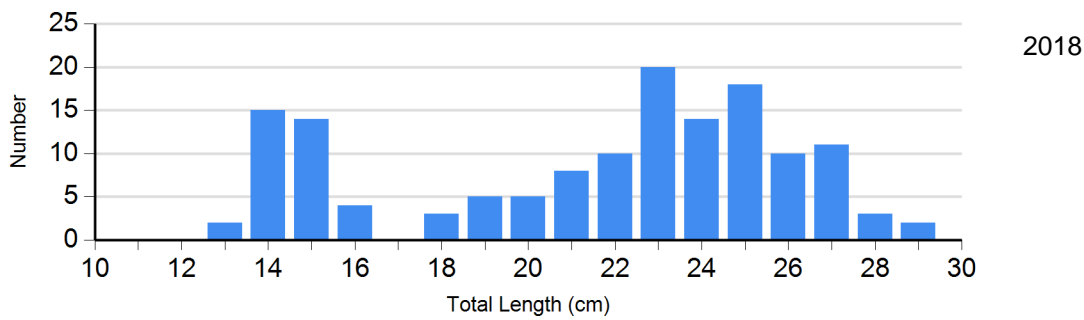
Species: Rainbow Trout
Gear: AFS std gill net



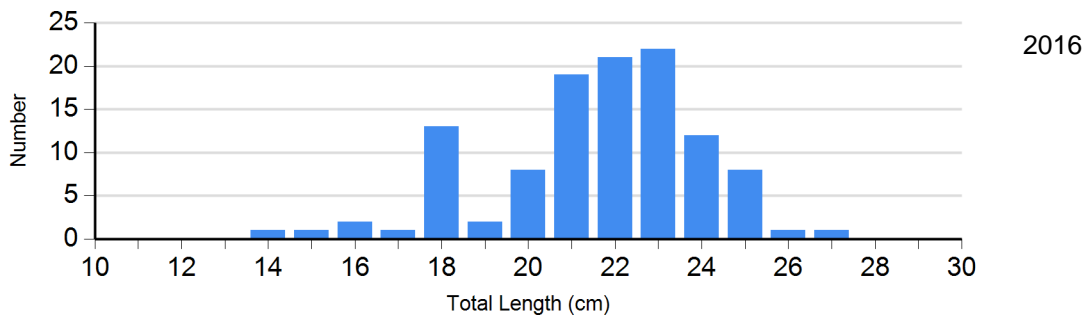
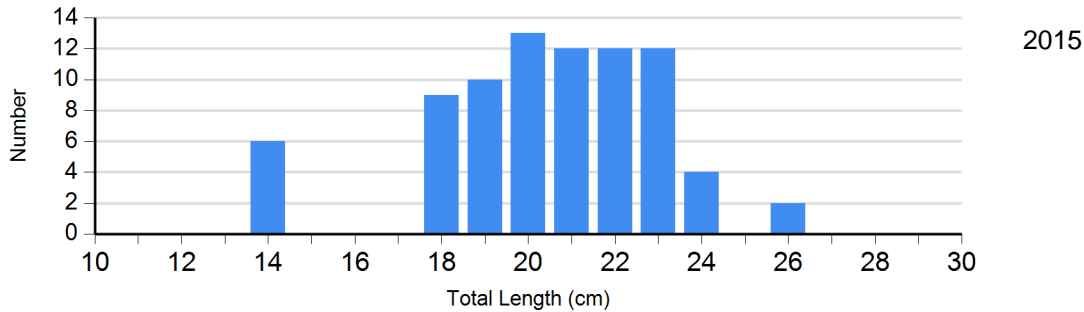
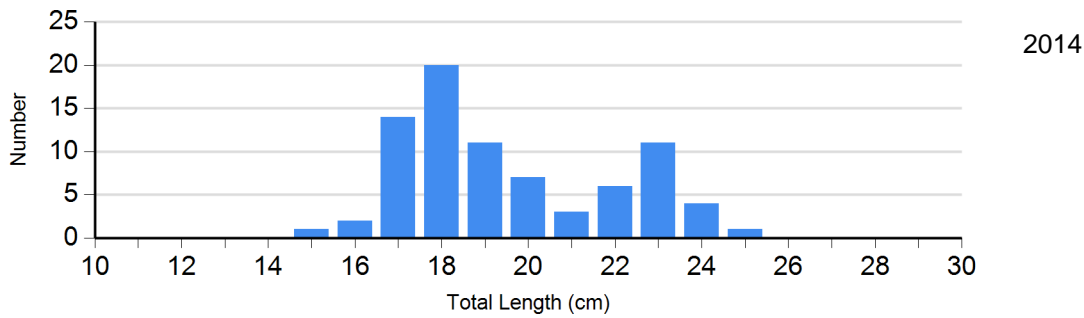
Species: Rainbow Trout
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std gill net



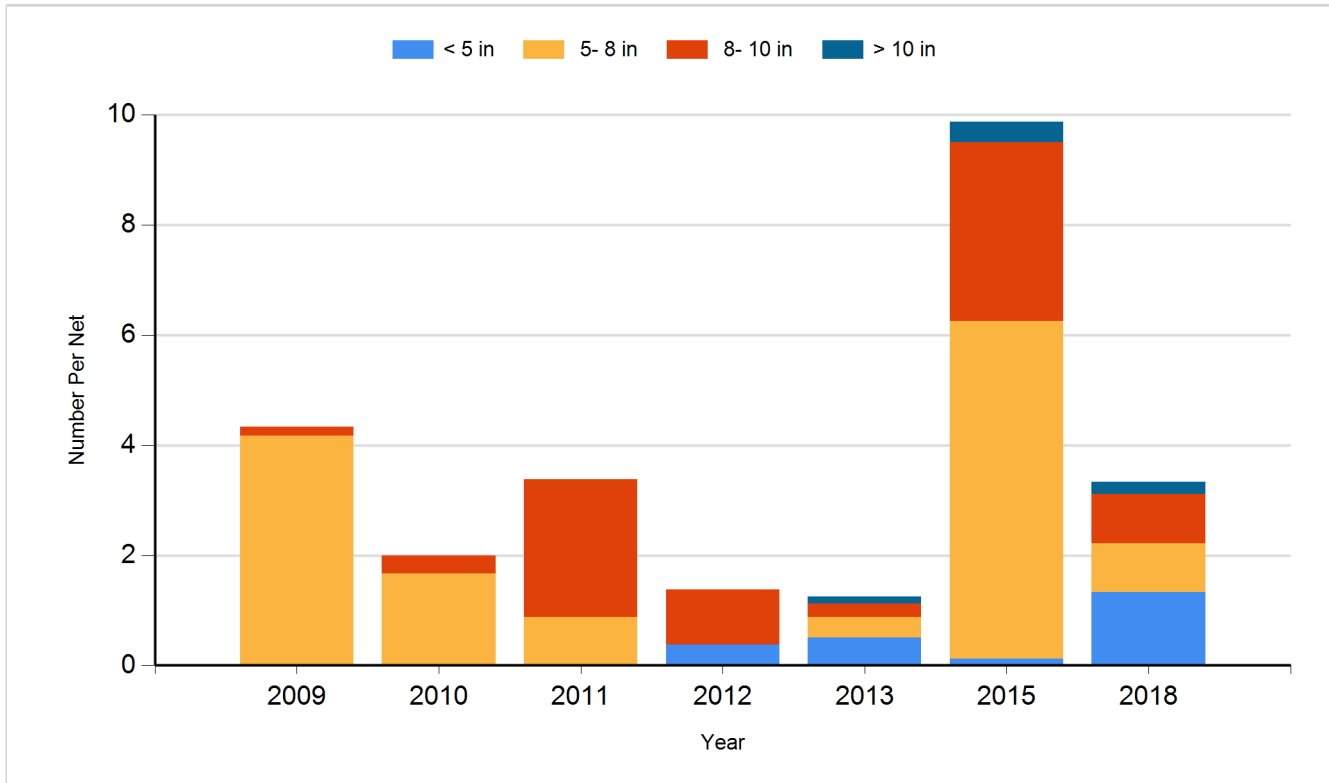
Species: Yellow Perch
Gear: std exp gill net



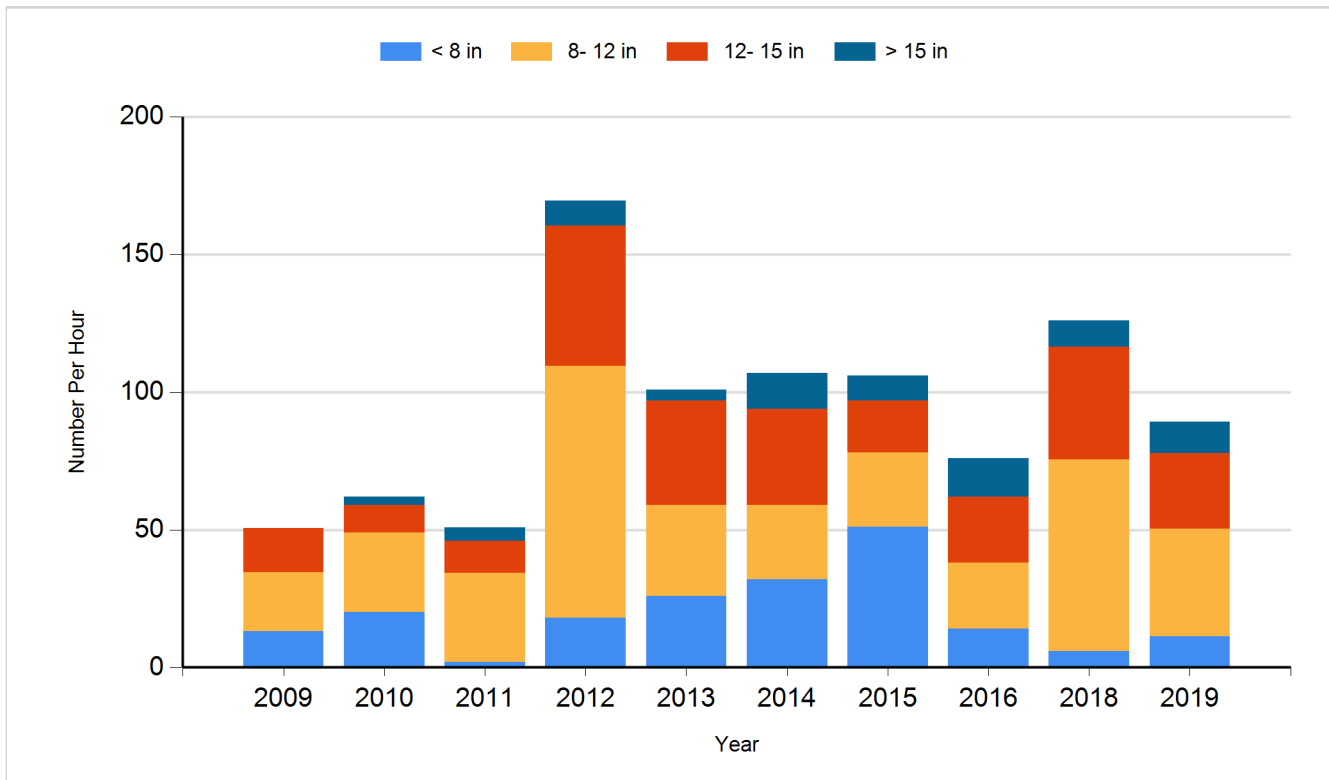
Historic Fish Sizes and Relative Abundance

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

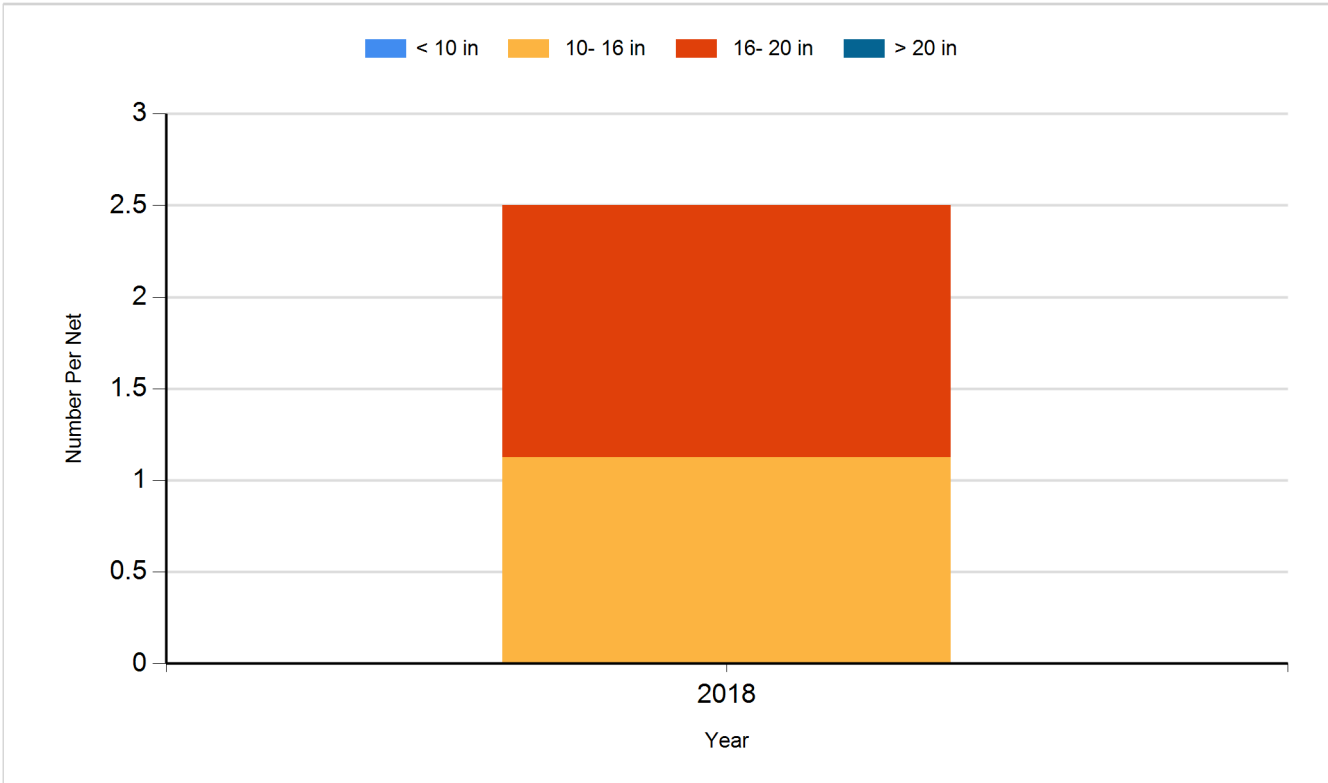
Species: Black Crappie
Gear: frame net (std 3/4 in)



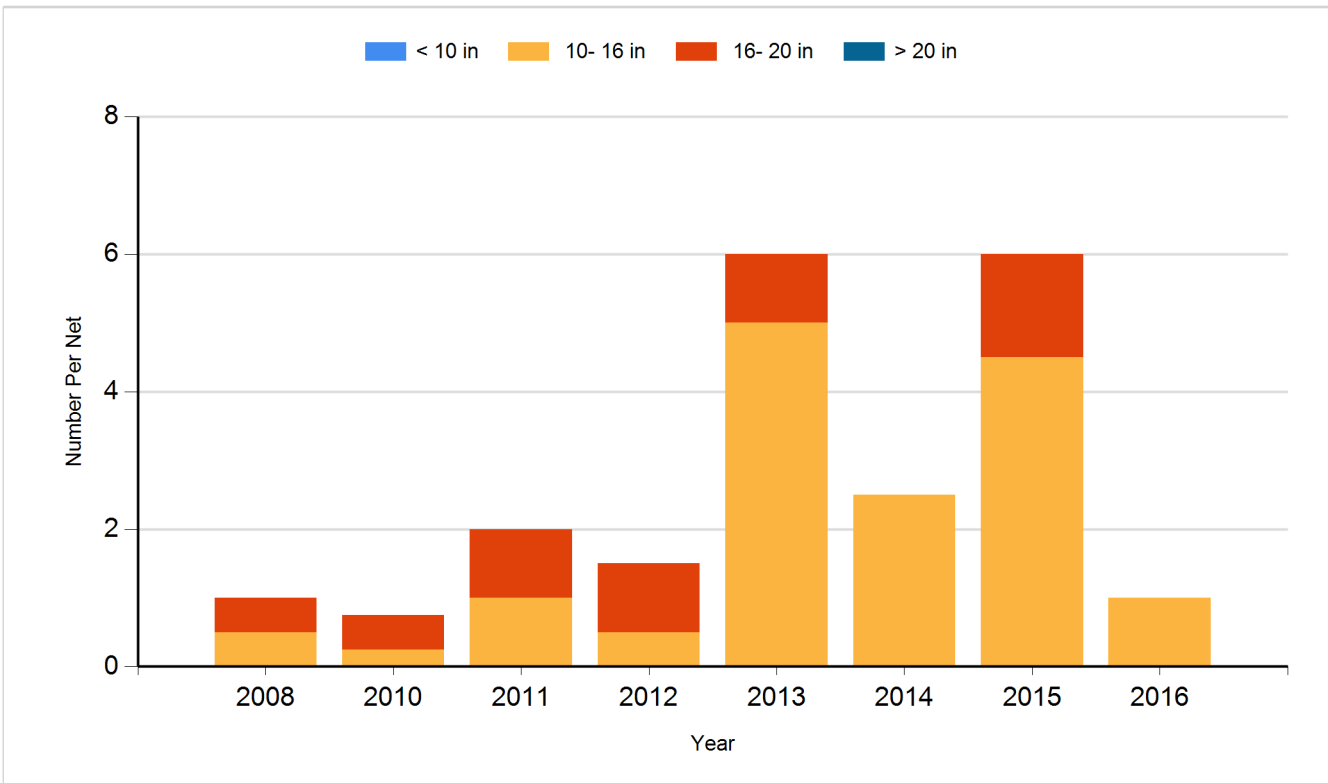
Species: Largemouth Bass
Gear: boat shocker (night)



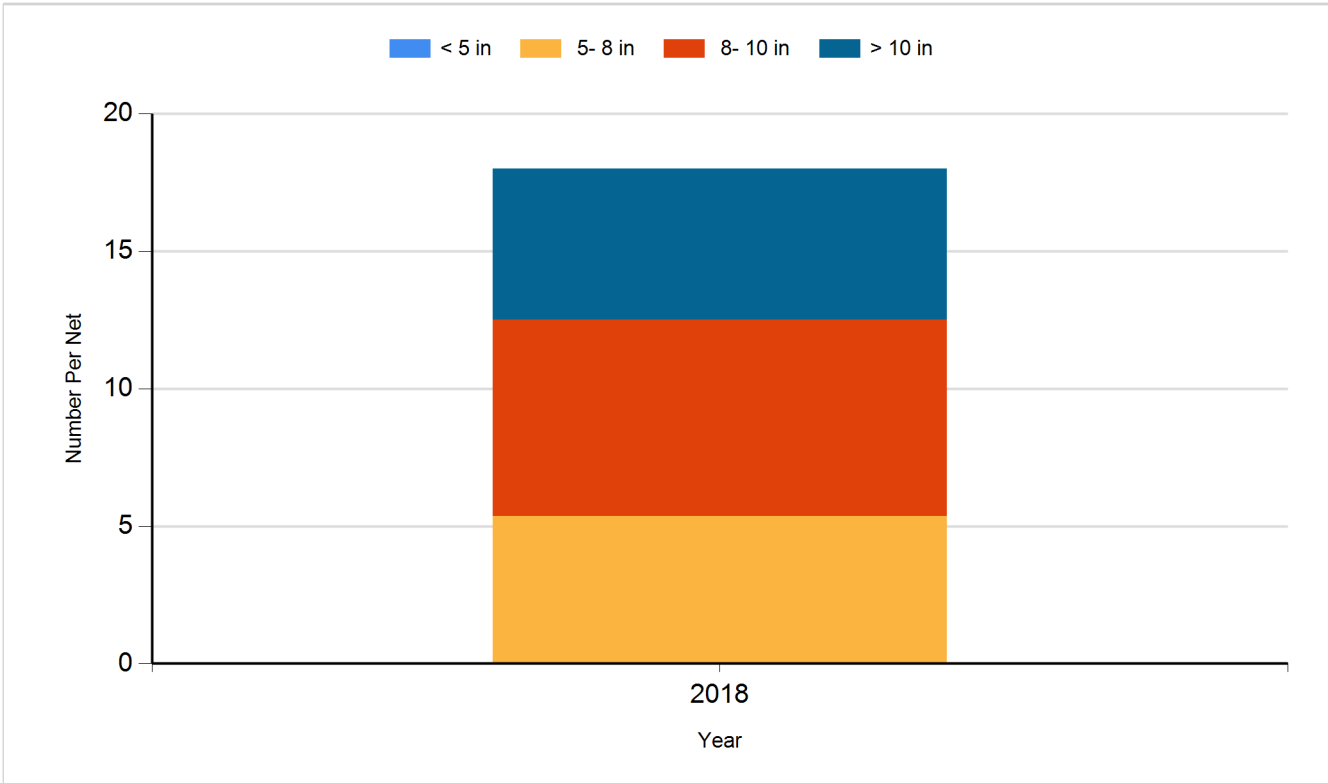
Species: Rainbow Trout
Gear: AFS std gill net



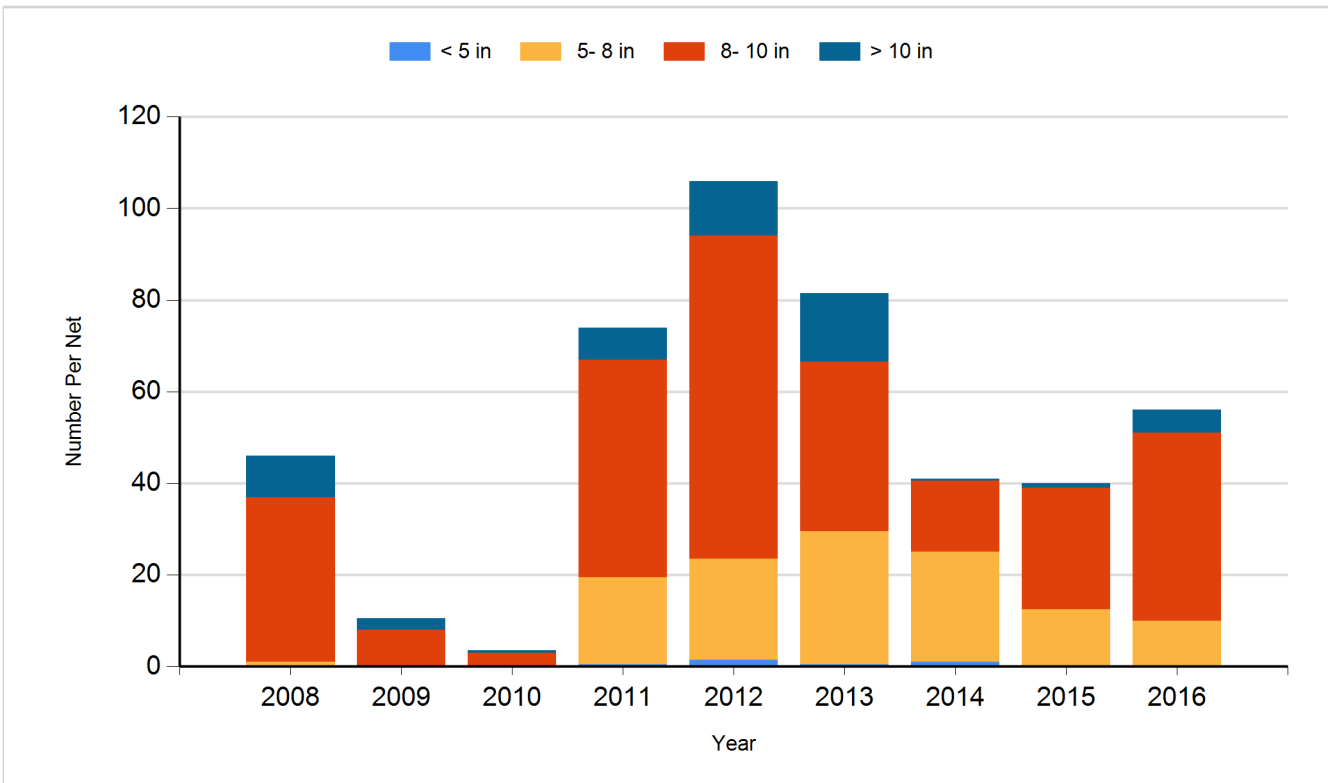
Species: Rainbow Trout
Gear: std exp gill net



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	Rainbow Trout (Shasta)	Catchable 11"	3,582
2008	Rainbow Trout (Utah)	Catchable	5,000
2009	Brown Trout (Utah)	Catchable 11"	1,000
2009	Rainbow Trout (Erwin)	Catchable	10,000
2009	Rainbow Trout (McConaugRainbow Trout	Catchable	10,637
2009	Rainbow Trout (McConaugRainbow Trout	Fingerling	6,000
2010	Brown Trout (Soda Lake)	Catchable 11"	900
2010	Rainbow Trout (Erwin x Arlee)	Catchable	9,000
2010	Rainbow Trout (McConaugRainbow Trout	Catchable	9,630
2010	Smallmouth Bass	Fingerling	7,800
2011	Rainbow Trout (Erwin x Arlee)	Catchable	7,920
2011	Rainbow Trout (McConaugRainbow Trout	Catchable	9,630
2011	Rainbow Trout (Shasta)	Fingerling	7,933
2011	Smallmouth Bass	Adult	200
2011	Smallmouth Bass	Fingerling	5,600
2012	Rainbow Trout (Erwin x Arlee)	Catchable	9,000
2012	Rainbow Trout (McConaugRainbow Trout	Catchable	5,000
2012	Rainbow Trout (McConaugRainbow Trout	Catchable 11"	5,000
2012	Smallmouth Bass	Adult	285
2013	Rainbow Trout (Erwin x Arlee)	Catchable	9,000
2013	Rainbow Trout (McConaugRainbow Trout	Catchable 11"	10,000
2013	Smallmouth Bass	Fingerling	6,890
2014	Rainbow Trout (Erwin x Arlee)	Catchable	1,000
2014	Rainbow Trout (Shasta)	Catchable	8,079
2014	Rainbow Trout (Shasta)	Catchable 11"	10,000
2015	Rainbow Trout (Ennis)	Catchable 11"	3,139
2015	Rainbow Trout (Shasta)	Catchable 11"	15,861
2016	Rainbow Trout (Shasta)	Catchable 11"	19,421
2016	Smallmouth Bass	Adult	300
2017	Rainbow Trout (Erwin x Arlee)	Catchable 11"	10,190
2017	Rainbow Trout (Shasta)	Catchable 11"	10,188
2017	Smallmouth Bass	Adult	275

2017	Walleye	Large Fingerling	14,000
2018	Rainbow Trout (Erwin x Arlee)	Catchable	7,296
2018	Rainbow Trout (Erwin x Arlee)	Catchable 11"	2,276
2018	Rainbow Trout (Shasta)	Catchable	9,877
2018	Rainbow Trout (Shasta)	Catchable 11"	524
2018	Rainbow Trout (Shasta)	Juvenile	2,800
2018	Smallmouth Bass	Juvenile	250
2019	Rainbow Trout (Erwin x Arlee)	Catchable	1,420
2019	Rainbow Trout (Erwin x Arlee)	Catchable 11"	7,482
2019	Rainbow Trout (Shasta)	Catchable 11"	10,968
2019	Walleye	Large Fingerling	4,080
2019	Walleye	Small Fingerling	21,420
