

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

King, Tripp County

LWH-Lake-529-000

2024

## Lake Information

**Name:** King  
**County:** Tripp  
**Surface Area:** 9 Acres

## Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	Oct 24, 2024	1575 seconds
frame net (std 3/4 in)	Jul 01, 2024	6 net-nights

## **Common Fish Species Present**

Largemouth Bass

Bluegill

Yellow Perch

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## 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	33	17.6	16.8	29		29		113	4
frame net (std 3/4 in)	Bluegill	497	82.8	20.8	42	3	14	2	108	1
	Yellow Perch	164	27.3	14.4	15	4	6	3	86	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**

Gear	Species	CPUE										Avg
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
AFS std frame net	Black Crappie				4.5							4.50
	Bluegill				13.3							13.30
	Yellow Perch				0.3							0.30
boat shocker (night)	Largemouth Bass				79.1			99.0			17.6	65.23
frame net (std 3/4 in)	Black Crappie	11.8						25.9			0.0	12.57
	Bluegill	12.5						78.5			82.8	57.93
	Largemouth Bass	0.1						0.6			0.0	0.23
	Yellow Perch	8.4						4.0			27.3	13.23

## 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										
			2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
AFS std frame net	Bluegill	PSD				85							
		PSD-P				6							
		Wr				101							
	Yellow Perch	PSD				0							
		PSD-P				0							
		Wr				93							
boat shocker (night)	Largemouth Bass	PSD				22			45			29	
		PSD-P				22			6			29	
		Wr				101			100			113	
frame net (std 3/4 in)	Bluegill	PSD	46						58			42	
		PSD-P	25						19			14	
		Wr	112						97			108	
	Largemouth Bass	PSD	0						0				
		PSD-P	0						0				
		Wr	107						97				
	Yellow Perch	PSD	61						97			15	
		PSD-P	19						63			6	
		Wr	86						89			86	

## Back-Calculated Lengths

Mean species back-calculated total length (mm) at age, standard error (SE), and sample size (N).

Species: Largemouth Bass

Year Class	Age	N	Mean back-calculated length (SE) at age											
			1	2	3	4	5	6	7	8	9	10		
2023	1	1	75											
2022	2	1	95	152										
2021	3	5	84 (5.7)	134 (4.7)	191 (6.4)									
2020	4	1	89	148	184	223								
2018	6	1	104	210	296	349	371	399						
2017	7	1	92	186	225	277	322	358	380					
Weighted Mean		10	88	152	208	283	347	379	380					
Year Class	Age	N	11	12	13	14	15	16	17	18	19	20		
2023	1	1												
2022	2	1												
2021	3	5												
2020	4	1												
2018	6	1												
2017	7	1												
Weighted Mean		10												



## 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+
2021	442		138 (100)	161 (77)	173 (36)	198 (143)	196 (87)				
2018	53			156 (18)	178 (34)	193 (1)					
2015	100		101 (54)	169 (9)	169 (2)	195 (10)	205 (10)	210 (14)	223 (1)		

Species: Largemouth Bass

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2024	10	110 (1)	177 (1)	215 (5)	243 (1)		424 (1)	403 (1)			
2021	33			237 (11)	294 (8)	337 (8)	368 (4)	449 (1)	482 (1)		
2018	27		245 (11)	261 (10)		431 (2)	447 (3)		505 (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).

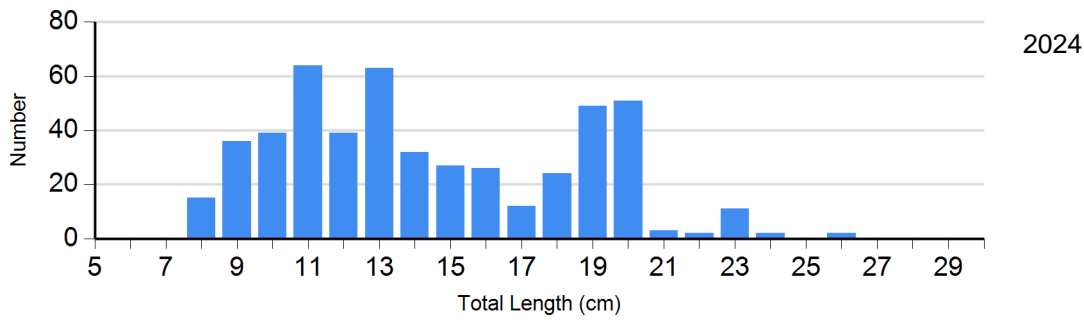
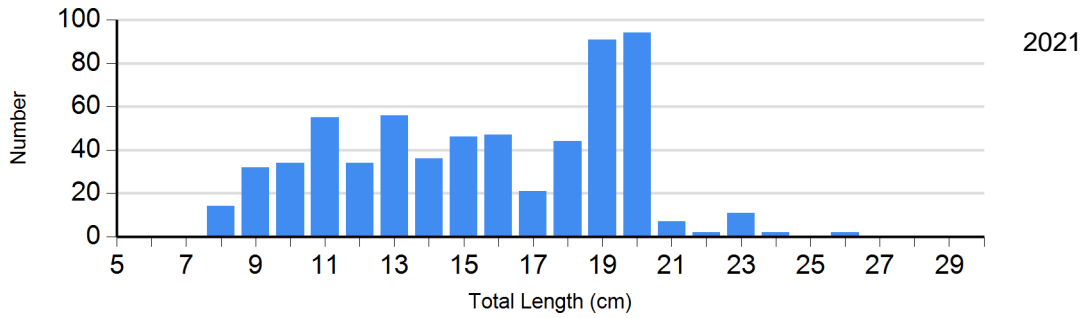
Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Bluegill Frame Net	2021	261	95 (0.8)	249	97 (0.8)	116	98 (0.8)	2	
	2024	288	108 (1.2)	138	120	69	112 (1.4)	2	101
Largemouth Bass Electro Fishing	2021	18	100 (1.4)	13	99 (2.0)	2	109 (2.0)	0	
	2024	5	117 (2.8)	0		2	103 (1.7)	0	

## Length Frequency Distribution

Length frequency histogram of species sampled by year.

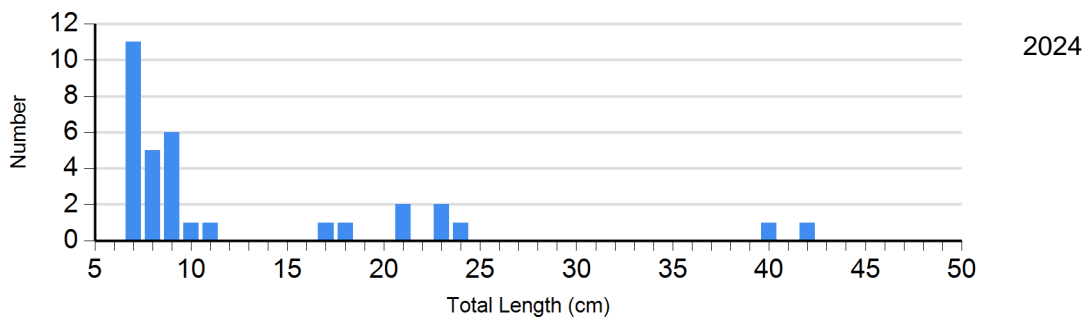
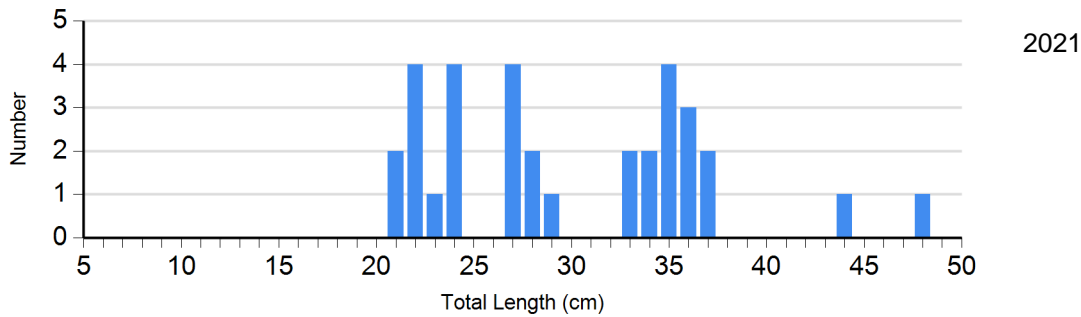
Species: Bluegill

Gear: frame net (std 3/4 in)



Species: Largemouth Bass

Gear: boat shocker (night)

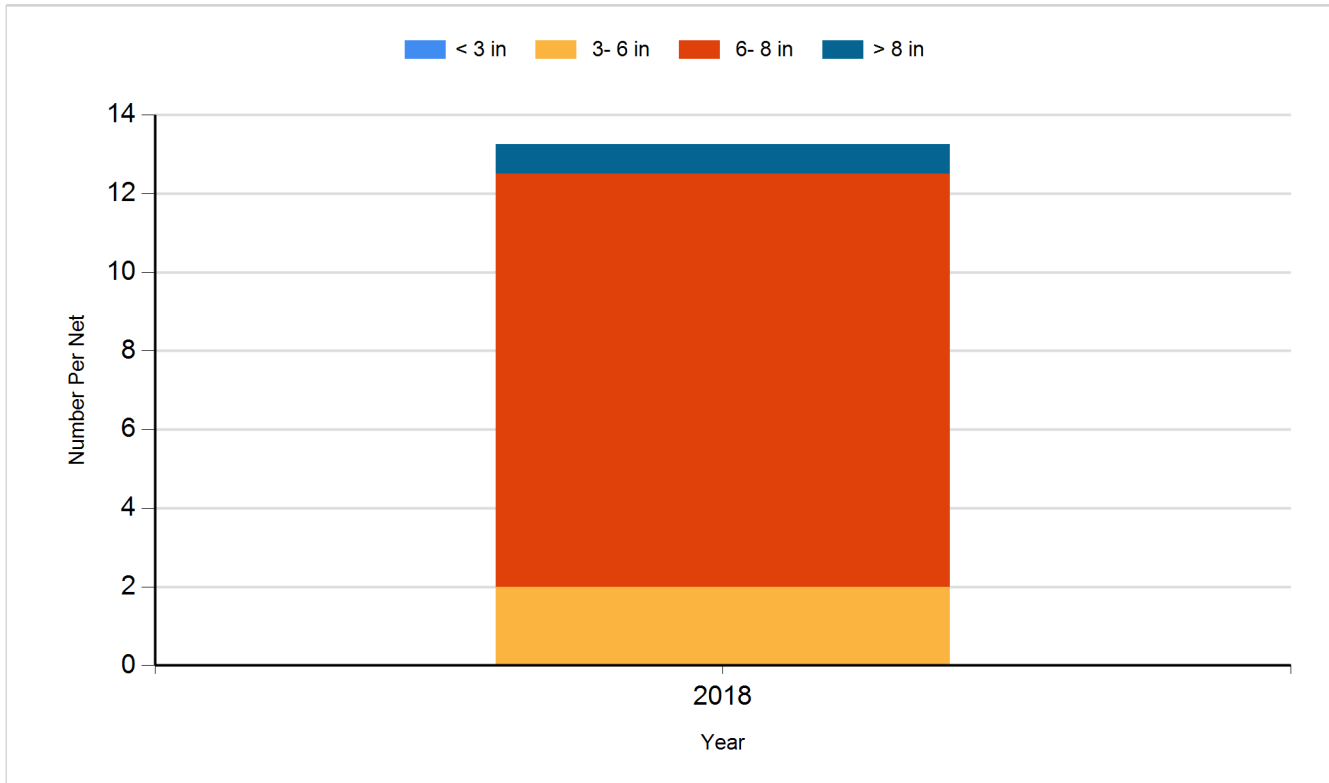


## Historic Fish Sizes and Relative Abundance

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

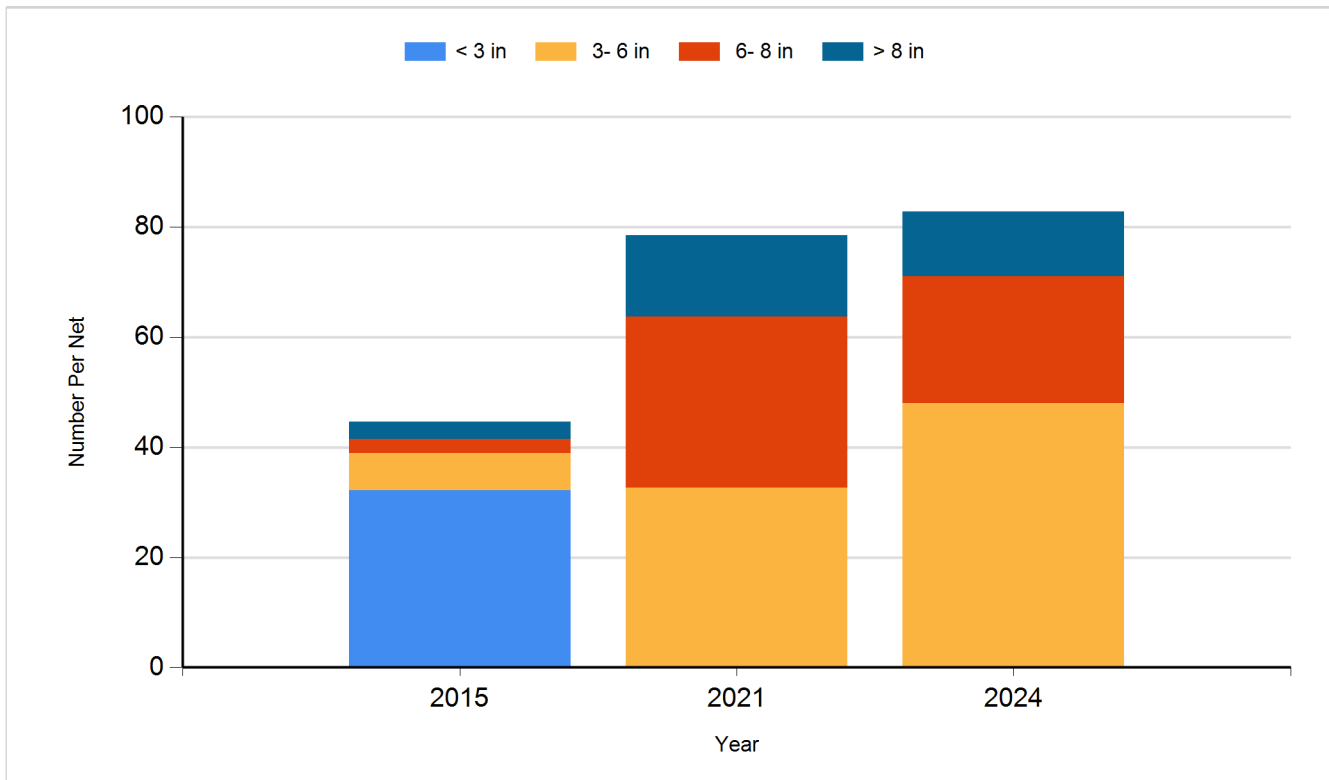
Species: Bluegill

Gear: AFS std frame net

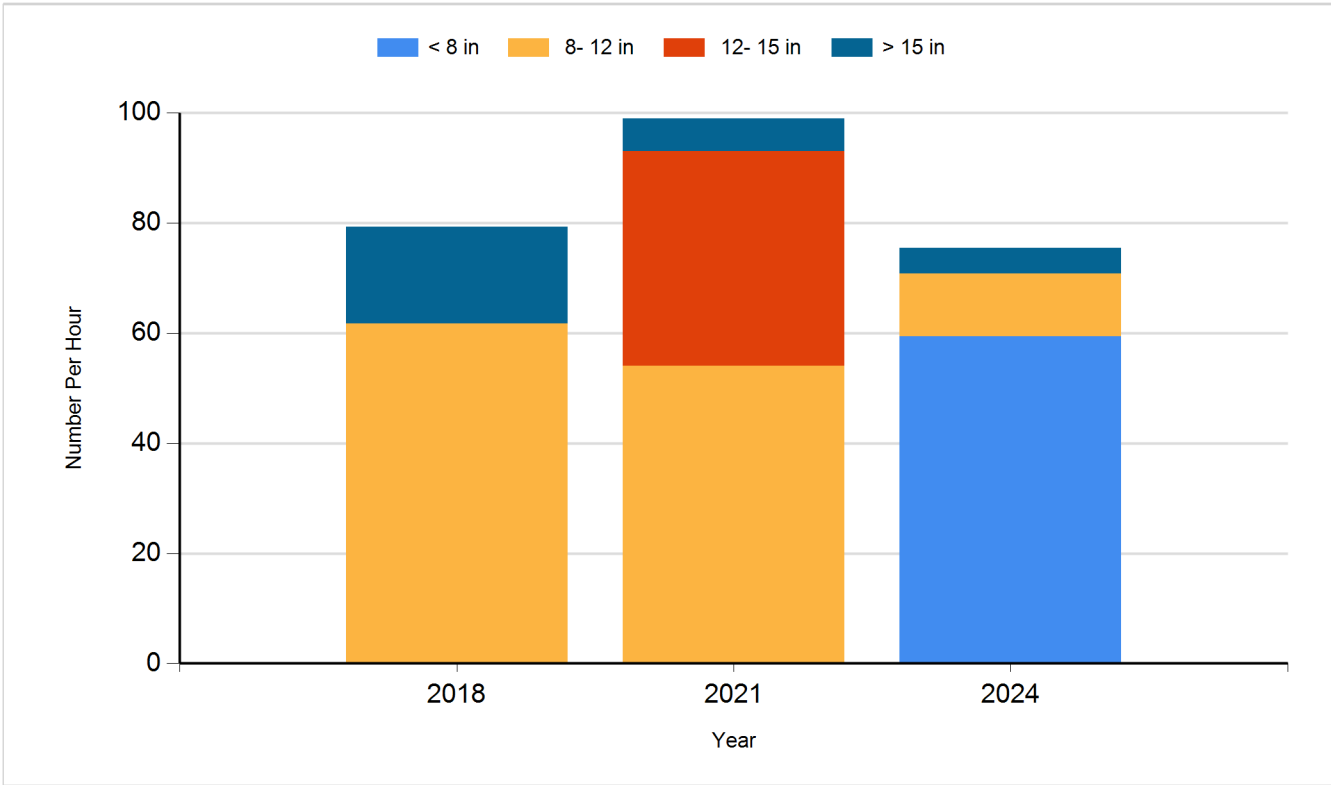


Species: Bluegill

Gear: frame net (std 3/4 in)



Species: Largemouth Bass  
Gear: boat shocker (night)



## **Fish Stocking**

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

Year	Species	Size	Number
2023	Bluegill		125
2023	Largemouth Bass	Adult	66
2024	Yellow Perch	Adult	288