2023 Armour Kids Fishing Pond (Douglas County)

Armour Kids Fishing Pond is a 6-acre community fishery on the northeast side of the town of Armour. Access locations consist of a handicap accessible fishing pier and a maintained shoreline that encompasses a majority of the pond. It is managed as a multi-species fishery consisting of Black Crappie and Bluegill, Largemouth Bass and Channel Catfish. Sampling occurs every three years, consisting of frame nets targeting all species and fall electrofishing targeting Largemouth Bass. This fishery experienced a winterkill in 2022/2023. Stocking in the spring and summer of 2023 occurred to help reestablish fish populations.

- **Black Crappie:** No Black Crappie were sampled in 2023.

- **Bluegill:** The catch rate of Bluegill in 2023 was 11.7 fish per frame net. Of the Bluegill sampled, 64% were 6 inches or larger. Bluegill have relative weight (Wr) of 111*.

- **Channel Catfish:** The catch rate of Channel Catfish in 2023 was 1.7 fish per frame net. Of the Channel Catfish sampled, 90 %were 16 inches or larger, with 20% larger then 24 inches. Channel Catfish have a relative weight (Wr) of 88*.

- **Largemouth Bass:** In 2023, all Largemouth Bass sampled were under 4 inches long.

In 2023, 400 adult Black Crappie, 90 adult Bluegill, 110 adult Channel Catfish and 166 adult Largemouth Bass were stocked in response to winterkill. One thousand adult Rainbow Trout were stocked in the fall of 2023 to increase fishing opportunities.

* 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.

Created 1/29/2024 BV

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Armour Kids Fishing Pond, Douglas County
LCL-Lake-21-000
2023

Lake Information

Name: Armour Kids Fishing Pond

County: Douglas

Surface Area: 6 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	Sep 28, 2023	576 seconds
frame net (std 3/4 in)	Jun 20, 2023	3 net-nights
frame net (std 3/4 in)	Jun 21, 2023	3 net-nights

Common Fish Species Present

Largemouth Bass

Bluegill

Channel Catfish

Sunfish Hybrid

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
boat shocker (night)	Largemouth Bass	35	0.0		0		0			
frame net (std 3/4 in)	Bluegill	70	11.7	7.4	64	8	0		111	2
	Channel Catfish	12	1.7	1.1	90		20		88	5
	Sunfish Hybrid	1	0.2	0.2	0		0		115	

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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Avg
boat shocker (night)	Black Bullhead				54.0			0.0			0.0	18.00
	Black Crappie				36.0			0.0			0.0	12.00
	Bluegill				420.0			0.0			0.0	140.00
	Largemouth Bass				120.0			98.5			0.0	72.83
frame net (std 3/4 in)	Black Bullhead							8.3			0.0	4.15
	Black Crappie							6.7			0.0	3.35
	Bluegill							35.7			11.7	23.70
	Channel Catfish							0.0			1.7	0.85
	Largemouth Bass							1.7			0.0	0.85
	Northern Pike							0.7			0.0	0.35
	Smallmouth Bass							0.7			0.0	0.35
	Sunfish Hybrid							0.3			0.2	0.25
	Yellow Perch							1.0			0.0	0.50

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	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
boat shocker (night)	Bluegill	PSD				20						
		PSD-P				1						
		Wr				100						
	Largemouth Bass	PSD				50			36			0
		PSD-P				15			9			0
		Wr				94			100			
frame net (std 3/4 in)	Bluegill	PSD							88			64
		PSD-P							4			0
		Wr							117			111
	Channel Catfish	PSD										90
		PSD-P										20
		Wr										88
	Largemouth Bass	PSD							20			
		PSD-P							0			
		Wr							97			

Length at Capture

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

Species: Largemouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2020	10		226 (1)	239 (6)	290 (2)				469 (1)		
2017	23	202 (7)	265 (4)	313 (6)	361 (3)			459 (3)			

Fish Condition

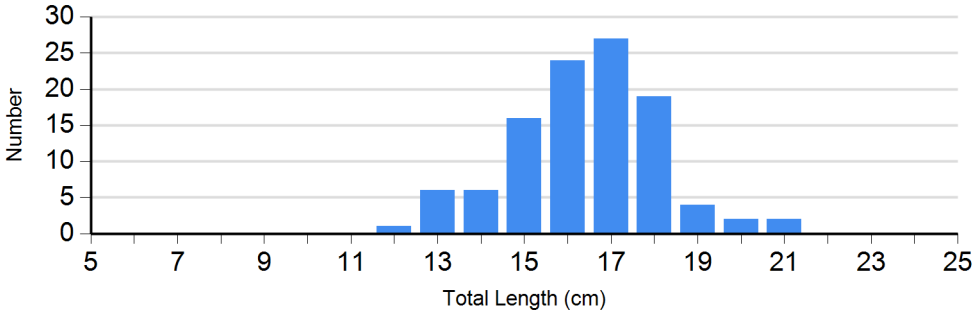
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Bluegill Frame Net	2020	13	112 (1.8)	90	118 (1.1)	4	84	0	
	2023	25	116 (3.5)	45	108 (2.0)	0		0	
Largemouth Bass Electro Fishing	2020	7	97 (2.3)	3	101 (7.1)	1	121	0	
	2023	0		0		0		0	

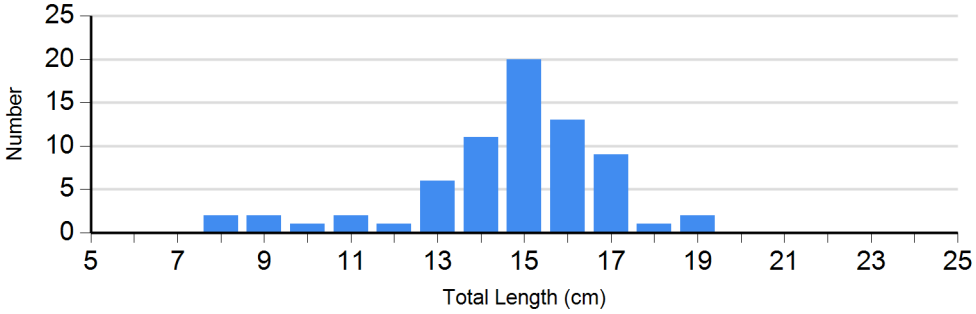
Length Frequency Distribution

Length frequency histogram of species sampled by year.

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

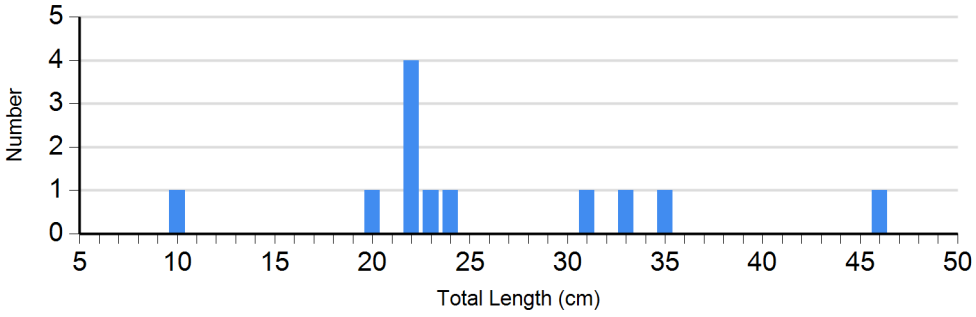


2020



2023

Species: Largemouth Bass
Gear: boat shocker (night)



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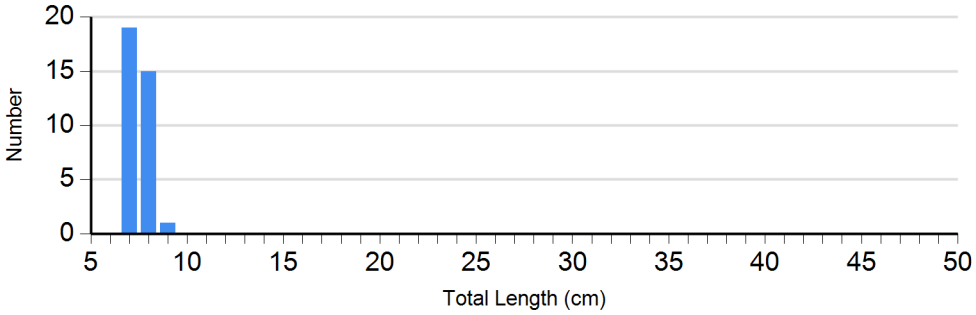
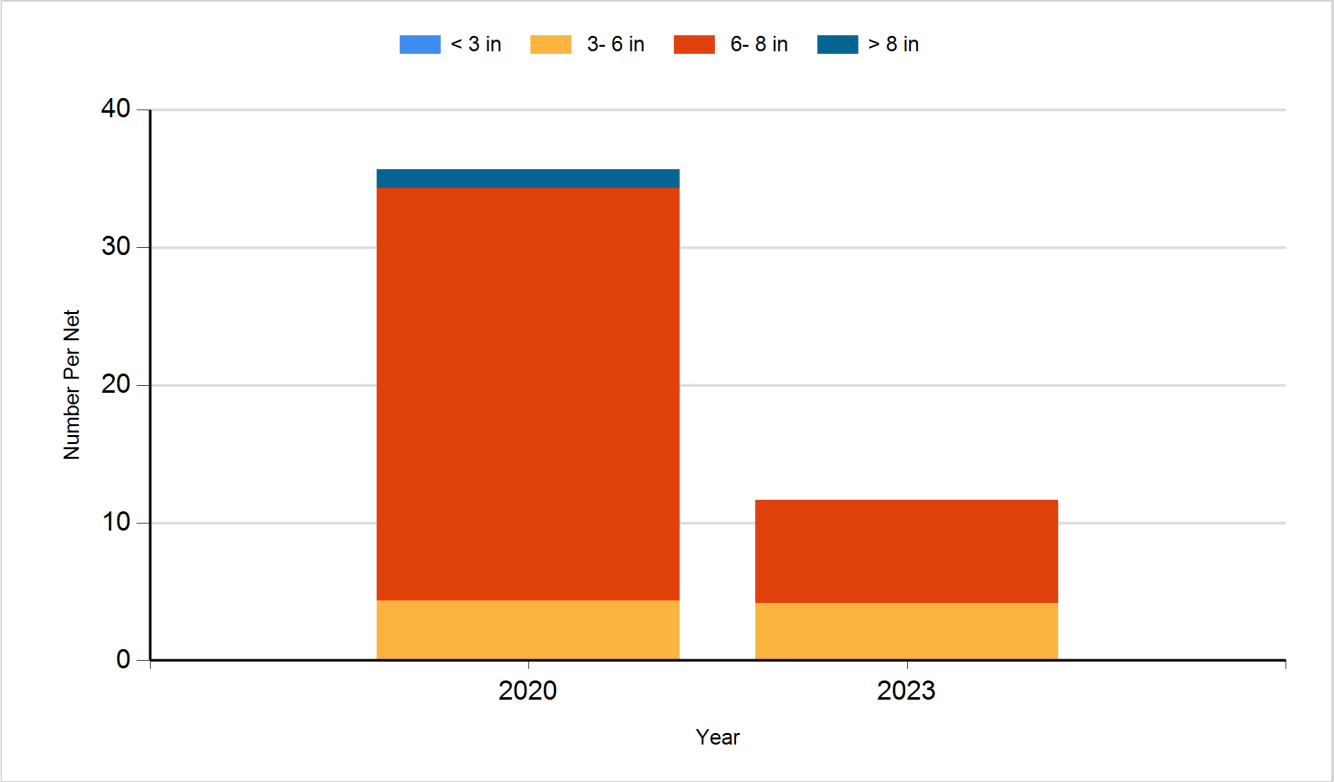


2023

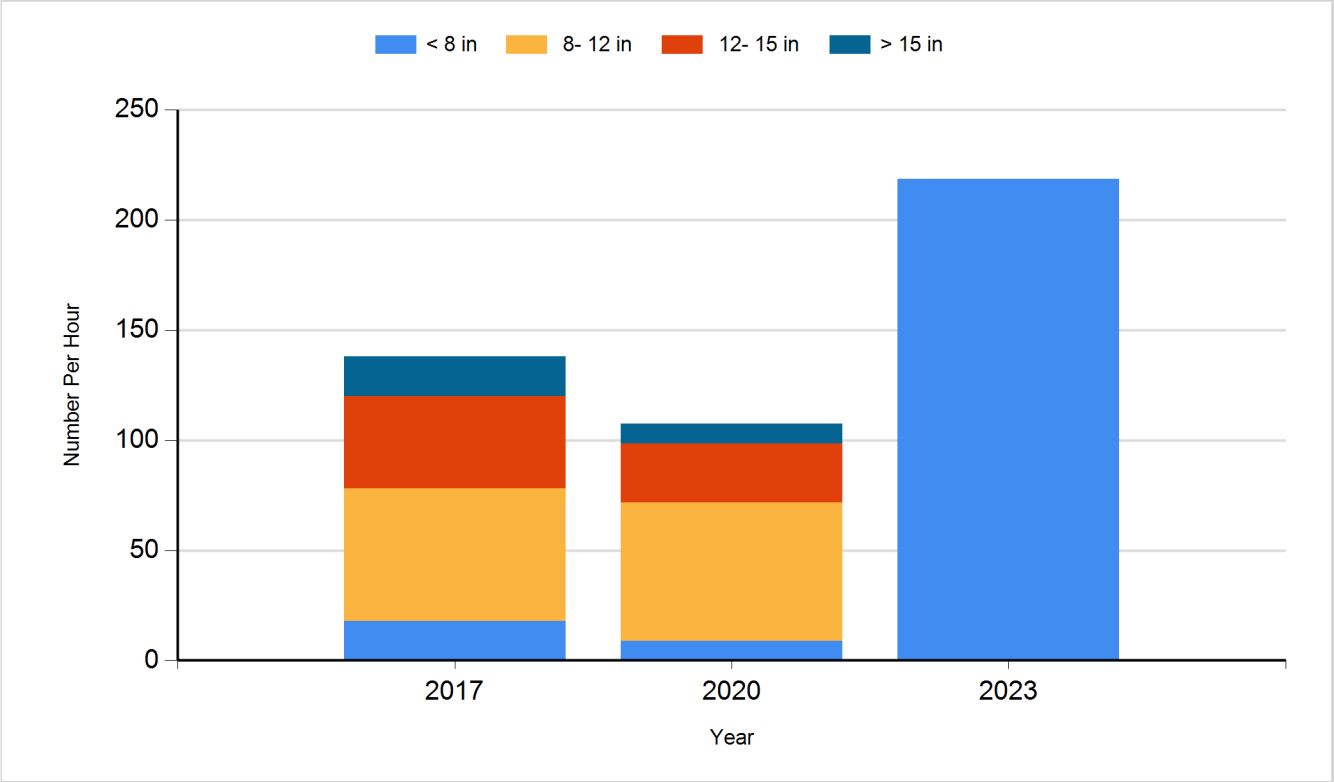
Historic Fish Sizes and Relative Abundance

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

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
2017	Largemouth Bass	Adult	100
2018	Black Crappie	Adult	150
2018	Smallmouth Bass	Adult	65
2019	Black Crappie	Adult	800
2019	Bluegill	Adult	50
2019	Largemouth Bass		125
2019	Walleye	Adult	10
2020	Black Crappie	Adult	510
2021	Black Crappie	Catchable	150
2021	Channel Catfish	Adult	120
2021	Largemouth Bass	Adult	232
2022	Black Crappie	Adult	580
2022	Bluegill	Adult	450
2022	Channel Catfish	Adult	50
2022	Largemouth Bass	Adult	20
2022	Largemouth Bass	Juvenile	110
2022	Rainbow Trout (Trout Lodge)	Adult	1,000
2023	Black Crappie	Adult	400
2023	Bluegill	Adult	90
2023	Channel Catfish	Adult	110
2023	Largemouth Bass		140
2023	Largemouth Bass	Adult	22
2023	Rainbow Trout	Adult	1,000