MONTANA FISH, WILDLIFE and PARKS
FISHERIES DIVISION
FEDERAL AID JOB PROGRESS REPORT

MONTANA STATEWIDE FISHERIES MANAGEMENT

Federal Aid Project Number:	F-113-M-7
Project Title:	Statewide Fisheries Management
Job Title:	Missouri River/Canyon Ferry Reservoir Fisheries Management

2023 Report

Troy Humphrey
Montana Fish, Wildlife and Parks
Helena Area Senior Fisheries Technician

ABSTRACT

Fisheries data was collected on Canyon Ferry Reservoir to monitor and manage the fishery. This report summarizes data collected from population, creel and other surveys conducted in 2023. Walleye abundance decreased to 6.7 per fall sinking gillnet, down from 8.7 per net in 2022. An overabundance of one- and two-year-old walleye caused the average length to remain low at 13.1 inches and in turn proportional stock density (PSD) decreased to 16. Yellow perch abundance increased from 0.8 perch per net in 2022 to 2.2 perch per net in 2023. Abundance continues to remain well below the goal range of 6-10 perch per net. Rainbow trout abundance increased to 4.0 per fall floating gill net and met the goal range of 4-6 per net after three consecutive years of being below. White sucker relative abundance increased from 2.6 per net in 2022 to 3.0 per net in 2023, still well below the current management plan goal. Relative abundance of burbot (0.0/net) and brown trout (0.1/net) remain low and below management goals. Very few northern pike were captured in multiple surveys across the reservoir throughout the year. Summer angler catch rates were above the long-term average for walleye, near the long-term average for rainbow trout and remained at historically low levels for yellow perch. Winter angler catch rates were at an all-time high for walleye, below the long-term average for rainbow trout and yellow perch catch rates remained far below the long-term average. Special projects will also be discussed.

TABLE OF CONTENTS

STUDY AREA

Descriptions and characteristics of Canyon Ferry Reservoir (CFR) and the associated fishery can be found in the *Upper Missouri River Reservoir Fisheries Management Plan 2010-2019* (Montana Fish, Wildlife & Parks 2010) *and 2020-2029* (Montana Fish, Wildlife & Parks 2020). A map of CFR is presented in Figure 1.

METHODS

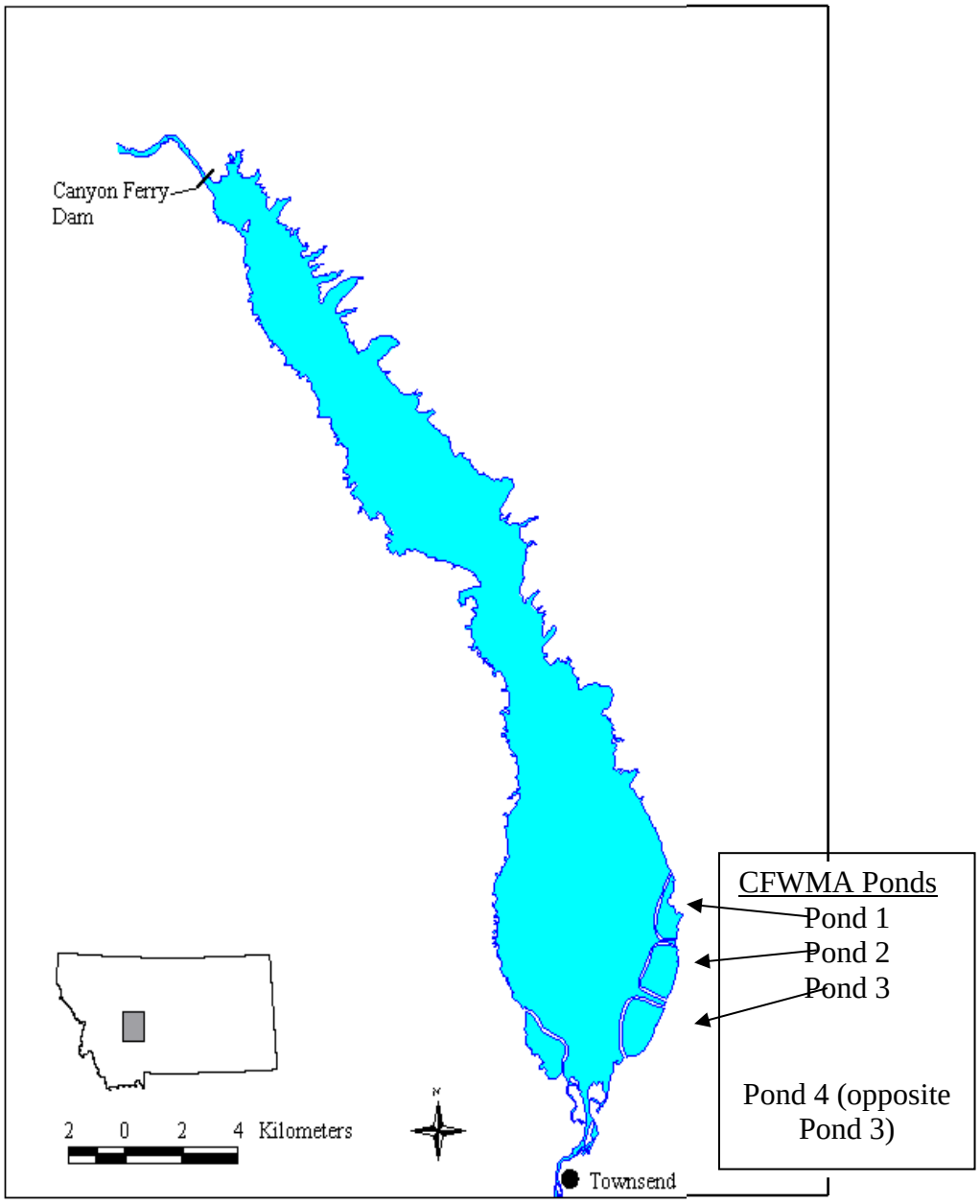
Canyon Ferry fish monitoring consists of five annual standardized gillnet series, 1 beach seine series, and winter and summer creel surveys (Table 1). All standardized series use 125' x 6'floating or sinking type experimental gillnets (3/4, 1, 1 ¼, 1 ½, and 2" bar mesh) set overnight. Beach seining is conducted at 60 standardized sites with a 100' x 10' beach seine that has a bar mesh of 0.25-inches. Specific locations for all standardized net series can be found in Yerk (2000) and, for reference, reservoir elevation at full pool is 3797'. Additional habitat and fishery surveys (special projects) are described in detail within this report.

Partial creel surveys were conducted two days a week during weekends for the summer and ice-covered months using methods established by Lere (1987). Angler pressure estimates are based on the license year (March-February), and methods can be found in McFarland (2006).

Table 1: Canyon Ferry fish monitoring netting and creel surveys.

Month	Purpose	Number	Duration
January-March	Winter Creel Survey	Weekends	3 months
May	Spring trout survey	15 floating experimental gillnets	3 net nights
May -October	Summer creel survey	Weekends	6 months
June	Yellow perch and sucker survey	17 sinking experimental gillnets	3 net nights
August	Yellow perch and sucker survey	16 sinking experimental gillnets	3 net nights
August	Annual juvenile production	60 beach seine sampling sites	3 days
September	Fall walleye survey	15 sinking experimental gillnets	3 net nights
October	Fall trout survey	18 floating experimental gillnets	3 net nights

Figure 1. CFR and the Canyon Ferry Wildlife Management Area Waterfowl Ponds.



RESULTS AND DISCUSSION

Gillnetting

Netting trends from standardized surveys and management goal ranges for rainbow trout, yellow perch and walleye are presented below.

Spring Horizontal Floating Gillnets

Fifteen horizontal floating gill nets were fished in standardized spring locations on May 8-11, 2023. Surface water temperatures varied from 49-54°F during the netting series and the reservoir levels were approximately 14-feet below full pool during the survey (3778 mean forebay elevation). The survey was conducted 3-6 days after a full moon. Typical spring weather was encountered during the survey with times of calm winds and sunshine, to rain and high winds. The south end of the reservoir is highly influenced by spring runoff from the Missouri River, which lead to a secchi disc reading of one foot and floating debris was a problem in our nets. In contrast the north end around Cemetery Island had a secchi disc reading of twenty-six feet.

In total, 42 rainbows were sampled equaling 2.8 per gillnet. Preliminary results indicate the catch was comprised of 11 - age one Eagle Lake's (2022 YOY plant), 7 - age one Arlee's (2022 YOY plant), 23 age two or > hatchery rainbows of unknown origin and 1 rainbow designated as wild. Five brown trout, one walleye (28.9"- released), one carp, and one longnose sucker were the only other fish species sampled during the survey and one gillnet resulted in zero fish sampled.

In 2023 a total of 415,000 RB > 6.5 inches (summer and fall) were planted, which was above the stocking request of 400,000 (an increase from 300,000 in 2022 and prior years). Planting fish greater than 6.5-inches continues to allow for good recruitment to the creel.

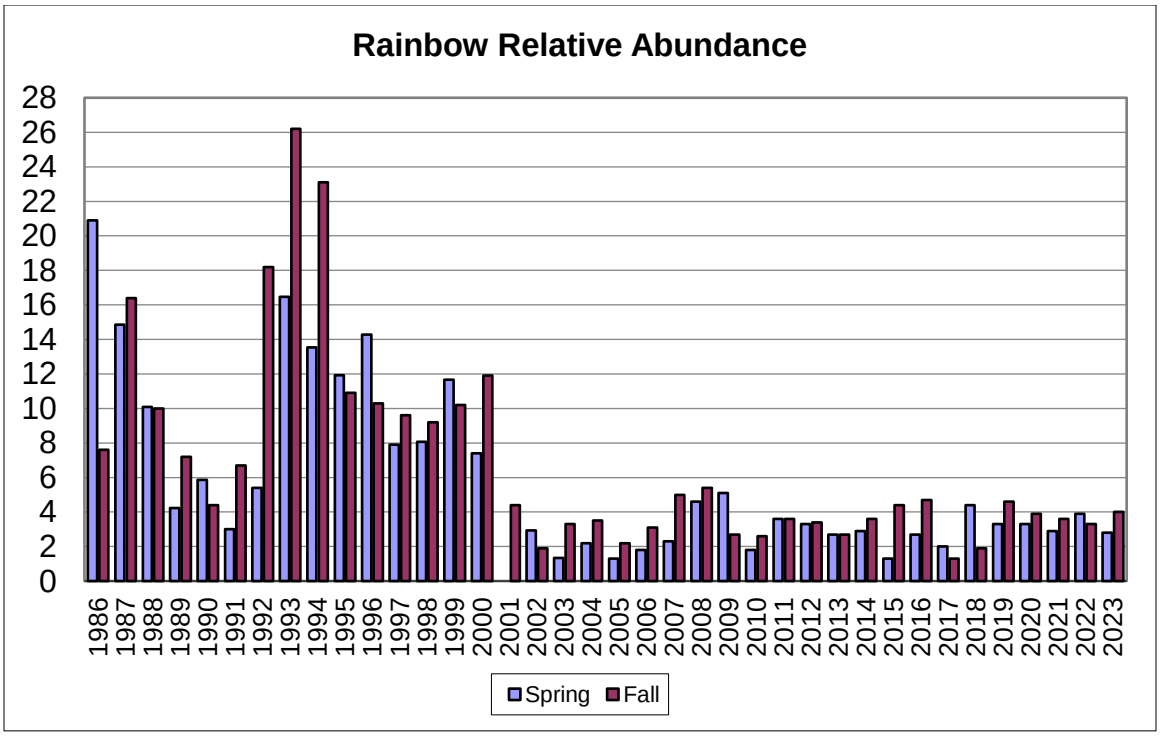


Figure 2: CFR RB relative abundance annual trends, 1986-2023.

Fall Horizontal Floating Gillnets

Eighteen floating gillnets were fished in Canyon Ferry Reservoir October 16-19, 2023, to measure rainbow trout population abundance trends. Surface water temperatures varied from 55-58°F during the netting series and the reservoir levels were 6.5-feet below full pool (3790.5 mean forebay elevation). The survey was conducted 9-12 days before a full moon which will occur on 10/28. Calm winds and clear skies with air temperatures ranging from 60-70°F were encountered during the survey, with the exception being on Tuesday, 10/17. Extremely high winds forced us off the reservoir which led us to setting 10 nets for the last day.

In total, 72 rainbows were sampled equaling 4.0 per gillnet. Length analysis results indicate the catch was comprised of twelve - 2023 YOY Arlee's (summer plant), five - 2023 YOY Eagle Lake (summer plant), seven – 2022 age 1+ Eagle Lake, six - 2022 age 1+ Arlee, and forty-two age 2+ or > hatchery rainbows of unknown origin. Thirteen - 2023 YOY Eagle Lake's (fall plant) were also caught, but not included in the trend data. One walleye was the only other fish species sampled during the survey and one gillnet resulted in zero fish sampled.

For three consecutive years 2020-2022 rainbow relative abundance was 3.9, 3.6 and 3.3, which is below the management goal range (4-6 RB/net). This prompted a change in our stocking strategy, which is to request 400,000 rainbows be planted annually, up from 300,00 planted historically. Initial indicators look promising as the increase in stocking rates has brought us back into the desired goal range.

See Appendix A for additional floating gillnet summaries.

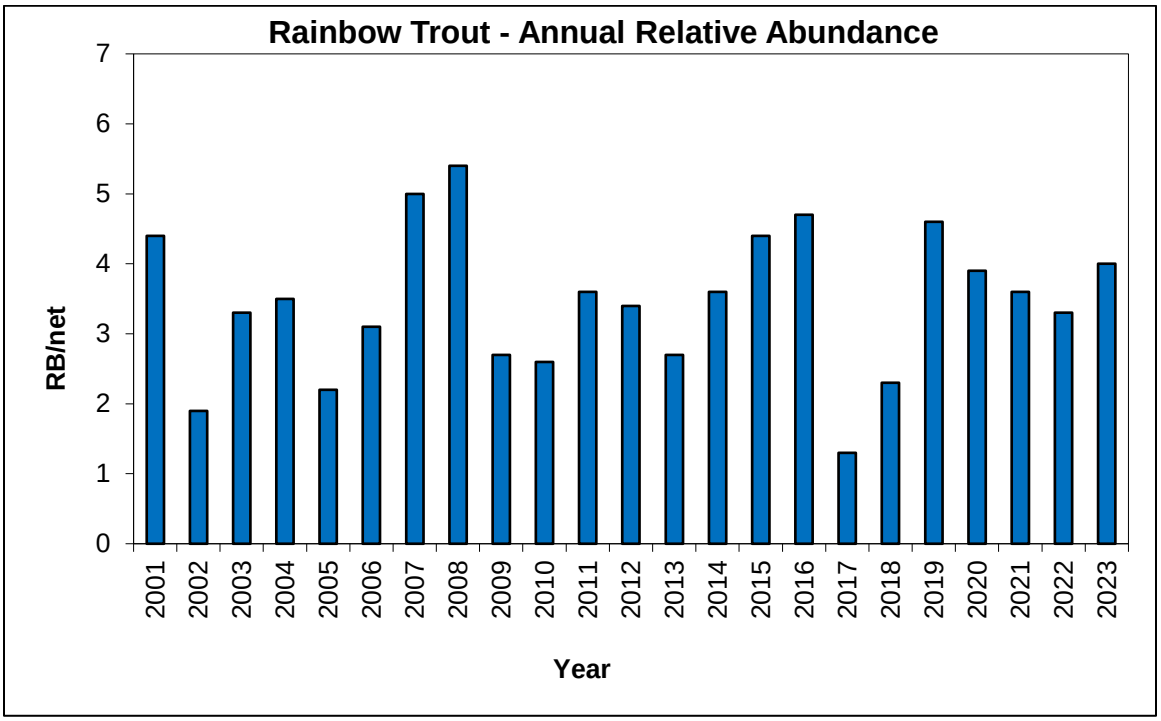


Figure 3: CFR RB fall floating gill net trends, 2001-2023.

June & August (Combined) Sinking Gillnet Series

The 2023 Historic Sinking Gillnetting series was conducted on Canyon Ferry Reservoir on June 12-15 and August 14-17. Seventeen gillnets in June and 16 gillnets in August were fished in the reservoir. Surface water temperatures ranged from 62-70°F in June and 68-73°F in August. June had a mixture of clear and calm to overcast with rain and high winds. Average reservoir forebay elevation (3797 is full pool) levels were 3796 feet in June (nearly full) and 3793 feet in August. Hot air temperatures in the 90's with smoky conditions and calm winds were encountered during August. This gillnetting series has been run periodically since 1955 and annually since 1994. Primary species monitored include yellow perch (YP), suckers, LL and burbot (LING). Table 2 (below) summarizes the current trends for selected species and their status relating to management goals.

Table 2: CFR relative abundance of select fish species from historic sinking gill net series, 2021-2023.

	2021	2022	2023	Status
Yellow Perch	1.4	0.8	2.2	Below management goals (6-10/net)
White Sucker	2.2	2.6	3.0	Below management goals (5-10/net)
Brown Trout	0.0	0.0	0.1	Below management goals (0.5-1.5/net)
Burbot	0.1	0.1	0.0	Below management goals (0.25-0.5/net)

Yellow perch abundance increased to 2.2 per net in 2023 and remained below the current management plan goal range (6-10/net). Yellow perch mean length was 8.6-inches in 2023 (Figure 4).

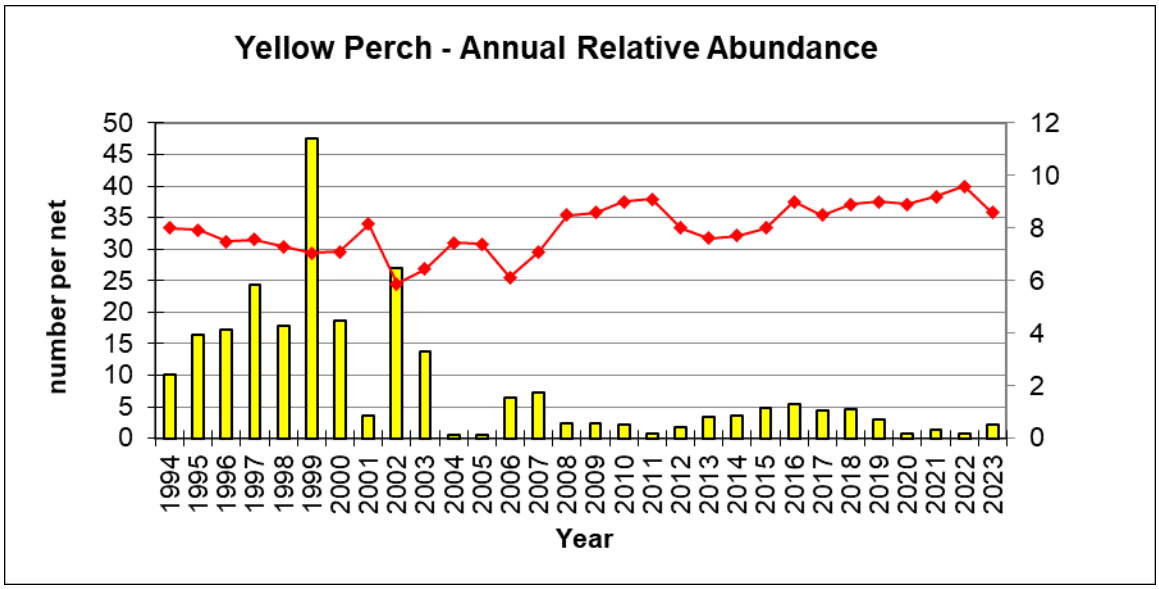


Figure 4: CFR annual yellow perch relative abundance and mean length (red line) from the historic sinking gillnetting series, 1994-2023.

After years of significant decline white sucker (WSU) population relative abundance remained near historical lows in 2023. Furthermore, white sucker juvenile abundance, or fish less than 12-inches, also remained at low levels (Figure 5) in 2023. Overall mean length in 2023 was 14.9-inches, which is above the 2022 length, which was 14.7-inches. Although the current WSU population abundance is historically low, the population level appears to have stabilized in recent years.

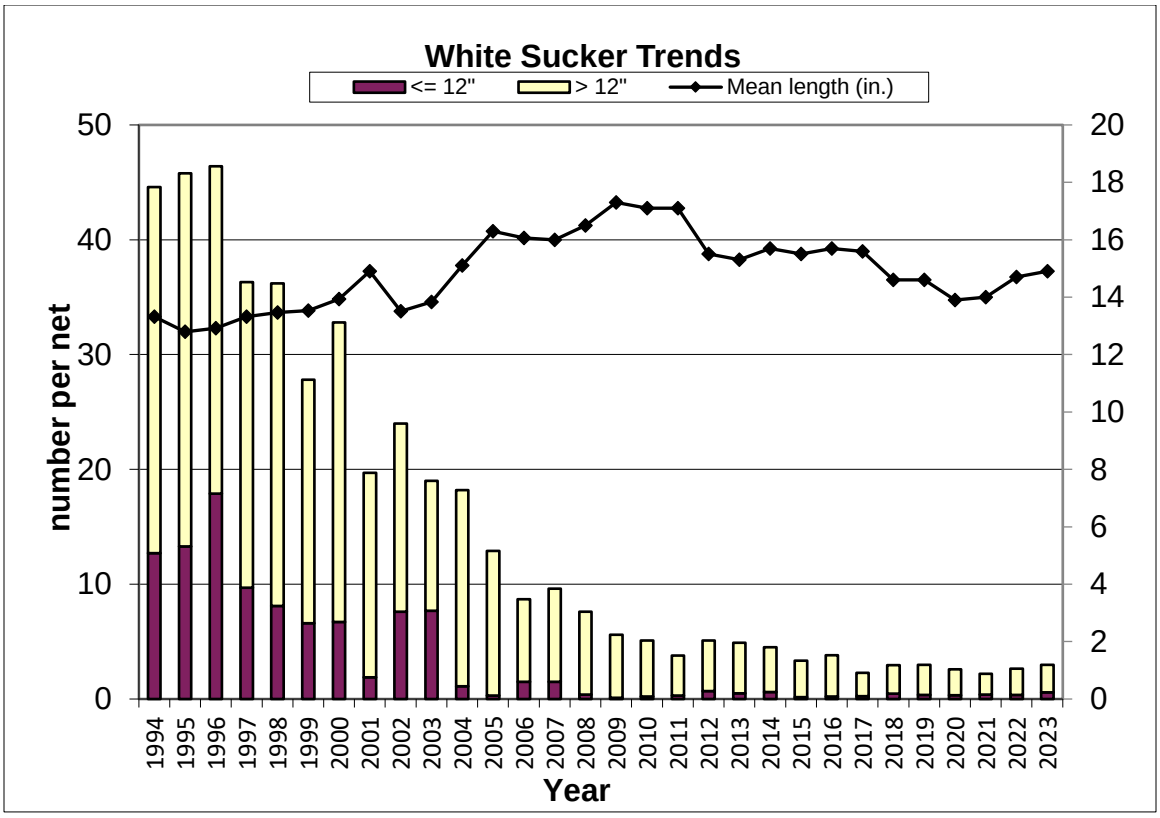


Figure 5: CFR annual population trend for adult and juvenile WSU as well as overall mean length by year.

Non-target predator species relative abundance in the CFR summer sinking gillnets survey (Figure 6) continue to persist at low abundance levels. Brown trout and LING remained at low abundance levels, three northern pike (NP) were sampled, and the WE abundance remained consistent with recent trends. Since 1997, walleye have been the most abundant predator captured in the summer sinking gillnets with 8.2 walleye per net in 2023 being the third highest on record. Multiple age classes of northern pike have been commonly surveyed since 2004 with 52 northern pike sampled in this survey to date.

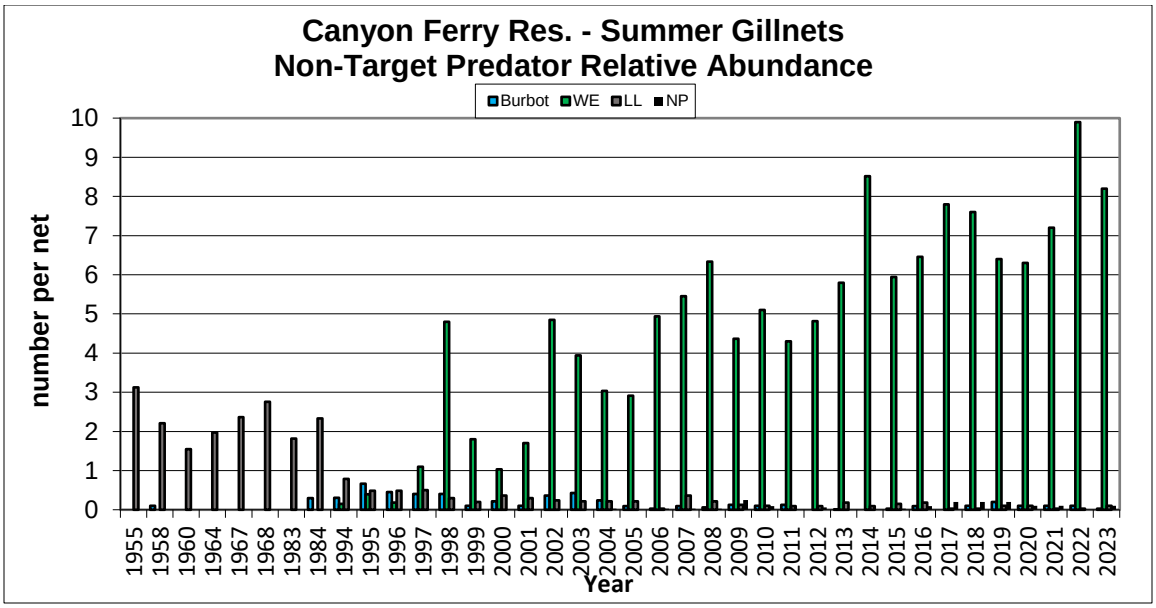


Figure 6: CFR relative abundance of LING, WE, LL, and NP in the historic sinking gill net series, 1955, 1958, 1960, 1964, 1967-68, 1983-84, and 1994-2023.

See Appendix B for more summaries and trends for the historic sinking gillnet series.

Fall Walleye Horizontal Sinking Gillnets

Fifteen experimental gillnets were fished at standardized locations on September 11-14, 2023. The surface water temperature varied from 65ºF to 70°F and the weather in general was moderately warm and calm throughout the survey. The survey was conducted 12-15 days after a full moon. Average reservoir forebay elevation (3797 is full pool) levels were at 3791 feet. This gillnetting series has been conducted annually each fall since 1996.

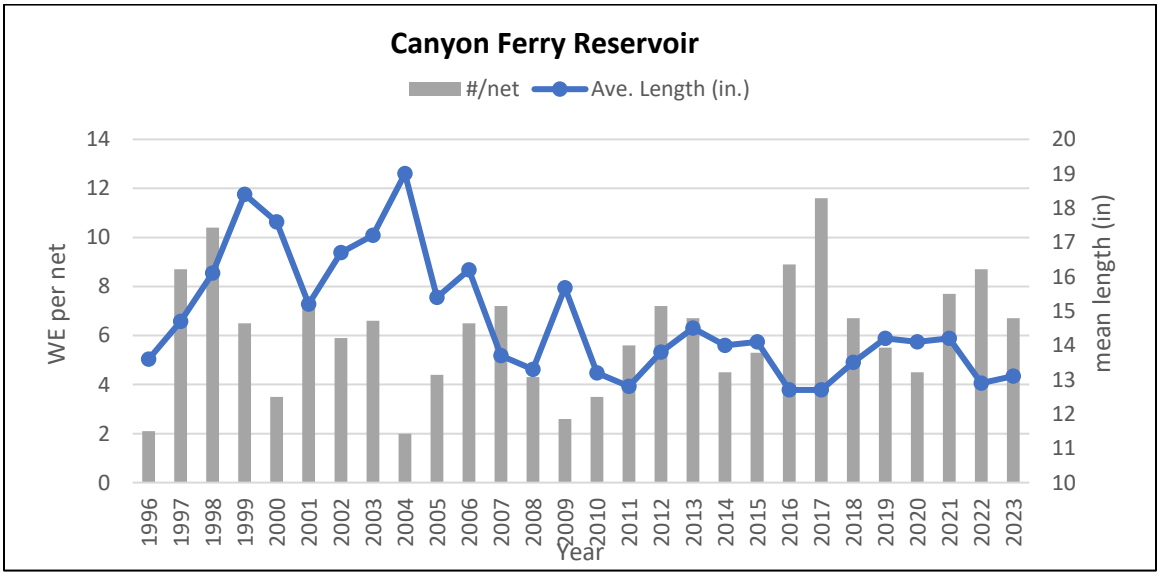


Figure 7: CFR WE annual trends from the fall sinking gillnet survey, 1996-2023.

Walleye abundance decreased to 6.7 per net in 2023 (Figure 7), reaching the management goal range (5-7 walleye per net) after two consecutive years of being above the management goal range. Walleye populations have shown considerable fluctuations annually in Canyon Ferry Reservoir. Stock (S) sized fish (10”-14.9”) made up 68% of the catch in 2023, followed by Relative Stock Density (RSD) Sub Stock (Sub) sized fish (< 10”) at 19%, Preferred (P) sized fish (20”-24.9”) at 5%, Quality (Q) sized fish (15”-19.9”) at 3%, Memorable (M) sized fish (25”-29.9”) at 2% and Trophy (T) sized fish (>30”) at 2 %. Walleye average length was at 13.1 inches in 2023, which was similar to 12.9 inches in 2022 (Figure 7). PSD (proportion of the walleye catch that was 15-inches in total length or greater) was 16%, down from 26% in 2022. PSD continues to be below the management goal range of 30 to 60. Overall mean relative weight (*Wr*) in 2023 was the third lowest on record at 79.4 and it was the tweleth consecutive year the mean *Wr* was below 90 (Table 3).

Table 3: CFR WE relative weight (W_r) and number surveyed (#) in the fall sinking gillnet surveys for select length groups, 1996-2023.

	Length Group (inches)										
Year	10-14"	#	15-19.9"	#	20-24.9"	#	25-29.9"	#	30+"	#	AVE
1996	100.9	19	103.9	6	105.7	1	101.3	1			104.2
1997	94.8	92	101.4	33	100.4	3					96.5
1998	101.6	60	101.1	91	101.3	3					101.2
1999	97.0	4	102.3	62	105.0	29	100.0	1			103.1
2000	101.7	15	105.4	14	103.6	22					103.9
2001	98.6	54	105.1	28	108.6	18	99.7	1			102.1
2002	97.7	32	101.8	33	106.6	14	112.9	5			101.1
2003	94.5	25	94.1	48	99.4	18	98.2	7			95.0
2004	91.0	6	94.8	14	88.2	5	89.7	4	103.2	1	92.5
2005	103.5	20	100.2	45		0					101.3
2006	81.9	39	90.8	46	92.6	7	105.1	3			87.4
2007	81.6	74	86.5	16	97.8	9					84.1
2008	84.3	54	83.2	4	88.9	2	102.5	1			84.8
2009	82.2	26	79.7	2	85.9	2	90.8	7			82.5
2010	84.2	36	87.5	8	88.9	2					85.7
2011	90.1	63	85.2	9	98.2	1					90.1
2012	84.7	66	84.9	29	100.9	8	95.0	1			85.9
2013	85.5	43	87.5	39	97.7	5	97.3	3	97.8	2	86.4
2014	82.3	26	81.7	17	86.0	6	97.7	2			82.9
2015	81.2	44	89.7	21	87.8	6	84.0	1			84.7
2016	82.5	91	87.8	13	90	3	97.4	3			84.7
2017	79.6	151	88.9	10	94.8	4	91.0	1			80.5
2018	83.0	78	87.2	6	106.7	6	101.1	2	106.0	1	77.5
2019	79.0	58	83.7	1	100.8	4	96.9	2	98.6	2	85.4
2020	81.1	44	80.5	4	95.0	2	106.6	5	109.0	2	82.4
2021	79.5	74	82.6	19	94.7	6	110.0	1	103.7	4	82.3
2022	76.9	74	79.5	14	83.0	9	101.1	1	88.6	2	78.3
2023	78.1	69	81.1	3	89.0	5	95.3	2	99.3	3	79.4

See Appendix C for additional net catch, (RSD) and (Wr) summaries.

Beach Seine

Sixty beach seine hauls were conducted at standardized locations throughout Canyon Ferry Reservoir on August 21-23, 2023. Seining conditions were overcast and rainy on day one, extremely windy on day two and calm with sun on day three. Water temperatures during sampling ranged from 66-72°F. Average reservoir forebay elevation (3797 is full pool) levels were 3792 feet during the survey. Cooler than normal water temperatures with higher-than-normal reservoir levels were experienced during the survey. Vegetation abundance and distribution appeared to be minimal to non-existent throughout the reservoir.

Table 4: Number of fish per beach seine haul in CFR, 1991-2023.

		Number per Haul				
Year	**# of Hauls**	**YP**	**Suckers**	**Walleye**	**Other***	**Total**
1991	30	1490.3	-----	0.0	0.3	1490.6
1992	30	785.5	313.2	0.0	2.1	1100.9
1993	30	916.5	138.4	0.0	0.6	1055.5
1994	60	29.6	101.7	<0.1	2.5	133.9
1995	60	561.9	100.9	0.2	0.5	663.5
1996	60	173.7	305.0	<0.1	2.1	480.8
1997	60	203.9	144.8	0.3	1.0	350.0
1998	60	225.6	222.5	0.0	9.4	457.5
1999	60	144.6	244.8	0.1	4.2	393.8
2000	60	50.9	181.5	0.1	2.3	234.8
2001	57	1036.1	75.6	0.1	1.0	1112.7
2002	60	240.1	11.0	0.5	0.5	252.0
2003	60	91.1	4.0	0.1	1.0	96.3
2004	60	11.1	6.2	0.1	0.8	18.1
2005	60	117.7	8.7	1.3	0.8	128.4
2006	60	59.8	0.9	0.9	1.8	63.4
2007	60	13.5	0.4	0.2	0.8	14.9
2008	60	108.0	1.9	0.4	1.2	110.8
2009	60	71.0	3.7	3.2	1.2	79.1
2010	60	65.7	12.4	0.8	2.7	81.6
2011	60	222.8	8.9	1.2	0.5	233.4
2012	60	45.1	2.1	1.3	0.9	49.4
2013	60	74.7	1.7	0.7	2.7	79.8
2014	60	36.2	0.0	1.8	0.3	38.4
2015	60	27.4	0.2	0.1	0.5	28.2
2016	60	62.0	0.6	1.9	5.7	70.2
2017	60	37.8	0.2	1.9	2.0	41.9
2018	60	77.5	1.7	0.3	2.4	81.9
2019	60	26.4	1.1	3.0	1.7	32.2
2020	60	150.2	0.3	10.3	2.0	162.8
2021	56	6.3	0.9	0.2	1.1	8.5
2022	60	31.9	0.9	3.6	13.1	49.5
2023	60	48.2	0.5	1.5	1.2	51.4

Mean	219.5	59.3	1.1	2.1	277.0

*Other species include brown trout, rainbow trout, sculpin, mountain whitefish, carp, longnose dace, smallmouth bass, largemouth bass, bluegill, fathead minnow, flathead chub, burbot, and northern pike.

Survey results in 2023 were similar to levels observed in 2022; however, numbers were still well below the long-term average (Table 4). Yellow perch were the most abundant catch (48.2 per tow), comprising 94% of the total catch and were present in 25% of seine hauls. Walleye (3%) were the second most abundant species in 2023, followed by bluegill (2%), and white sucker (2%). Rainbow, carp, smallmouth bass, fathead minnows and sculpin made up the remaining 2% of the total species surveyed. Thirteen tows (22%) captured no fish.

See Appendix D for additional beach seine summaries.

Creel Surveys

Summer Creel

Summer creel surveys were conducted on weekends from April 15- October 29, 2023. Over 55 creel days, 1,089 anglers were interviewed compiling 4295.5 angler hours and catching 2,582 fish (Table 5). The average completed trip was 5.0 hours, equating to 3.0 fish per trip. Lengths and weights were collected from 850 fish (668 WE, 139 RB, 41 YP, one smallmouth bass and one brown trout). Average WE length was 13.3-inches and the average RB was 18.8-inches. Catch rates for RB were 0.14 per hour among all anglers (Table 5) and 0.45 per hour among anglers targeting only trout (Appendix E). Walleye catch rates were 0.41 fish per hour among all anglers (Table 5) and 0.66 per hour for anglers targeting WE (Appendix E). The number of YP being caught has remained low for several years. Anglers surveyed during the 2023 creel reported 111 YP, which averaged 9.9-inches.

Walleye were the most designated target species, at 43%, followed by RB at 32%, any fish (undesignated) at 12%, trout/walleye (combined) at 5%, YP/WE (combined) at 4%, carp at 1%, and trout/perch/walleye (combined) at 1%. Boat anglers eclipsed shore anglers 55.5% to 44.5%. Historically the normal ratio is 60/40 to 50/50 with boat anglers holding a slight advantage. Walleye target-boat anglers are the dominant group on Canyon Ferry. The percentage of caught fish that were kept by anglers was 33% for RB, 46% for WE, and 45% for YP. This trend of releasing more than half the fish caught has become the norm in recent years. Most anglers were from Gallatin (34%), Lewis and Clark (20%), and Broadwater (14%) counties. Other significant angler origin designations in 2023 were east of the divide and Silverbow County (7% each), Jefferson County (5%), and out of state and west of the divide (4% each). Angler county origins of

Cascade, Powell, Meagher, Madison, and Deer Lodge rounded out the remaining 5% identified angler origins.

Table 5: CFR summer creel summary for all angler interviews, 1986-2023.

			Catch Rate (fish per hour)				
Year	# Interviews	Total Fish	Rainbow	Brown	Perch	Walleye	Other
1986	1532	3306	0.28	0.01	0.36	0	0.03
1987	2362	6127	0.2	<0.01	0.67	0	0.05
1988	2979	5828	0.22	<0.01	0.36	0	0.04
1989	1460	1443	0.16	<0.01	0.13	0	0.03
1990	2809	1419	0.14	<0.01	0.03	0	0.01
1991	1904	1320	0.11	<0.01	0.15	0	0.05
1992	711	1226	0.33	0.01	0.2	0	0.03
1993	1955	2925	0.37	<0.01	0.08	0	0.02
1994	1460	1373	0.25	<0.01	0.01	0	0.02
1995	1584	1508	0.16	<0.01	0.13	0	0.03
1996	1511	1386	0.17	<0.01	0.09	<0.01	0.02
1997	1852	3811	0.2	<0.01	0.42	<0.01	0.01
1998	1040	3171	0.12	<0.01	0.66	0.05	0.01
1999	1510	2974	0.14	<0.01	0.36	0.02	0.01
2000	2645	2707	0.12	<0.01	0.1	0.04	0.01
2001	3314	5342	0.12	<0.01	0.16	0.06	0.02
2002	2253	2780	0.13	<0.01	0.12	0.03	0.03
2003	4266	6185	0.05	<0.01	0.11	0.13	0.03
2004	2974	3602	0.04	<0.01	<0.01	0.22	<0.01
2005	2613	1706	0.04	<0.01	<0.01	0.1	0.01
2006	1774	2507	0.06	0	0.02	0.22	<0.01
2007	1623	2359	0.05	<0.01	0.04	0.19	0.11
2008	1157	1535	0.18	<0.01	0.05	0.13	0.03
2009	1976	1872	0.07	<0.01	0.04	0.21	0.06
2010	2643	2910	0.19	<0.01	0.03	0.14	0.01
2011	2593	2920	0.19	<0.00	0.06	0.21	0.01
2012	1627	2036	0.13	<0.01	0.02	0.2	0.01
2013	1775	1747	0.08	<0.01	0.02	0.15	0.01
2014	1513	2764	0.15	<0.01	0.02	0.33	0.01
2015	1725	3052	0.19	<0.01	0.02	0.26	0.01
2016	1785	3887	0.16	<0.01	0	0.37	0.01
2017	1952	4758	0.13	<0.01	0.05	0.43	0.02
2018	853	1048	0.06	0	0.05	0.23	0.02
2019	1263	2203	0.07	0.001	0.04	0.34	0.02
2020	1477	3112	0.23	0.001	0.03	0.28	0.04
2021	976	1617	0.08	0.001	0.03	0.25	0.03
2022	1369	3909	0.12	0.001	0.04	0.43	0.05
2023	1089	2582	0.14	0.001	0.03	0.41	0.03
Mean	1892	2815	0.15	0.003	0.13	0.21	0.03

Winter Creel

Winter creel surveys were conducted on weekends during ice-covered months from January 7 – March 26, 2023. There were 22 creel days and 992 anglers were interviewed compiling 3924.8 angler hours and catching 1,152 fish (Table 6). The average completed trip was 5.2 hours and the average angler caught 1.5 fish per trip. Lengths and weights were collected from 764 fish (429 YP, 140 RB, 167 WE, 21 burbot, 4 carp, 2 LNSU and one WSU). Average YP length was 10.0-inches, average RB length was 18.4-inches, and WE average length was 12.6-inches.

Table 6: CFR winter creel summary for all angler interviews, 1986-2023.

			Catch Rate (fish per hour)				
	# Interviews	Total Fish	Rainbow	Brown	Perch	Walleye	Ling
1986	557	6844	0.11	<0.01	3.68	0	0
1987	951	8688	0.25	<0.01	2.28	0	0
1988	1411	7926	0.26	<0.01	1.74	0	<0.01
1989	287	2158	0.19	<0.01	1.94	0	0
1990	756	2578	0.11	<0.01	0.91	0	<0.01
1991	884	2674	0.08	<0.01	0.95	0	0.01
1992	899	2004	0.06	<0.01	0.66	0	0.01
1993	1101	5405	0.35	<0.01	0.95	0	0.03
1994	822	1413	0.42	<0.01	0.13	0	0.01
1995	635	1028	0.2	<0.01	0.2	0	0.02
1996	1225	2165	0.2	<0.01	0.22	0	0.02
1997	844	1962	0.16	0	0.43	0	0.03
1998	1596	5313	0.21	<0.01	0.75	0	0.04
1999	1179	9021	0.19	<0.01	2.2	0	0.01
2000	840	2578	0.14	<0.01	0.78	0	0.03
2001	1709	5629	0.10	<0.01	0.73	0	0.02
2002	1796	11780	0.07	0	1.5	<0.01	<0.01
2003	1321	9810	0.11	0	1.81	0	0.45
2004	2128	10480	0.08	<0.01	1.16	<0.01	0.08
2005	1988	3252	0.14	<0.01	0.33	<0.01	<0.01
2006	1114	789	0.20	<0.01	0.03	0	0.01
2007	1865	2990	0.16	0	0.26	0.01	0.01
2008	1104	2396	0.31	<0.01	0.46	0.01	<0.01
2009	1438	1630	0.17	0	0.14	<0.01	<0.01
2010	1402	1100	0.13	0	0.11	<0.01	<0.01
2011	1394	1272	0.16	0	0.09	0	0
2012	1050	1495	0.25	0.001	0.18	0.01	0.001
2013	831	763	0.19	0.001	0.1	0.01	0.001
2014	634	784	0.25	0.001	0.15	0.01	0.001

2015	915	1059	0.25	0.001	0.12	0.01	0.00001
2016	1871	2706	0.16	0.001	0.26	0.02	0.001
2017	2040	3210	0.15	0	0.27	0.02	0
2018	2040	1899	0.09	0	0.14	0.01	0.001
2019	520	273	0.10	0	0.04	0.005	0.002
2020	558	515	0.22	0	0.02	0.02	0.002
2021	1153	829	0.10	0	0.09	0.02	0.01
2022	913	893	0.11	0.001	0.11	0.03	0.005
2023	992	1152	0.08	0.001	0.14	0.06	0.01
Mean	1178	3381	0.17	0.0004	0.69	0.01	0.03

Overall winter catch rates for YP were 0.14 per hour among all anglers (Table 6) and 0.23 per hour among anglers targeting only perch (Appendix E). Catch rates for RB were 0.08 per hour among all anglers and 0.18 per hour among anglers targeting only trout. WE catch rates and anglers targeting them have increased in recent years to 0.06 per hour for all anglers; however, only eighteen anglers specifically targeted WE, which resulted in a catch rate of 0.18 per hour.

The majority of winter anglers targeted YP and WE (combined,37%), followed by anglers targeting Any Fish and RB (16% each), YP (14%), trout/perch/walleye (combined, 6%) and the remaining anglers targeted other combinations. Angler origin was similar to summer creel, with most anglers from Gallatin (46%), Broadwater (17%), and Lewis and Clark (14%) counties; remaining anglers were from various other Montana counties or regions. Approximately 2% of those interviewed were from out of state.

See Appendix E for additional winter and summer creel summaries.

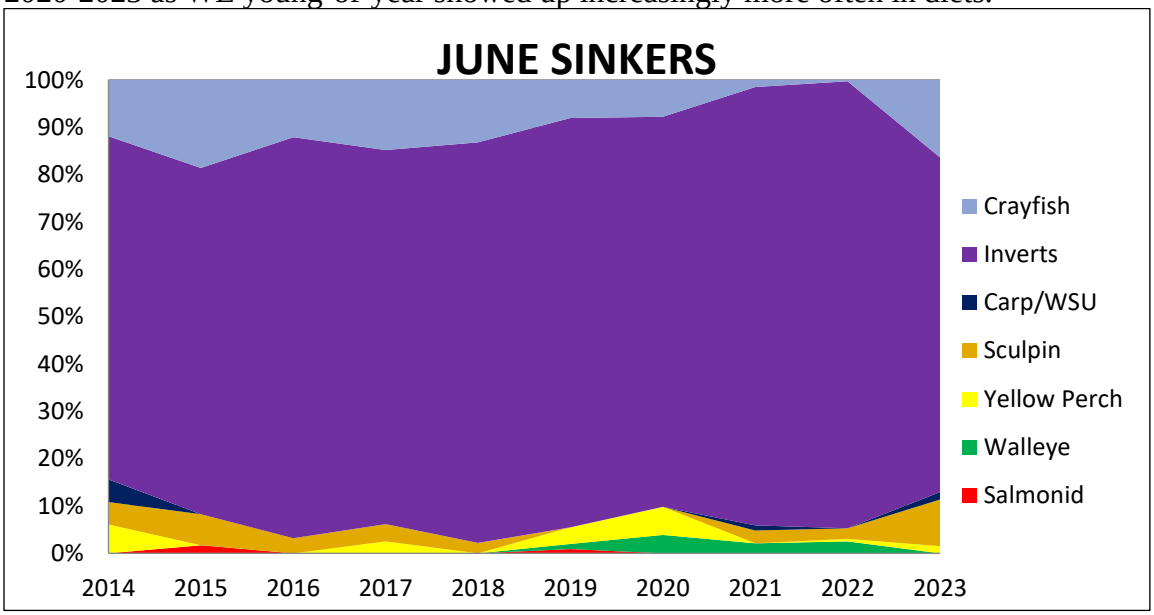
Special Projects

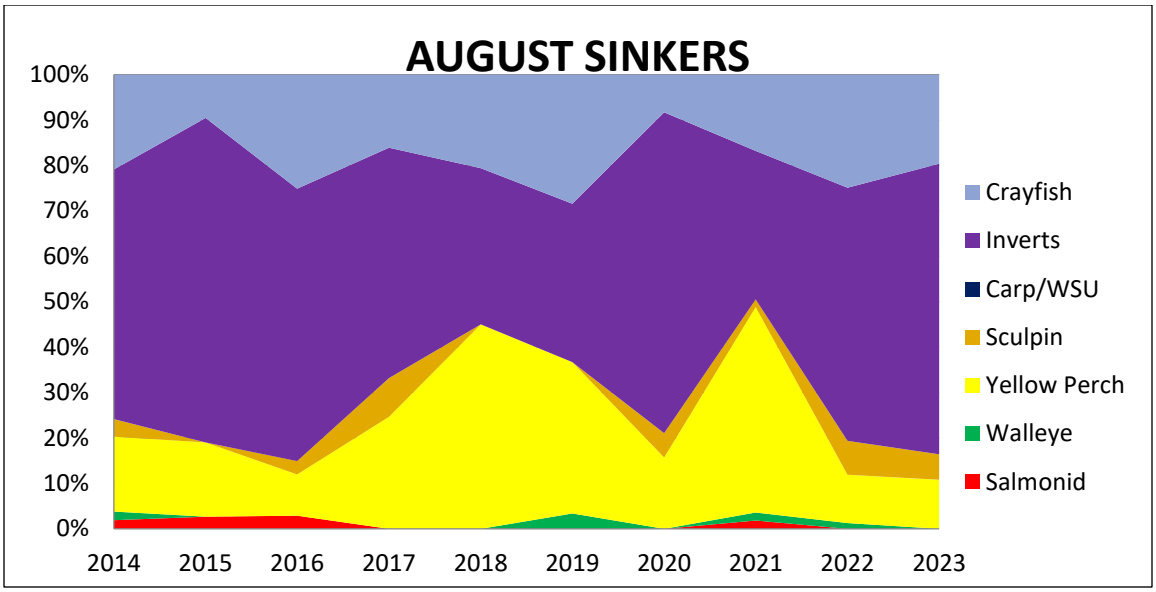
Yellow Perch Christmas Tree Project

Since 1999, FWP has worked with Walleyes Unlimited, Helena Boy and Girl Scouts, Townsend Chamber of Commerce, the City of Helena and Broadwater County Sanitation to recycle Christmas trees for yellow perch spawning habitat. The project is known as Pines for Perch. In the beginning years of the project, trees were bundled and manually placed in the lake either by barge or drug out on the ice using sleds and OHV's. Currently, bundles are constructed on shore and placed in the reservoir post ice-out via helicopter. Twenty-seven bundles, made up of approximately 1,775 trees, were placed into Canyon Ferry in 2023. Habitat bundles were placed in the reservoir in early April after ice-off. Two DNRC helicopters were used to place bundles in the reservoir for the twelfth consecutive year of the project. Total project costs in 2023 were approximately $6,000.

Walleye Diet

Stomach samples were collected from WE during the June, August and September horizontal sinking gillnet surveys. Food habits for the period 2014-2023 are presented in Figure 8. June diets have consistently been dominated by aquatic invertebrates, primarily midge larvae. Forage fish availability in June is nearly non-existent as the previous year's hatch has already been cropped back by the previous fall. August diets have varied over time and are dependent on forage fish availability. In the years 2014, 2018, 2019 and 2021 yellow perch showed up significantly in the walleye diets. Crayfish and aquatic macroinvertebrates are an important component of August diets, but not at the levels seen in June diets. September diets are dependent on forage fish availability as well. During most years the abundance of forage fish has already been nearly depleted by September. Interestingly, 2015 had a spike in salmonids in WE diets with most of these being identified as rainbow trout. Crayfish and aquatic macroinvertebrates are also an important component of September WE diets. Cannibalism became more prevalent in 2020-2023 as WE young-of-year showed up increasingly more often in diets.





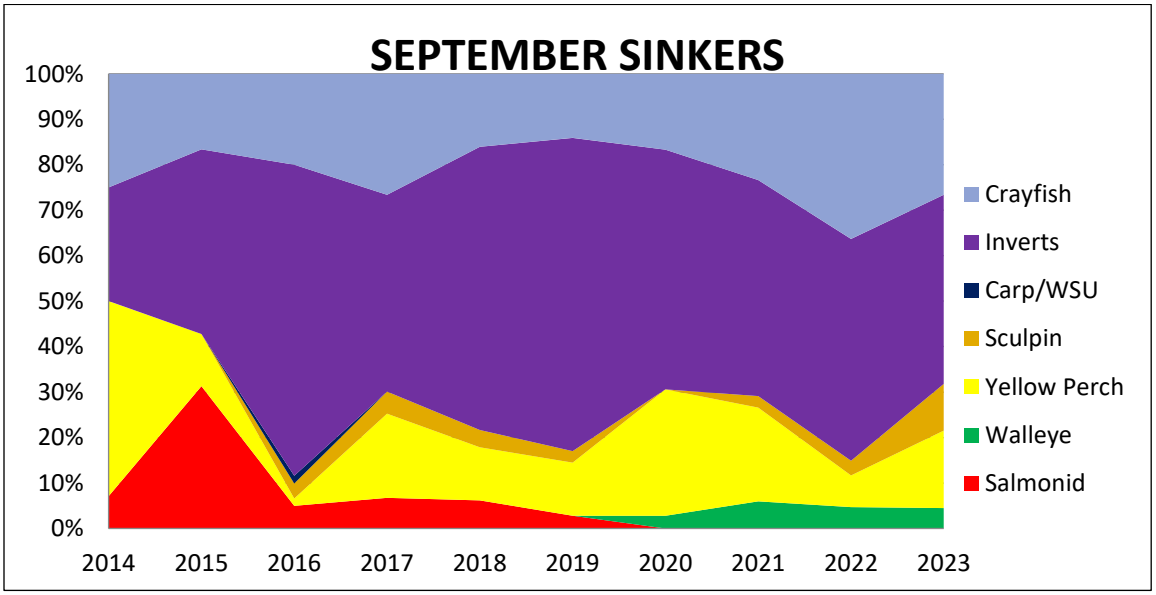
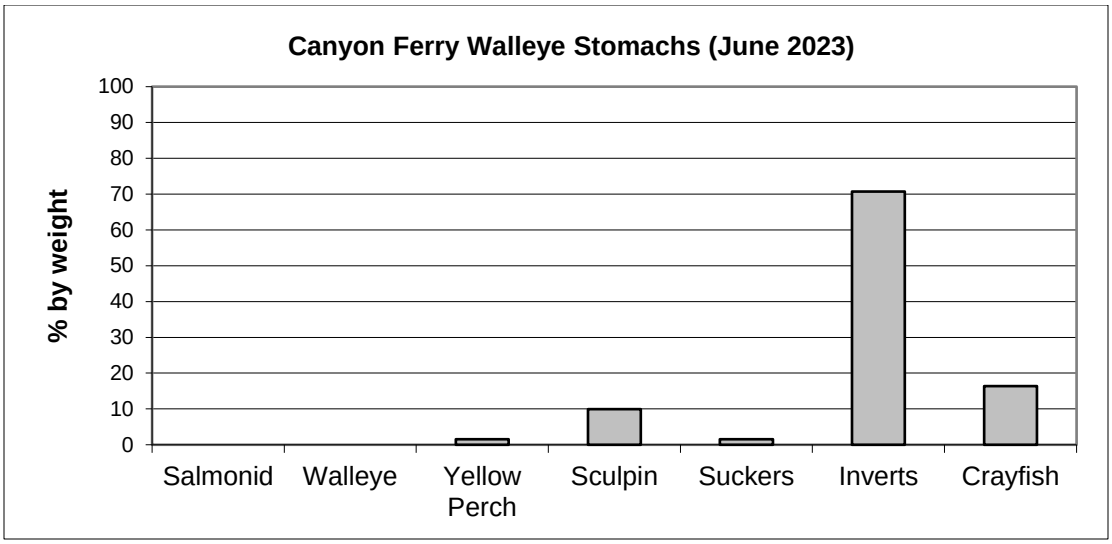


Figure 8: CFR WE diet analysis, 2014-2023.

June 2023, WE diets were comprised of 70.7% aquatic macroinvertebrates (Figure 9), 16.4% crayfish, 9.9% sculpin, 1.5% sucker and 1.5% YP. August WE diets were comprised of 63.9% aquatic macroinvertebrates, 19.6% crayfish, 10.8% YP and 5.6% sculpin. September WE diets were comprised of 41.6% aquatic macroinvertebrates, 26.6% crayfish, 17.0% YP, 10.3% sculpin and 4.5% WE.



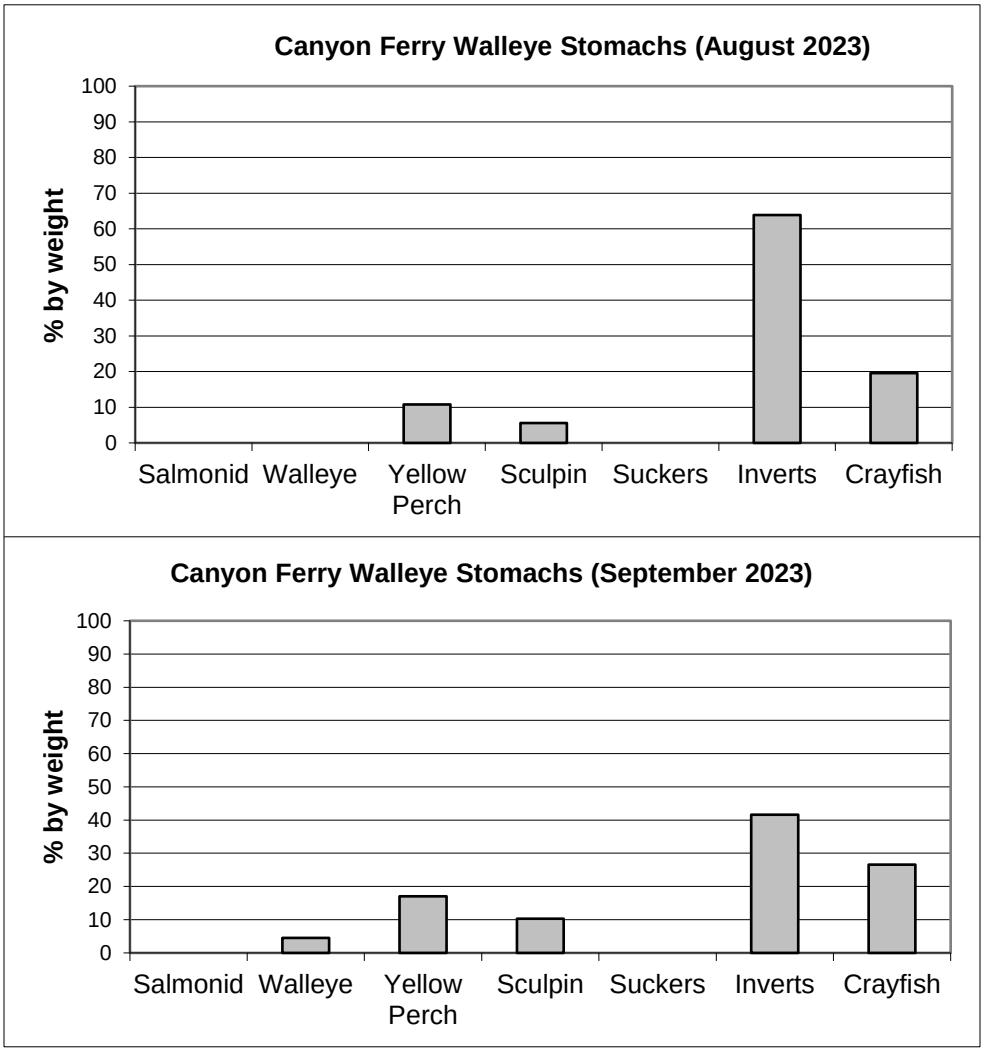
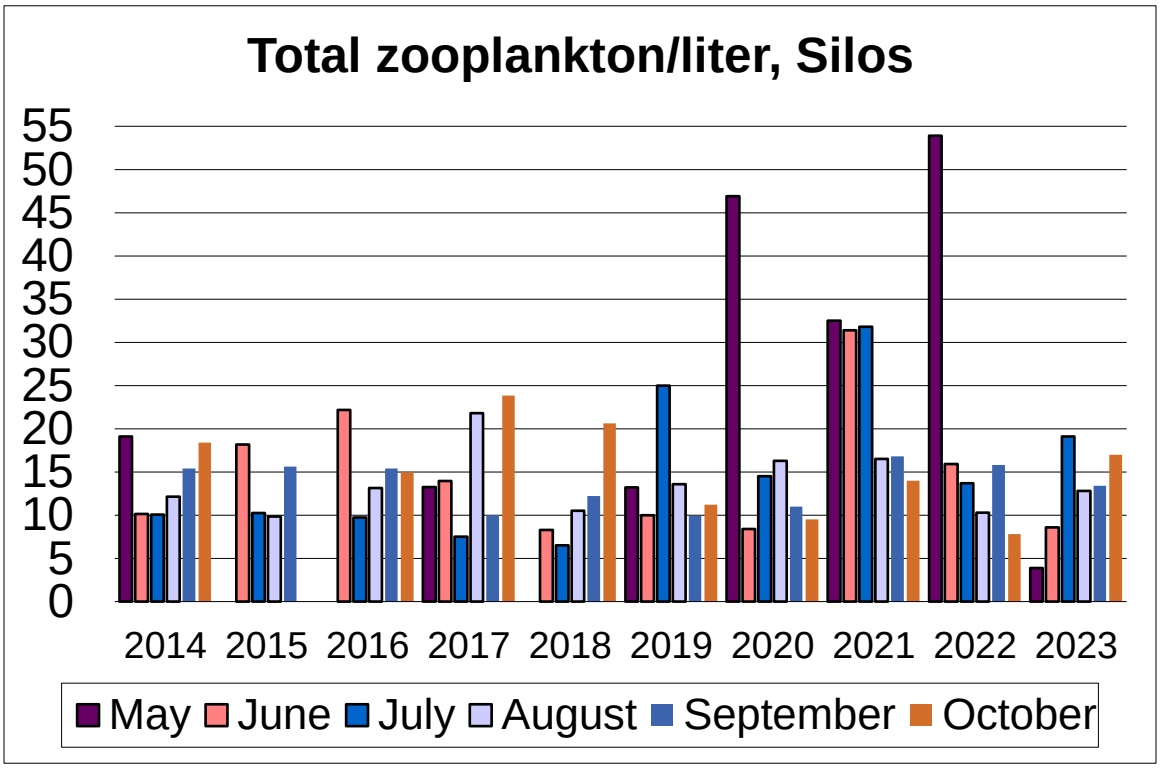
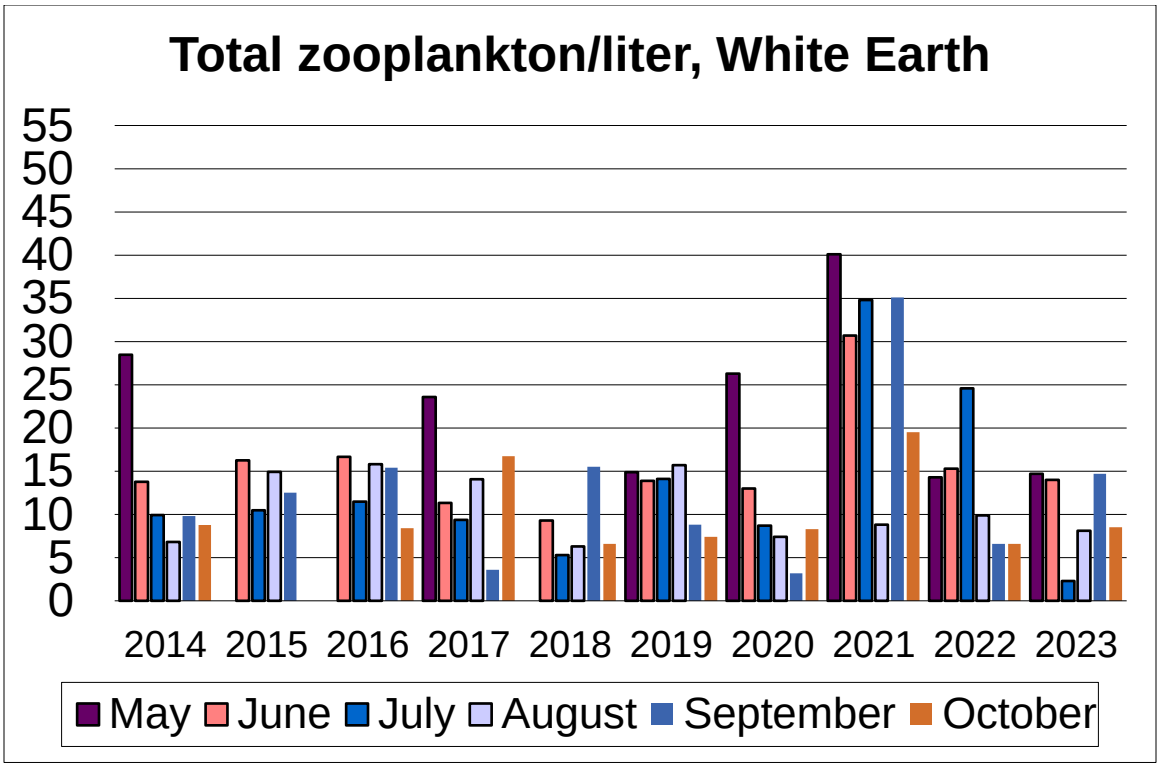


Figure 9: CFR WE diet analysis, 2023.

Zooplankton

Zooplankton densities have remained relatively consistent over time. Monthly and annual variations do occur; however, these changes are typically short term. CFR does have a management goal to maintain a mid-summer (June, July and August) zooplankton density of 20 per liter. Mid-summer densities in 2023 (Figure 10) for the Silos, White Earth and Cemetery Island locations did not have any month reach the goal. Interestingly, May at Cemetery Island had densities of 71.8 zooplankton per liter, which is the fourth highest on record for the period 1996-present. For the period 2014-2023 most months are below the zooplankton density goal of 20 per liter.





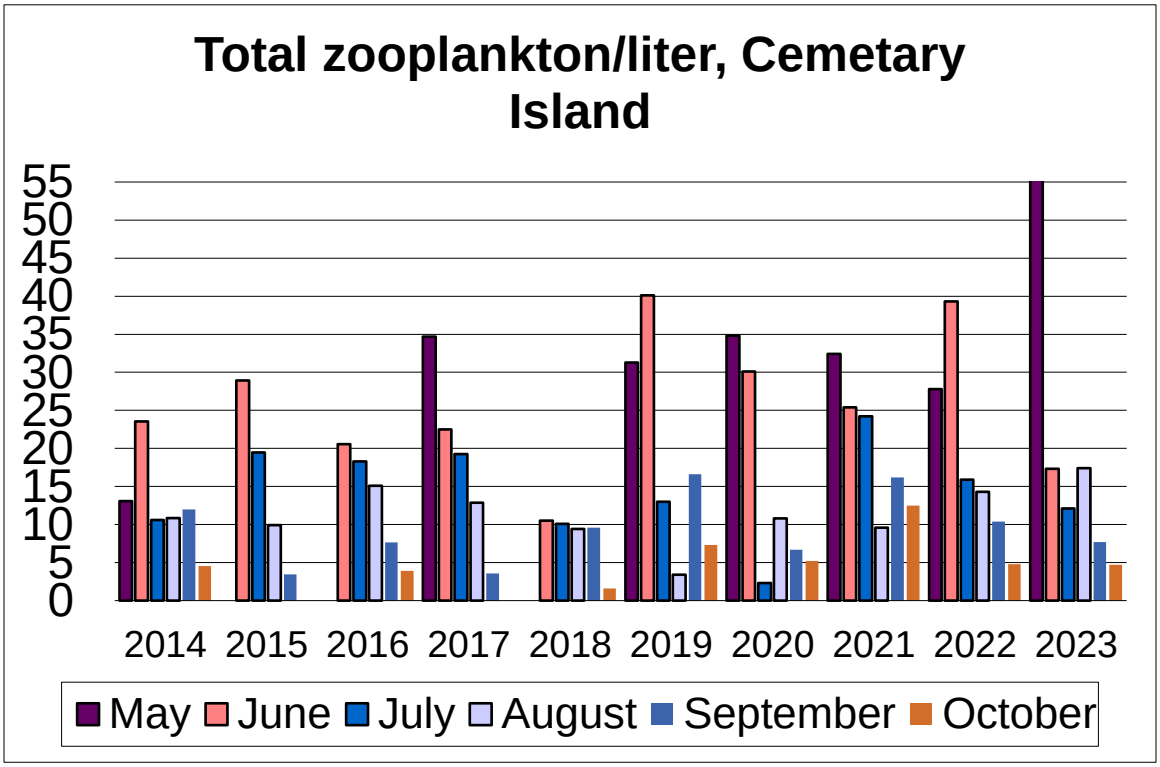


Figure 10: CFR Zooplankton analysis, 2014-2023.

Literature Cited

Lere, M. 1987. Statewide fisheries investigations, mid-Missouri reservoirs study. Montana Fish, Wildlife and Parks. Job progress report F-36-R-2, II-f, Helena.

McFarland, R.C. 2006. Montana statewide angling pressure 2005. Montana Fish, Wildlife and Parks. Helena.

Montana Fish, Wildlife and Parks. 2010. Upper Missouri River reservoir fisheries management plan 2010-2019. Helena

Montana Fish, Wildlife and Parks. 2020. Upper Missouri River reservoir fisheries management plan 2020-2029. Helena

Yerk, D.B. 2000. Population characteristics and habitat use of a developing walleye population in Canyon Ferry Reservoir, Montana. Master's thesis, Montana State University, Bozeman.

APPENDICIES

Appendix A: Additional trends and surveys from annual fall (October) floating gillnet surveys.

Table 7: Number of fish per net (*N*).

Year	RB	LL	YP	WSU	LNSU	Carp	MWF	UC	WE	NP	Other	# Nets
1986	7.6	0.3	0.0	0.0	0.1	0.2	0.0	0.2	0.0	0.0	0.1	18
1987	16.4	0.3	0.0	0.7	0.0	0.8	0.0	0.2	0.0	0.0	0.0	18
1988	10	0.3	0.0	0.4	0.0	1.7	0.2	0.4	0.0	0.0	0.0	18
1989	7.2	0.7	0.0	0.6	0.1	0.4	0.0	0.7	0.1	0.0	0.0	18
1990	4.4	0.4	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.0	18
1991	6.7	0.3	0.0	0.5	0.0	1.2	0.1	2.0	0.0	0.0	0.0	18
1992	18.2	0.2	0.0	0.7	0.0	1.3	0.0	0.9	0.0	0.0	0.1	18
1993	26.2	0.4	0.0	0.2	0.1	0.7	0.0	0.2	0.0	0.0	0.0	18
1994	23.1	0.5	0.0	0.3	0.1	0.7	0.0	0.1	0.1	0.0	0.0	18
1995	10.9	0.2	0.0	0.4	0.0	0.6	0.0	0.2	0.0	0.0	0.0	18
1996	10.3	0.2	0.0	1.2	0.0	1.1	0.2	0.2	0.1	0.0	0.0	18
1997	9.6	0.3	0.0	0.3	0.1	1.2	0.0	0.1	0.2	0.0	0.0	18
1998	9.2	0.7	0.0	0.2	0.1	0.7	0.0	0.1	0.2	0.0	0.0	18
1999	10.2	0.3	0.0	0.2	0.0	2.4	0.0	0.1	0.2	0.0	0.0	18
2000	11.9	0.3	0.0	0.1	0.1	0.9	0.0	0.0	0.0	0.0	0.0	18
2001	4.4	0.1	0.0	1.1	0.1	0.1	0.0	0.0	0.2	0.0	0.0	18
2002	1.9	0.3	0.0	0.2	0.0	2.1	0.0	0.0	0.0	0.0	0.0	18
2003	3.3	0.0	0.0	0.1	0.0	0.9	0.0	0.1	0.3	0.0	0.0	18
2004	3.5	0.1	0.0	0.0	0.0	0.8	0.0	0.0	0.1	0.0	0.0	18
2005	2.2	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0	18
2006	3.1	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.1	0.0	0.0	18
2007	5	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	18
2008	5.4	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	18
2009	2.7	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18
2010	2.6	0.3	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	18
2011	3.6	0.1	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	18
2012	3.4	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	18
2013	2.7	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	18
2014	3.6	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	18
2015	4.4	0.3	0.0	0.0	0.1	0.6	0.0	0.0	0.1	0.0	0.0	18
2016	4.7	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	18
2017	1.3	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	18
2018	1.9	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	18
2019	4.6	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	18
2020	3.9	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	18
2021	3.6	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	18
2022	3.3	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	18
2023	4.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	18

Appendix B: Catch summary for historic sinking net series (June and August). Series run periodically since 1955 and annually from 1994 to 2023.

Table 8: Number of fish per net (*N*).

Year	RB	LL	YP	WSU	LNSU	Carp	MWF	Burbot	WE	NP	Other
1955	1.9	3.1	7.6	192.2	40.2	13.6	3.7	0.0	0.0	0.0	1.1
1958	0.5	2.2	43.1	129.0	3.2	6.4	0.3	0.1	0.0	0.0	1.6
1960	0.7	1.5	24.1	104.4	3.2	5.1	0.3	0.0	0.0	0.0	0.6
1964	0.7	2.0	79.2	56.8	3.0	6.0	0.2	0.0	0.0	0.0	0.2
1967	0.7	2.4	30.8	39.0	5.0	6.1	1.2	0.0	0.0	0.0	0.5
1968	2.6	2.8	63.8	28.6	7.5	4.2	0.9	0.0	0.0	0.0	0.3
1983	0.9	1.8	71.3	48.5	2.2	1.5	1.6	0.0	0.0	0.0	0.6
1984	0.4	2.3	62.3	52.6	6.2	1.2	4.8	0.3	0.0	0.0	1.9
1994	2.7	0.8	10.1	44.6	2.1	2.1	1.5	0.3	0.2	0.0	0.7
1995	2.2	0.5	16.4	45.8	4.5	1.1	1.1	0.7	0.4	0.0	0.2
1996	2.7	0.5	17.2	46.4	3.1	1.6	0.6	0.5	0.2	0.0	0.4
1997	1.3	0.5	24.4	36.3	3.9	1.5	0.5	0.4	1.1	0.0	0.4
1998	1.1	0.3	17.8	36.2	3.6	1.9	0.1	0.4	4.8	0.0	0.3
1999	1.8	0.2	46.7	27.8	3.1	0.9	0.0	0.1	1.8	0.0	0.2
2000	1.5	0.4	18.6	32.8	2.9	1.0	0.1	0.2	1.0	0.0	0.1
2001	1.2	0.3	3.7	19.8	0.9	1.7	0.0	0.1	1.7	0.0	0.4
2002	1.4	0.2	26.9	24.0	2.0	1.5	0.1	0.4	4.8	0.0	0.4
2003	1.4	0.2	13.7	19.0	2.2	2.0	0.0	0.4	3.9	0.0	0.1
2004	0.4	0.2	0.5	18.2	0.8	1.1	0.0	0.2	3.0	0.0	0.1
2005	0.3	0.2	0.5	12.9	0.8	0.9	0.1	0.1	2.9	0.0	0.0
2006	0.5	0.0	6.4	8.8	0.4	1.4	0.0	0.0	4.9	0.0	0.2
2007	0.6	0.4	7.2	9.6	1.0	1.5	0.0	0.1	5.5	0.0	0.1
2008	0.6	0.2	2.3	7.7	1.2	0.5	0.0	0.1	6.3	0.0	0.2
2009	0.5	0.1	2.4	5.6	1.4	1.0	0.0	0.1	4.4	0.3	0.1
2010	1.3	0.1	2.1	5.5	0.8	1.3	0.0	0.1	5.1	0.1	0.1
2011	0.8	0.1	0.8	3.8	1.3	1.4	0.0	0.1	4.3	0.0	0.1
2012	0.7	0.1	1.7	5.1	1.1	1.2	0.0	0.0	4.8	0.1	0.0
2013	0.8	0.2	3.3	4.9	1.7	1.8	0.1	0.0	5.8	0.0	0.0
2014	0.8	0.1	3.6	4.5	1.2	1.5	0.0	0.0	8.5	0.0	0.2
2015	1.3	0.2	4.9	3.4	1.6	1.3	0.0	0.0	5.9	0.0	0.0
2016	0.8	0.2	5.5	3.8	2.2	1.2	0.0	0.1	6.5	0.1	0.1
2017	0.7	0.0	4.5	2.3	1.1	1.5	0.0	0.0	7.8	0.2	0.1
2018	1.0	0.03	4.6	3.0	1.0	1.5	0.0	0.1	7.6	0.2	0.0
2019	0.6	0.1	2.9	3.0	1.1	1.6	0.03	0.2	6.4	0.2	0.03
2020	0.8	0.1	0.8	2.6	0.6	1.3	0.0	0.1	6.3	0.1	0.03
2021	0.5	0.0	1.4	2.2	0.6	1.3	0.0	0.1	7.2	0.1	0.0
2022	0.8	0.03	0.8	2.6	0.4	1.4	0.0	0.1	9.9	0.0	0.0
2023	1.0	0.1	2.2	3.0	0.4	0.9	0.0	0.0	8.2	0.1	0.0

Appendix B Continued

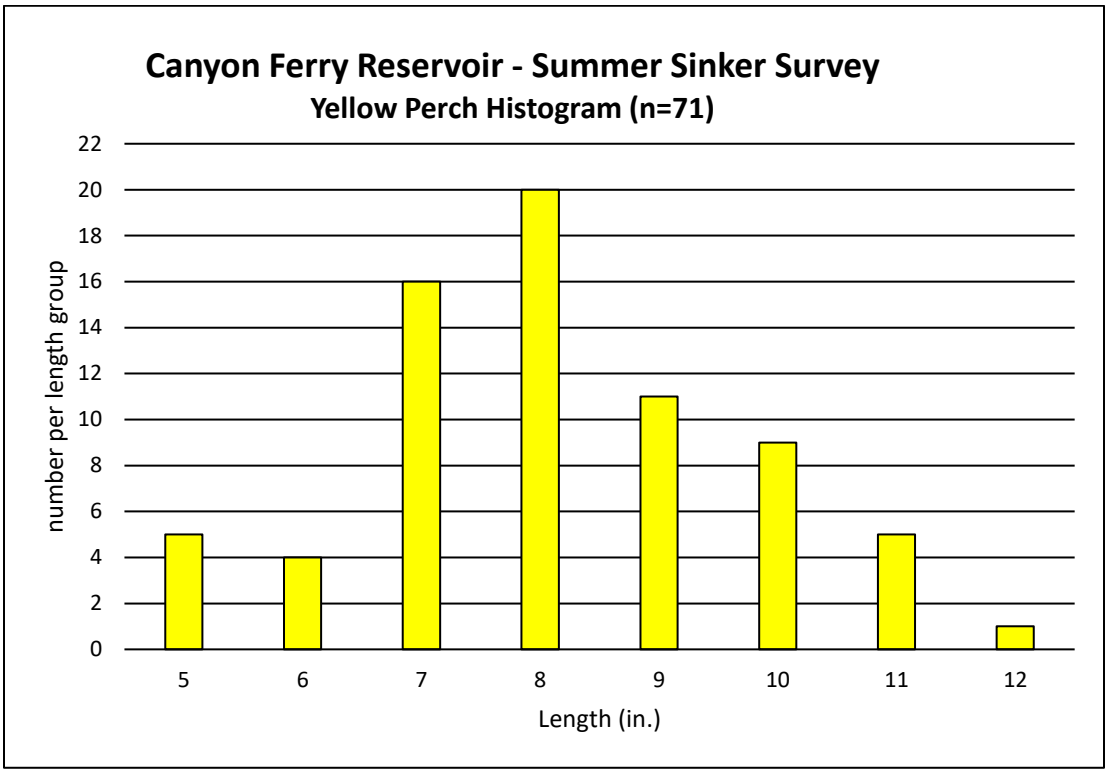


Figure 11: Length-frequency histogram for yellow perch from the historic sinking gillnetting series, 2023.

Appendix C: Catch summary for walleye sinking gill nets (September). Survey conducted annually since 1996.

Table 9: Number of fish sampled by year.

Year	RB	LL	YP	NP	Ling	Carp	UC	LNSU	WSU	STCT	SMB	WE	MWF	Grand Total
1996	143	4	219	0	19	44	11	6	763	10	1	32	9	1261
1997	61	4	269	1	21	43	20	3	632	8	0	131	3	1188
1998	20	1	513	0	2	36	4	6	662	2	0	156	1	1400
1999	35	1	121	0	1	19	9	16	493	11	0	97	0	803
2000	34	7	19	0	7	47	10	20	615	3	0	53	1	816
2001	20	1	116	0	2	11	3	3	350	1	0	111	0	618
2002	26	2	485	0	3	19	4	9	406	7	1	88	0	1050
2003	10	1	79	0	4	12	1	10	337	6	0	99	0	559
2004	17	1	0	0	4	13	0	13	289	0	0	30	0	367
2005	7	2	6	0	0	14	0	13	191	1	0	66	1	301
2006	11	1	30	1	2	37	1	20	193	2	0	98	0	396
2007	26	0	18	1	0	33	0	29	251	1	0	108	0	467
2008	4	0	3	1	3	31	0	7	147	1	0	64	0	261
2009	8	2	12	0	0	40	0	7	103	0	0	39	0	211
2010	5	0	1	0	0	18	1	9	65	0	0	52	0	151
2011	20	0	23	5	2	17	1	12	93	3	0	84	0	260
2012	3	0	39	0	1	23	2	19	76	0	2	108	0	273
2013	30	5	22	0	0	23	0	21	103	0	1	100	0	305
2014	22	2	19	0	0	29	0	18	98	0	2	68	0	258
2015	32	1	9	0	0	12	0	14	58	0	1	80	0	207
2016	10	1	10	2	1	22	0	19	62	0	2	133	0	262
2017	12	2	17	1	3	14	0	20	71	1	3	174	0	318
2018	22	0	23	1	1	28	0	8	57	0	8	101	0	249
2019	6	1	36	1	1	18	1	8	55	0	1	82	0	210
2020	5	1	20	0	0	20	0	11	52	0	2	68	1	180
2021	28	1	9	2	0	10	0	6	55	0	1	116	0	228
2022	12	0	32	1	0	18	0	4	108	0	6	130	0	311
2023	11	0	21	1	0	20	0	2	40	0	12	101	0	208

Appendix C (continued)

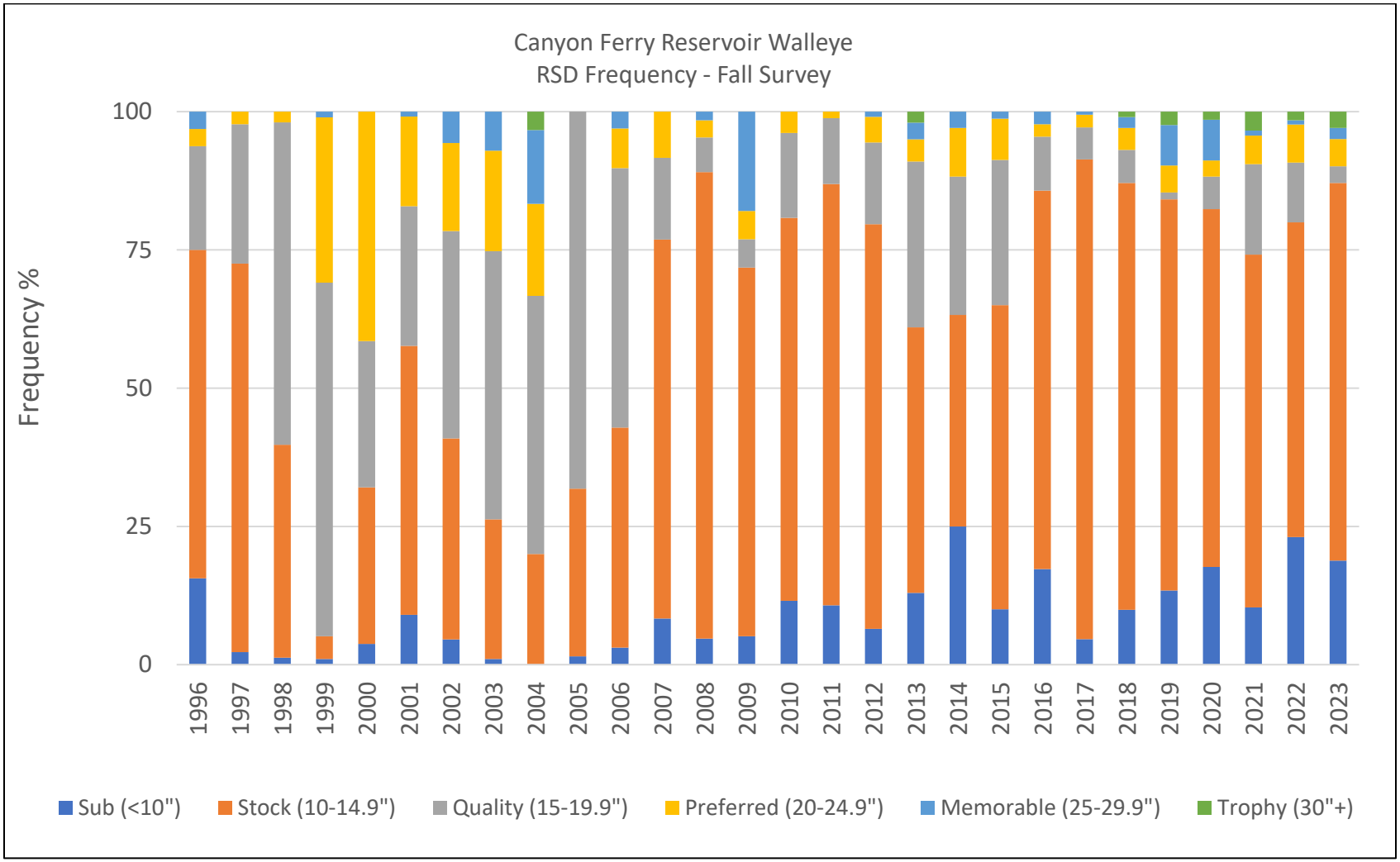


Figure 12: Relative Stock Density (RSD) frequency (%) for walleye from September sinking gillnets, 1996-2023.

Appendix C (continued)

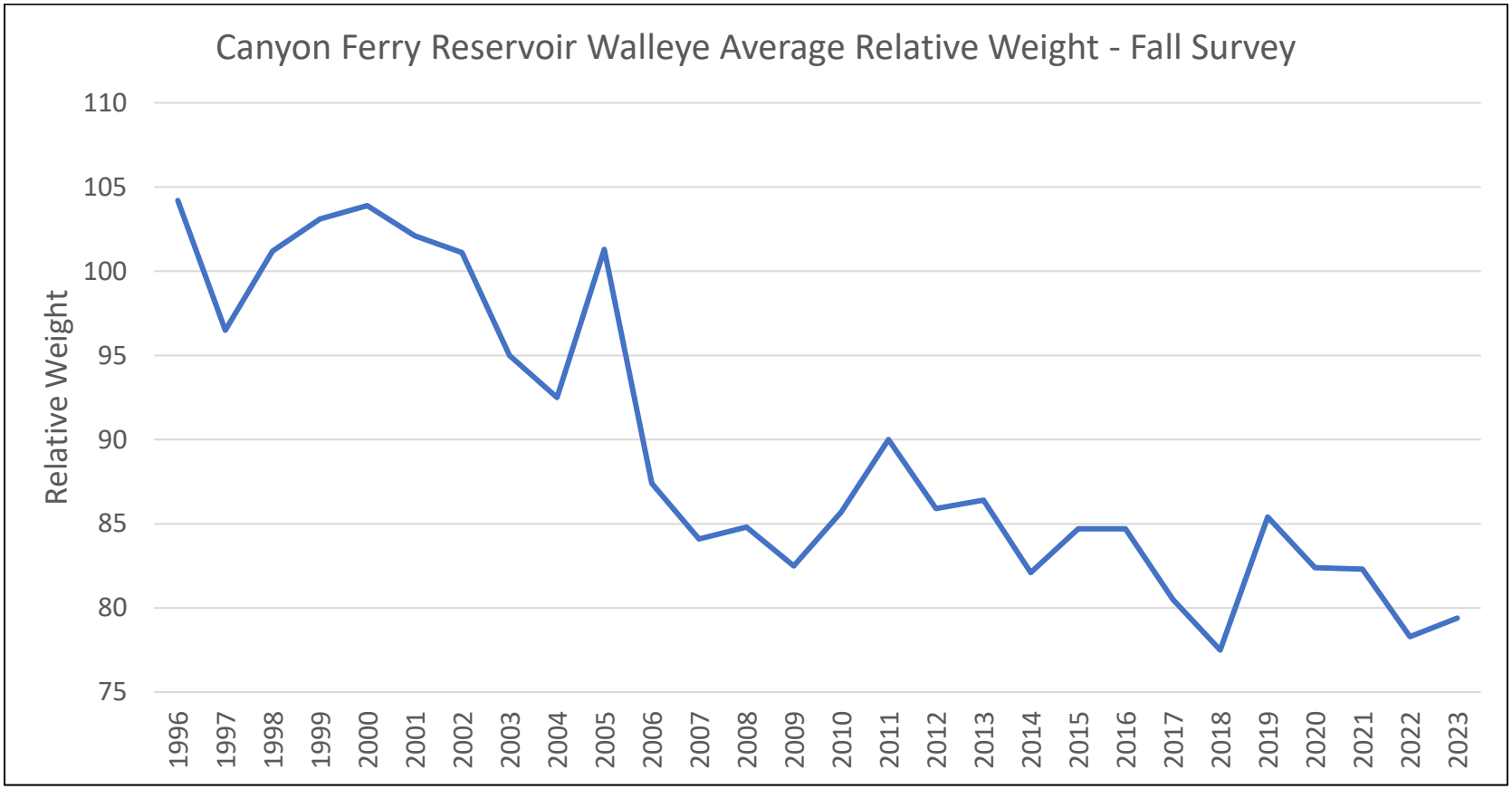


Figure 13: Average relative weight for walleye from September sinking gillnets, 1996-2023.

Appendix C (continued)

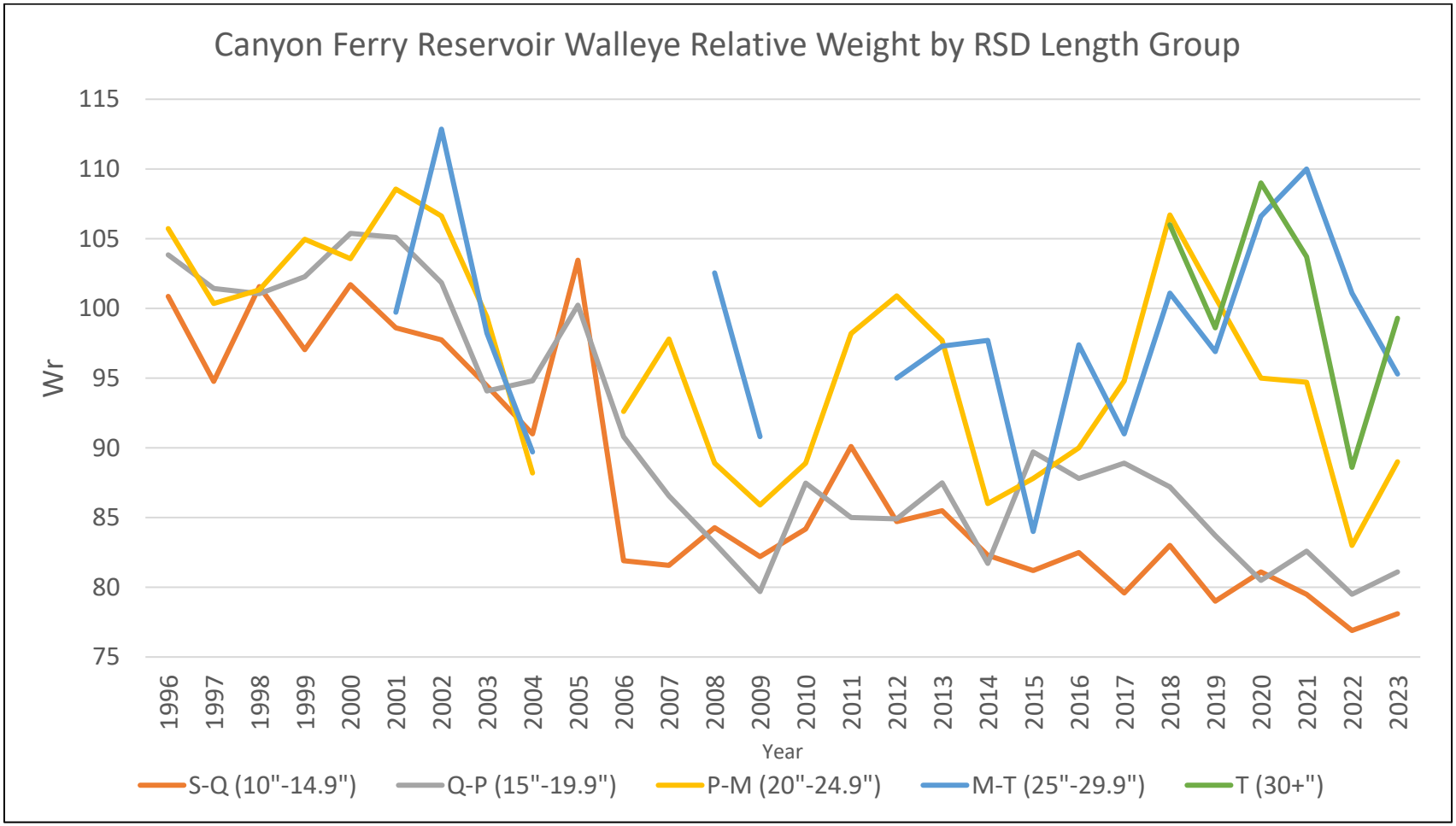


Figure 14: Relative Weight (*Wr*) by Relative Stocking Density (RSD) length group from 1996-2023.

Appendix D: Beach seine trends.

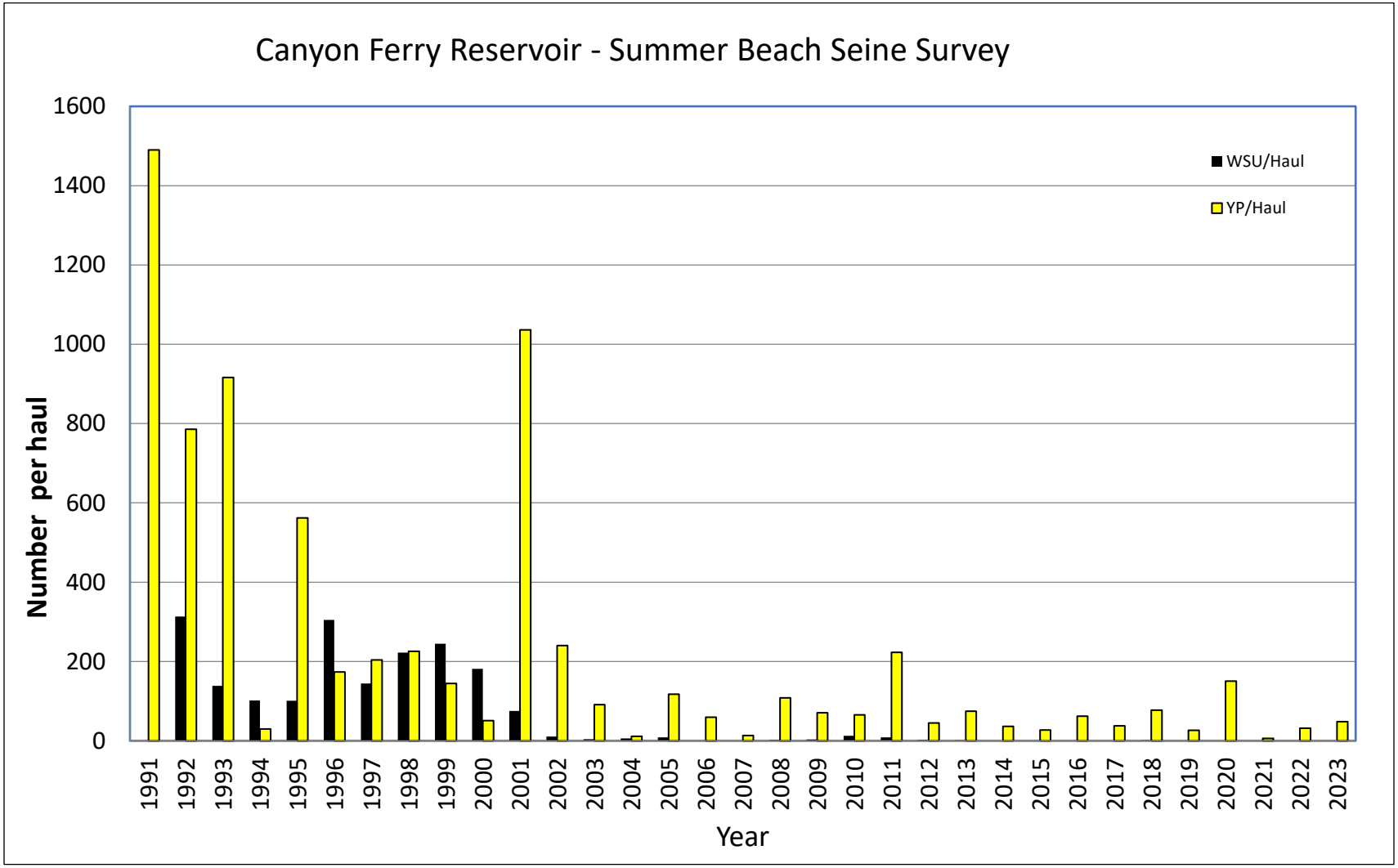


Figure 15: Yellow perch and white sucker trends from historical beach seining series 1991-2023.

Appendix E: Summer and winter creel trends by anglers targeting specific species in Canyon Ferry Reservoir, 2014-2023.

Table 10: Angling Trends; Summer and Winter

Summer Creel									
	Rainbow			***Yellow Perch***			***Walleye***		
Year	*No. Ang.*	Total Fish	Fish/hr	*No. Ang.*	Total Fish	Fish/hr	*No. Ang.*	Total Fish	Fish/hr
2014	556	558	0.39	3	0	0	732	1731	0.50
2015	462	782	0.65	3	0	0	544	1207	0.47
2016	283	620	0.78	0	0	0	721	2158	0.62
2017	420	660	0.58	3	2	0.48	780	2525	0.65
2018	62	70	0.32	1	0	0	325	499	0.34
2019	261	200	0.28	4	4	0.26	640	1435	0.50
2020	578	1098	0.71	0	0	0	622	1395	0.48
2021	217	194	0.30	2	0	0	499	875	0.34
2022	319	442	0.41	2	11	1.49	675	2062	0.62
2023	352	446	0.45	3	0	0	467	1509	0.66
Mean	351	507	0.49	2	2	0.22	601	1540	0.52

Winter Creel									
	Rainbow Trout			***Yellow Perch***			***Walleye***		
Year	*No. Ang.*	Total Fish	Fish/hr	*No. Ang.*	Total Fish	Fish/hr	*No. Ang.*	Total Fish	Fish/hr
2014	369	451	0.39	206	283	0.44	0	0	0
2015	455	613	0.50	284	247	0.25	0	0	0
2016	1018	840	0.29	628	1442	0.57	3	0	0
2017	921	981	0.31	798	1832	0.58	13	0	0
2018	688	435	0.19	700	910	0.31	0	0	0
2019	283	150	0.16	78	61	0.19	9	1	0.08
2020	422	392	0.25	38	31	0.22	25	12	0.12
2021	352	227	0.20	142	118	0.23	8	0	0
2022	193	173	0.26	147	160	0.27	18	1	0.02
2023	155	94	0.18	137	133	0.23	33	19	0.18
Mean	486	436	0.27	316	522	0.33	11	3	0.04

Appendix F: Fish stocking information for Canyon Ferry Reservoir, 2014-2023.

Table 11: Rainbow trout stocking details

Year	Reservoir	RB Strain	Number Planted	Date Planted	Size @ Plant (in)	TM	Fin Clip
2014	C. Ferry	L/Arlee 0+	105,531	7/7-7/9	6.79-6.89		
		L/E.Lake 0+	133,765	10/6-10/9	6.57-6.75	Single	
		L(E)/Shasta 0+	19,733	10/8-10/9	7.17-7.21		RightPelvic
		TOTAL	**259,029**				
2015	C. Ferry	L/Arlee 0+	96,903	7/6-7/8	7.06-7.2		
		L/E.Lake 0+	146,379	9/28-10/1	6.89-7.39	Single	
		BW/E. Lake 0+	55,576	9/21-9/23	6.43-6.65	Double	
		TOTAL	**298,858**				
2016	C. Ferry	L/Arlee 0+	99,383	7/5-7/7	6.8-7.2		
		L/E.Lake 0+	146,876	10/3-10/6	6.8-7.1	Single	
		TOTAL	**246,259**				
2017	C. Ferry	L/Arlee 0+	102,039	7/5-7/7	6.94-7.29		
		L/E.Lake 0+	135,191	10/4-10/10	6.97-7.20	Single	
		BW/E. Lake 0+	44,726	9/11-9/18	7.01-7.25	Double	
		TOTAL	**281,956**				
2018	C. Ferry	L/Arlee 0+	90,146	7/16-7/19	7.11-7.37		
		BW/E. Lake 0+	13,160	9/17	6.93	Single	
		L/E.Lake 0+	52,550	10/1-10/2	7.44-6.88	Single	
		TOTAL	**155,856**				
2019	C. Ferry	L/Arlee 0+	86,337	7/8-7/11	7.06-7.75		
		BW/E. Lake 0+	26,304	9/19-9/23	6.29-6.5		
		L/E.Lake 0+	21,737	10/8	7.37-7.44	Single	
		TOTAL	**134,378**				
2020	C. Ferry	L/Arlee 0+	86,337	6/24-6/25	6.26-6.46		
		BW/E. Lake 0+	0				
		L/E.Lake 0+	151,874	9/28-10/1	6.75-6.92		
		TOTAL	**259,899**				
2021	C. Ferry	L/Arlee 0+	103,828	6/22-6/24	6.40-6.56		
		BW/E. Lake 0+	30,356	10/4-10/5	6.88-6.95		
		L/E.Lake 0+	165,720	9/24-10/1	6.40-7.38		
		TOTAL	**299,904**				
2022	C. Ferry	L/Arlee 0+	100,122	6/27-6/29	5.85-6.34		
		L/E. Lake 1+	9,735	6/27	7.77-7.89		
		J/Arlee 0+	22,220	7/12-7/14&11/1	7.04-8.59		
		G/E. Lake 0+	29,627	9/21	3.18-6.00		
		L/Arlee 0+	12,804	9/30	7.31		Adipose
		L/E.Lake 0+	190,815	10/3-10/8	6.41-7.03		
		TOTAL	**365,323**				
2023	C. Ferry	L/Arlee 0+	56,283	2/14	2.00		
		L/Arlee 0+	98,695	6/27-6/30	6.68-6.85		
		L/E. Lake 1+	30,938	7/11-7/12	7.69-7.77		
		L/Arlee 0+	26,896	9/21-9/22	7.72		
		L/E.Lake 0+	166,031	9/25-10/2	7.49-8.07		
		BW/E.Lake 0+	92,110	10/2-10/16	7.64-8.55		
		TOTAL	**470,953**				