

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/Hauser and Holter Reservoir
Fisheries Management

2023 Report

Nathan Jaksha
Montana Fish, Wildlife and Parks
Helena Area Fisheries Management Biologist

Chris Hurley
Montana Fish, Wildlife and Parks
Helena Area Fisheries Technician

Table of Contents

INTRODUCTION	3
METHODS	3
HAUSER RESERVOIR	5
RESULTS AND DISCUSSION	5
Gillnetting	5
Spring Horizontal Gillnets	5
Fall Horizontal Gillnets.....	5
Vertical Gillnets	5
Creel Surveys.....	7
Summer Creel	7
Winter Creel.....	8
Rainbow Trout and Kokanee Stocking	10
HOLTER RESERVOIR	11
RESULTS AND DISCUSSION	11
Gillnetting	11
Spring Horizontal Gillnets	11
Fall Horizontal Gillnets.....	11
Creel Surveys.....	13
Summer Creel	13
Winter Creel.....	15
Rainbow Trout and Kokanee Stocking	17
HAUSER DAM TAILRACE ELECTROFISHING.....	18
RESULTS AND DISCUSSION	18
HAUSER TAILRACE CREEL SURVEY	19
RESULTS AND DISCUSSION	19
APPENDICES	21
REFERENCES	29

Introduction

Descriptions and characteristics of Hauser and Holter reservoirs and the associated fisheries 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 the study area is presented in Figure 1.

Methods

Monitoring methods detailed in this report have been described by Berg and Lere (1983) and MFWP (1985 & 2020). A map of the two-reservoir system and associated river sections are presented in Figure 1. Horizontal and vertical gillnetting (timing, net size, and locations) is based on procedures established in Lere (1986).

Two boom-mounted electrofishing boats were used to evaluate how rainbow trout plants influence the fishery in the Missouri River below Hauser Dam. A modified Peterson estimate was calculated using FIS (MFWP 2013, Ricker 1975).

Partial weekend creel surveys were conducted on Hauser and Holter reservoirs from April through October and again during ice-covered months (January through March) as described in Lere (1987). Creel surveys were also conducted on the Missouri River below Hauser Dam on weekends and one weekday throughout the summer, and at least once a week during the winter months. Angler interviews were conducted on the approximately 2-mile reach of river between Hauser Dam and Cochrane Gulch (just downstream of Beaver Creek). Shore anglers were approached by foot at parking areas or along walking trails. Boat anglers were interviewed when possible (e.g., anchored to shore or fishing close to shore). Data collected included species targeted, angler origin, hours fishing, and number of fish caught. When possible, length and weight of fish was measured. The number of boats observed each day was also documented.

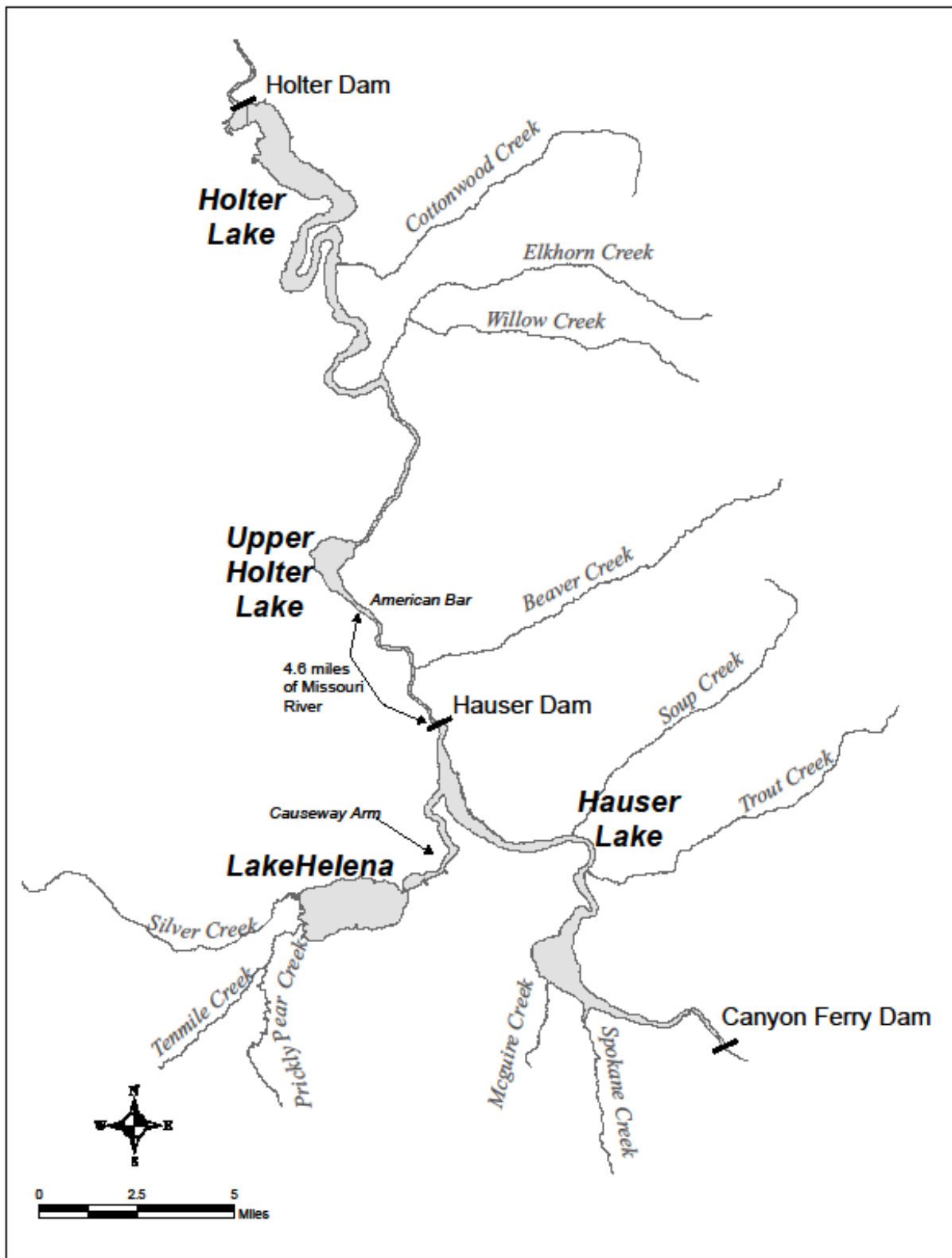


Figure 1. Map of Hauser and Holter Reservoirs, associated river tailrace sections and primary tributaries.

Hauser Reservoir

Results and Discussion

Gillnetting

Netting trends for rainbow trout (RB), yellow perch (YP), and walleye (WE) in Hauser Reservoir are displayed in Figure 2. Netting data for all species collected in Hauser Reservoir since 1986 is tabulated in Appendix A through D.

Spring Horizontal Gillnets

Nine floating and six sinking gill nets were fished in Hauser Reservoir May 16-19, 2023.

Forty-one fish were captured in floating gillnets, for an average catch of 3.7 fish per net. Rainbow trout comprised 88% of the catch for a relative abundance of 3.3 per net.

Sinking gillnets captured forty-seven fish for an average catch of 7.8 fish per net. Walleye comprised 53.2% of the catch for a relative abundance of 4.2 per net. Other species captured included burbot (LING, 21.3% of the catch), longnose sucker (LNSU, 2.1%), YP (4.8%), brown trout (LL, 8.5%) and white sucker (WSU, 8.5%). WE abundance increased from 2.8 per net in 2022 to 4.2 per net in 2023, WSU abundance increased from 0.2 per net in 2022 to 0.7 per net in 2023 and YP abundance maintained a catch rate of 0.3 from 2022 to 2023.

Fall Horizontal Gillnets

Eleven floating and seven sinking gillnets were fished in Hauser Reservoir October 10-13, 2023. Sixty-three fish were captured in floating gillnets for an average catch of 5.7 fish per floating net. Rainbow trout comprised 77.8% of the catch for a relative abundance of 4.5 per net (Figure 2). Hatchery fish comprised 96% of the catch. Average length for all captured adult RB was 18.0-inches while Eagle Lake RB averaged 17.6-inches, Arlee RB averaged 20.6-inches. Other species captured in floating gillnets included kokanee salmon (KOK, 12.7%), LL (4.8%) and WE (4.8%).

Sinking gillnets captured 178 fish for an average catch of 25.4 fish per net. Species captured included WE (30.9% of the catch), YP (27.0%), WSU (16.9%), LNSU (13.5%), LING (7.3%), RB (1.7%), NP (1.1%), LL (1.1%), and KOK (0.6%).

Relative abundance of WE increased from 7.4 per net in 2022 to 7.9 per net in 2023 (Figure 2). Most WE were less than 15-inches (75.9%), however, average length increased from 11.7-inches to 13.7 from 2022 to 2023. Proportional Stock Density (PSD) also increased from 5 to 21 while relative weight (Wr) decreased slightly from 85 to 83. Abundance of YP decreased from 10.6 per net in 2022 to 6.9 per net in 2023 (Figure 2) and exhibited an average length of 7.1-inches. Relative abundance for LNSU decreased (4.0 to 3.4 per net) from 2022 to 2023 while WSU relative abundance (3.1 to 4.3 per net) increased.

Vertical Gillnets

MFWP planted 113,150 surplus KOK in Hauser Reservoir on June 2, 2020. Recruitment was confirmed that year as 16 KOK (7.4-inch average length) were surveyed in October and November. Additional vertical gillnet surveys in 2021 confirmed the 2020 surplus plant was a success and MFWP added a plan to annually plant KOK in Hauser Reservoir (100,000/year) in 2022. MFWP planted 80,810 KOK in 2023 and survey results that year yielded 14 total KOK in July to September.

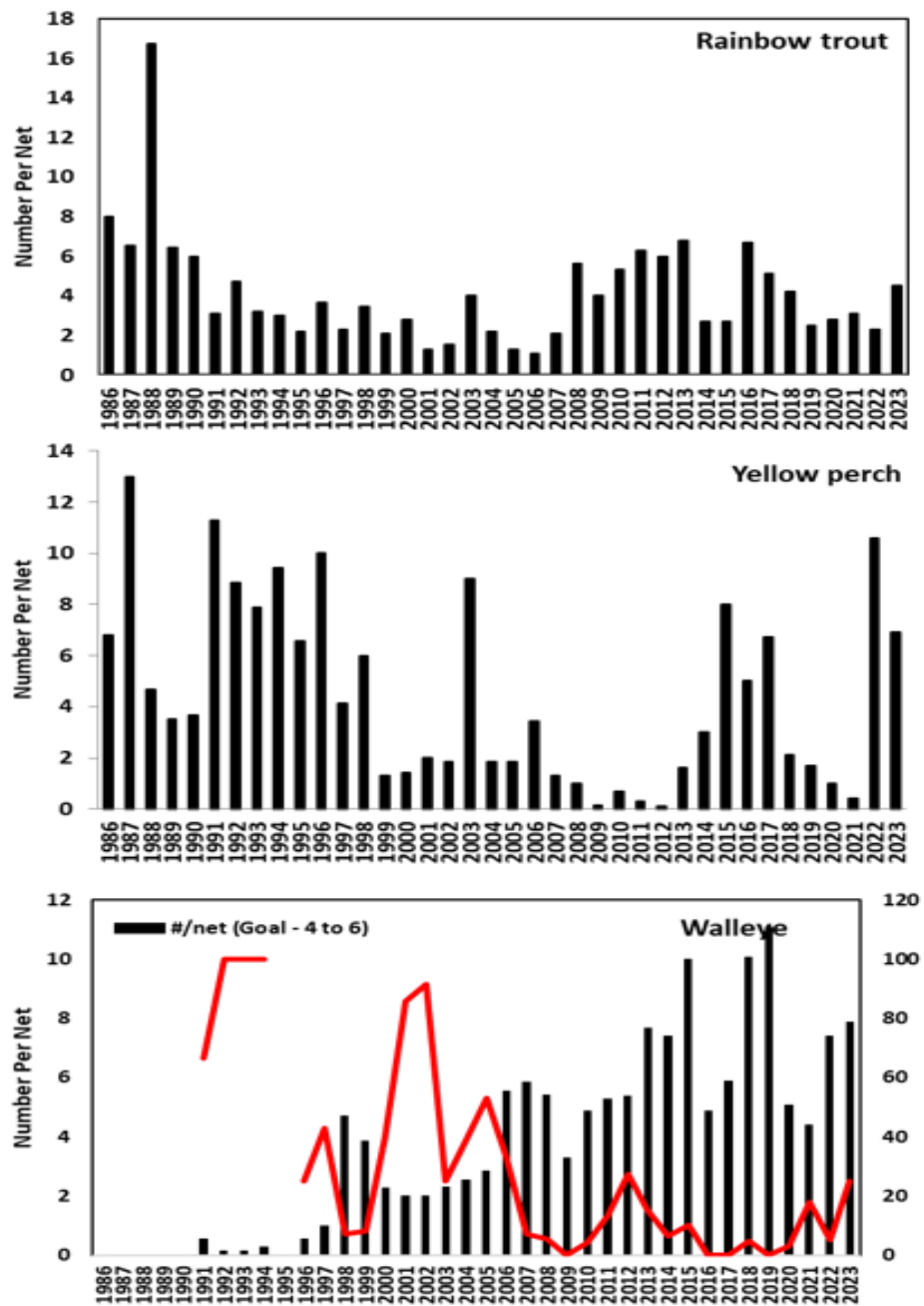


Figure 2. Hauser Reservoir fish population trends for RB, YP, and WE from Standardized Gill Netting.

Creel Surveys

Summer Creel

Summer creel clerks interviewed 998 anglers in the Hauser summer creel (Table 1). Average completed fishing trip was 3.7 hours. Fish recorded in the creel (both harvested and released fish) included 617 RB, 570 WE, 89 YP, 5 LL, 6 KOK, 2 NP, and 43 Carp. Catch rates for RB were 0.28 fish per hour (40% kept), WE were 0.26 fish per hour (54% kept), YP were 0.04 fish per hour (37% kept), and KOK were <0.01 per hour (83% of fish kept).

Table 1: Total number of angler interviews, total fish caught, and angler catch rates for selected species for Hauser summer creel.

Year	# of Interviews	Total Fish	Catch Rates (fish per hour)			
			Rainbow	Kokanee	Perch	Walleye
1986	1,404	2,197	0.26	0.10	0.13	0.00
1987	2,229	3,191	0.24	0.13	0.12	<0.01
1988	2,146	3,221	0.20	0.24	0.06	0.00
1989	1,753	3,225	0.12	0.42	0.10	0.00
1990	2,881	3,842	0.10	0.22	0.17	0.00
1991	3,341	6,900	0.02	0.46	0.08	<0.01
1992	2,214	3,541	0.05	0.22	0.16	0.00
1993	2,078	2,508	0.05	0.22	0.04	<0.01
1994	1,402	1,523	0.02	0.15	0.14	<0.01
1995	1,014	1,235	0.05	0.11	0.16	<0.01
1996	773	1,103	0.06	0.09	0.29	<0.01
1997	762	383	0.07	0.03	0.07	<0.01
1998	1,028	890	0.07	0.01	0.11	0.04
1999	1,028	1,179	0.12	0.01	0.06	0.14
2000	442	118	0.06	0.00	0.01	0.02
2001	1,359	617	0.05	<0.01	0.01	0.05
2002	612	243	0.05	0.00	0.03	0.05
2003	820	1,159	0.23	<0.01	0.19	0.01
2004	1,265	770	0.14	<0.01	0.01	0.04
2005	1,341	531	0.10	<0.01	<0.01	0.04
2006	1,606	577	0.07	0.00	0.01	0.06
2007	1,798	2,098	0.17	<0.01	0.04	0.26
2008	1,781	1,675	0.12	<0.01	0.01	0.25
2009	1,754	1,999	0.17	<0.01	0.01	0.28
2010	1,690	1,321	0.19	0.00	<0.01	0.13
2011	1,509	1,507	0.26	<0.01	0.01	0.13
2012	1,243	961	0.23	0.00	0.01	0.09
2013	1,245	1,276	0.29	0.00	0.01	0.12
2014	1,402	1,430	0.36	0.00	0.01	0.12
2015	1,105	1,067	0.26	<0.01	0.02	0.17
2016	1,333	1,706	0.35	0.00	0.04	0.17
2017	1,256	1,438	0.27	0.00	0.03	0.22
2018	1,150	1,772	0.23	<0.01	0.05	0.39
2019	965	1,247	0.22	0.00	0.06	0.29
2020	1,221	1,523	0.21	0.00	0.06	0.26
2021	997	798	0.37	0.00	0.07	0.26
2022	1,091	1,237	0.29	<0.01	0.03	0.14
2023	998	1,332	0.28	<0.01	0.04	0.26
MEAN	1,422	1,667	0.17	0.09	0.07	0.13

Rainbow trout in the creel averaged 18.6-inches and 2.6-pounds followed by WE at 13.5-inches and 0.75-pounds, and YP at 11.4-inches and 0.82-pounds. Catch rates were highest for RB in October at 0.64 per hour, WE in July at 0.57 per hour and YP in July at 0.11 per hour.

Anglers targeted primarily RB (60.6% of anglers), WE (24.6%) and trout/walleye (6.0%). All other anglers were targeting other species, combinations of other species or anything. Most anglers interviewed were fishing from shore (67.4%) compared to those fishing by boat (32.6%).

Most anglers were interviewed at the Causeway (30.3%), Riverside (21.6%), Black Sandy (19.7%), York Bridge (12.8%), followed by Lake Helena (10.3%), White Sandy (4.5%), Devil's Elbow (0.4%) and Hauser Dam (0.3%). Most shore anglers were interviewed at the Causeway (42.1%), Riverside (29.6%), Black Sandy (14.7%) and York Bridge (12.3%). Boat anglers were interviewed primarily at Lake Helena (31.7%), Black Sandy (30.2%), York Bridge (13.8%), White Sandy (12.3%), the Causeway (5.8%) and Riverside (5.2%).

Anglers interviewed came from throughout Montana; however, 73.7% were locals from Lewis & Clark County. Out of state anglers comprised 2.9% of the interviews.

Winter Creel

From January 1 to March 26, 260 anglers were interviewed on Hauser Reservoir (Table 2). Catch rates were highest for RB at 0.16 per hour, and YP at 0.09 per hour. (Table 2). Other species had minimal contribution to the 2023 winter creel (Table 2). Most anglers were targeting RB (75.8%), perch/walleye (9.6%), YP (6.5%), and trout/walleye/perch (3.8%). All other anglers were fishing for combinations of species or any fish they could catch.

Rainbow trout in the creel averaged 19.4-inches and 2.9-pounds followed by WE at 12.3-inches and 0.37-pounds YP at 11.8-inches and 1.1-pounds. Catch rates were highest for RB in March at 0.20 per hour, YP in January at 0.16 per hour, and WE in January and March at 0.01 per hour.

Anglers were interviewed in the winter creel though the ice (93.8%) and from shore (6.2%). Ice anglers were fishing primarily at the Causeway (61.9%), Black Sandy (23.0%) and Lake Helena (15.2%) while shore anglers fished at the Causeway (100%). Overall, most anglers were interviewed at the Causeway (64.2%), Black Sandy (21.5%), and Lake Helena (14.2%).

Table 2. Number of interviews, total catch, and angler catch rates (fish per hour) for selected species from winter creel surveys on Hauser Reservoir.

Year	# of Interviews	Total Fish	Catch Rates (fish per hour)				
			Rainbow	Brown	Kokanee	Perch	Walleye
1989	573	882	0.18	0.01	0.23	0.2	0
1990	300	337	0.11	<0.01	0.18	0.2	0
1991	451	723	0.08	0.01	0.18	0.6	0
1992	566	1177	0.02	<0.01	0.3	0.45	0
1993	635	2234	0.04	0.01	0.47	0.88	0
1994	197	457	0.01	0.02	0.03	0.76	0
1995	323	624	0.04	<0.01	0.06	0.45	0
1996	247	141	0.04	<0.01	<0.01	0.15	0
1997	297	281	0.08	0	0.01	0.34	0
1998	197	115	0.05	0	0	0.21	0
1999	255	207	0.17	<0.01	<0.01	0.13	0.02
2000	266	188	0.11	0	<0.01	0.11	0.04
2001	306	192	0.17	0.01	<0.01	0.02	0.01
2002	103	34	0.1	0.01	0	0.05	0
2003	81	51	0.18	<0.01	0	0.02	0.004
2004	364	347	0.27	0.01	0	0.04	0
2005	463	365	0.23	0.002	0	0.04	0.001
2006	180	57	0.1	0	0	0	0
2007	499	365	0.08	0.002	0	0.09	0.001
2008	391	141	0.16	0.001	0	0	0
2009	623	441	0.27	0.002	0	0.01	0.003
2010	590	460	0.29	0.005	0	0.003	0.01
2011	529	389	0.33	0.001	0	0.004	0.01
2012	445	277	0.23	0	0	0	0.03
2013	443	331	0.28	0.001	0	0	0
2014	314	308	0.41	0.001	0	0.01	0.001
2015	220	130	0.28	0.005	0	0.01	0.002
2016	406	243	0.28	0	0	0	0.01
2017	304	227	0.30	0.003	0	0.03	0.01
2018	373	268	0.25	0.002	0	0.05	0.001
2019	271	164	0.14	0	0	0.06	0.04
2020	229	132	0.27	0	0	0.01	0.01
2021	413	284	0.16	0.002	0	0.12	0.02
2022	434	241	0.10	0	0.001	0.06	0.02
2023	260	187	0.16	0.001	0	0.09	0.01
MEAN	359	371	0.17	0.00	0.05	0.15	0.01

Rainbow Trout and Kokanee Stocking

In 2023, Hauser Reservoir was stocked with 50,021 age 1 Eagle Lake (EL) strain RBs from June 26 to June 30 and 99,923 age 0 Arlee (AR) strain RB from September 19 to October 16. Length at stocking was 8.0 inches for the EL plants and ranged from 7.3-8.0 inches for the AR plants. Annual fall horizontal gillnet survey results found 50 of 51 (98%) RBs were identifiable to strain. Of the identifiable fish, 10% were AR strain rainbow, 90% were EL strain and one trout was considered a wild fish.

In 2023, 80,810 KOK (3.4 inches – 4.3 inches) were planted in Hauser during the months of May and June. All 80,810 KOK received Tet marks to evaluate natal origins of fish in both Hauser and Holter reservoirs in the future. Annual fall horizontal gillnet survey results found 9 total KOK of which 11% were age-1, 22% were age-2 and 67% were age-3.

Holter Reservoir

Results and Discussion

Gillnetting

Netting trends for RB, YP, and WE for Holter Reservoir are displayed in Figure 3. Detailed netting results for all species collected in spring and fall floating and sinking gillnets since 1986 are tabulated in Appendix E through H.

Spring Horizontal Gillnets

Nine floating and 6 sinking experimental gillnets were fished in Holter Reservoir May 22-25, 2023. Floating gillnets captured 33 fish, for an average catch of 3.7 fish per net. Rainbow Trout comprised 84.8% of the floating gillnet catch with a relative abundance of 3.1 per net.

Sinking gillnets captured 431 fish for an average catch of 71.8 fish per net. Yellow perch comprised 64.0% of the catch for a relative abundance of 46.0 per net. Other species captured included WSU (26.2% of the catch), LING (4.2%), WE (2.3%), NP (1.6%), LNSU (1.2%), and RB (0.5%).

Fall Horizontal Gillnets

Nine floating gillnets and 6 sinking gillnets were fished in Holter Reservoir October 2-5, 2023. Floating gillnets captured 59 fish for an average catch of 6.6 fish per net. Rainbow trout comprised most of the catch (64.4% of catch), followed by KOK (35.6%). Relative abundance of RB decreased from 5.4 per net in 2022 to 4.2 per net in 2023 (Figure 3). Average RB length was 16.5-inches, which was above the long-term average length of 15.4-inches. All RB captured in floating gillnets were hatchery fish (68.8% Eagle Lake RB/31.2% Arlee RB).

Sinking gillnets captured 340 fish for an average catch of 56.7 fish per net. Yellow perch comprised most of the catch (50.3%), followed by WSU (32.6%), WE (7.6%), LING (4.4%), RB (2.4%), KOK (1.5%), LNSU (0.9%), and NP (0.3%). Relative abundance for YP decreased from 32.0 per net in 2022 to 28.5 per net in 2023 (Figure 3). Average size of YP increased from 7.7-inches in 2022 to 8.2-inches in 2023. Walleye relative abundance increased from 4.2 per net in 2022 to 4.3 per net in 2023 (Figure 3). Average WE length was 14.8-inches with a PSD of 35 and a mean *Wr* of 88 in 2023.

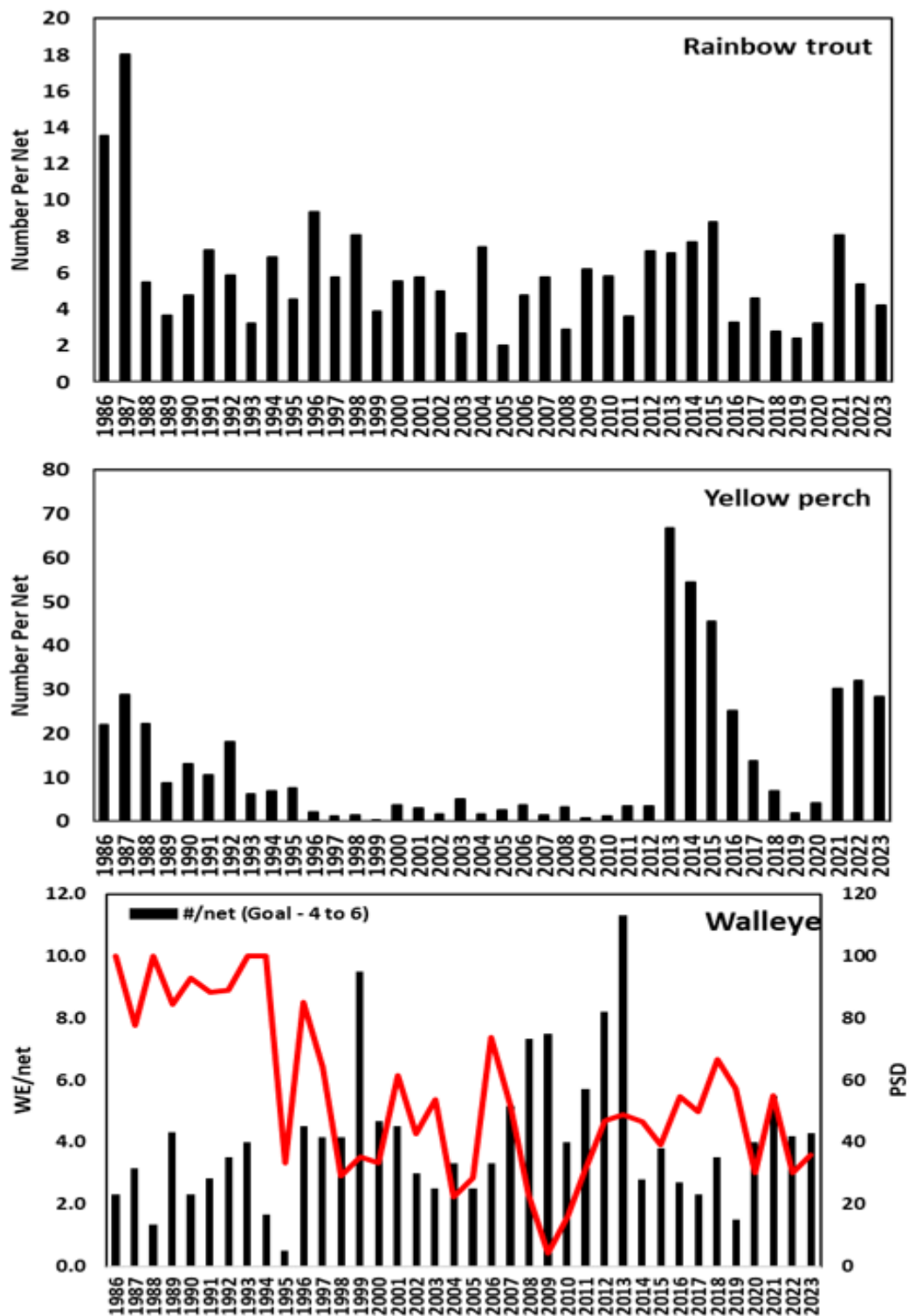


Figure 3. Holter Reservoir fish population trends for RB, YP, and WE from Standardized Gill Netting Series.

Creel Surveys

Summer Creel

Creel clerks interviewed 983 anglers between April 22 and October 22, 2023 (Table 3). The average completed fishing trip was 4.0 hours. Fish recorded in the creel included 1,551 RB, 180 KOK, 170 WE, 1,070 YP, 2 NP, 1 LL, 1 Ling and 1 WSU. In the creel, RB averaged 18.4-inches and 2.50-pounds, KOK averaged 19.3-inches and 3.27-pounds, WE averaged 15.4-inches and 1.09-pounds and YP averaged 9.6-inches and 0.39-pounds. Angler catch rates were 0.49 per hour for RB (30% kept), 0.06 per hour for KOK (89% kept), 0.05 per hour for WE (53% kept) and 0.34 per hour for YP (61% of fish kept).

Most anglers were targeting RB (60.0%), followed by YP (14.0%), KOK (10.6%), WE (5.5%), and walleye/perch and trout (4.8%). All other anglers were targeting combinations of the above species. Angler catch rates for RB were highest in April at 1.18 per hour while catch rates for KOK were the highest in July at 0.15 per hour. WE catch rates were highest in June at 0.12 per hour, while catch rates for YP peaked in July at 0.59 per hour.

Boat anglers comprised 51% of the interviews and shore anglers comprised 49%. Shore anglers were interviewed at Log Gulch (35.5%), Holter BLM Ramp (31.3% of interviews), Departure Point (16.5%), Gates of the Mountains (16.1%). Boat anglers were interviewed at Holter BLM Ramp (58.3% of interviews), Log Gulch (31.3%), Gates of the Mountains (8.9%) and Departure Point (1.4%). Most anglers were from Cascade County (46.0%), Lewis & Clark County (15.0%), west of the Continental Divide (12.6%), east of the Continental Divide (12.3%), Gallatin County (3.8%) and other locations. Out of state anglers comprised 3.4% of angler interviews.

Table 3. Number of interviews, total catch, and angler catch rates (fish per hour) for principal game species from summer creel surveys on Holter Reservoir.

Year	# of Interviews	Total Fish	Catch Rates (fish per hour)			
			Rainbow	Kokanee	Perch	Walleye
1986	1,063	1,887	0.34	0.01	0.16	0.00
1987	1,876	4,333	0.37	0.01	0.39	0.02
1988	1,280	2,962	0.32	0.01	0.37	0.01
1989	1,393	4,846	0.27	0.01	0.85	0.00
1990	1,633	4,782	0.26	0.11	0.53	0.00
1991	1,851	4,210	0.27	0.10	0.40	0.00
1992	2,350	6,822	0.22	0.09	0.52	0.01
1993	1,365	1,782	0.14	0.06	0.22	0.00
1994	1,245	2,063	0.03	0.06	0.37	0.01
1995	809	748	0.16	0.03	0.08	0.00
1996	1,086	1,482	0.21	0.16	0.04	0.02
1997	878	640	0.11	0.02	0.07	0.01
1998	954	771	0.10	0.01	0.10	0.04
1999	895	1,366	0.14	<0.01	0.23	0.05
2000	531	738	0.05	<0.01	0.08	0.13
2001	1,472	1,530	0.06	<0.01	0.07	0.06
2002	477	536	0.19	0.01	0.06	0.06
2003	745	1,545	0.20	0.01	0.14	0.13
2004	1,307	2,310	0.24	0.01	0.11	0.08
2005	1,143	1,032	0.12	<0.01	0.03	0.11
2006	1,408	1,234	0.17	<0.01	0.04	0.05
2007	1,811	4,003	0.29	<0.01	0.13	0.21
2008	1,795	4,259	0.32	<0.01	0.02	0.35
2009	1,835	4,958	0.42	<0.01	0.03	0.34
2010	1,906	5,247	0.48	<0.01	0.03	0.29
2011	1,720	3,455	0.45	0.00	0.03	0.16
2012	1,208	2,164	0.45	0.00	0.06	0.06
2013	1,070	2,588	0.30	0.00	0.45	0.07
2014	1,402	6,974	0.44	<0.01	1.11	0.14
2015	1,377	8,146	0.35	<0.01	1.72	0.09
2016	1,613	8,345	0.40	0.00	1.29	0.06
2017	1,548	4,666	0.36	<0.01	0.57	0.05
2018	1,309	3,147	0.34	<0.01	0.39	0.05
2019	942	1,611	0.22	0.01	0.23	0.09
2020	1,081	1,478	0.30	<0.01	0.15	0.02
2021	747	1,801	0.51	<0.01	0.26	0.06
2022	927	3,062	0.44	0.02	0.50	0.14
2023	983	2,976	0.49	0.06	0.34	0.05
MEAN	1,290	3,066	0.28	0.03	0.32	0.08

Winter Creel

Creel clerks interviewed 831 anglers from January 1 to March 26, 2023, in the Holter winter creel. The total number of fish recorded in the winter creel was 7,918. The average angler trip was 4.7 hours. Fish recorded in the creel included 7,428 YP, 447 RB, 30 Ling, 7 WE and 6 NP. RB in the creel averaged 19.7-inches and 3.16-pounds, and YP averaged 8.4-inches and 0.25-pounds. Angler catch rates for RB were 0.15 per hour and YP were 2.50 per hour (Table 4).

Most anglers in the winter creel targeted RB (74%) and YP (23%). All other anglers targeted other species or other combinations of species. Most anglers were interviewed at Log Gulch (23.8%), Departure Point (21.9%), Gates of the Mountains (19.7%), and Holter Ramp (19.6%).

Anglers were primarily from Cascade (38%), Lewis & Clark (29%) and Silver Bow (13%) counties. Out-of-state anglers comprised around 1% of the interviews in the winter of 2023.

Table 4. Number of interviews, total catch, and angler catch rates (fish per hour) for principal game species from winter creel surveys on Holter Reservoir.

Year	# of Interviews	Total Catch	Catch Rates (fish per hour)			
			Rainbow	Kokanee	Perch	Walleye
1989	493	4708	0.23	<0.01	2.95	<0.01
1990	346	3597	0.24	<0.01	3.05	<0.01
1991	547	6162	0.27	0.02	3.57	<0.01
1992	166	2930	0.23	<0.01	5.6	<0.01
1993	486	4487	0.09	<0.01	2.73	<0.01
1994	349	4519	0.07	<0.01	3.79	<0.01
1995	121	624	0.06	0	1.69	<0.01
1996	160	403	0.25	0	0.65	<0.01
1997	283	476	0.24	0	0.38	<0.01
1998	139	630	0.11	<0.01	1.31	<0.01
1999	136	547	0.29	0	0.95	<0.01
2000	88	958	0.11	0	3.22	<0.01
2001	243	564	0.06	0	0.5	<0.01
2002	92	251	0.15	<0.01	0.46	<0.01
2003	36	345	0.44	0	2.4	<0.01
2004	210	394	0.15	0	0.41	<0.01
2005	70	129	0.17	0	0.52	<0.01
2006	18	12	0.2	0	0.02	<0.01
2007	363	484	0.13	0	0.26	0.02
2008	280	363	0.27	0	0.05	0.06
2009	705	1604	0.3	0	0.3	0.05
2010	535	726	0.32	0	0.05	0.01
2011	290	318	0.25	0	0.02	0
2012	121	112	0.3	0	0	0.03
2013	228	288	0.32	0	0.03	0.02
2014	203	3121	0.42	0	4.87	0.002
2015	399	6486	0.08	0	5.31	0.002
2016	792	9194	0.05	0	3.02	0.002
2017	792	5683	0.09	0	1.90	0.001
2018	906	5843	0.06	0	1.65	0.001
2019	307	935	0.08	0	0.75	0.002
2020	98	205	0.26	0	0.38	0.05
2021	277	535	0.20	0	0.30	0.001
2022	554	2,065	0.22	0	0.86	0.003
2023	831	7,918	0.15	0	2.50	0.002
Mean	333	2218	0.20	0.00	1.61	0.02

Rainbow Trout Stocking

Holter Reservoir was stocked with 240,571 RB in 2023: 122,329 age-1 EL strain from June 27 to July 10 and 118,242 age-0 AR strain from September 18-21. All RB stocked in Holter are from FWP's Big Spring Trout Hatchery. Length at stocking for EL ranged from 7.54-8.13-inches and AR ranged from 7.67-8.06-inches. In 2023, Arlee strain rainbow trout continued to be marked with clipped adipose fins in order to visually distinguish AR strain from EL strain fish during standardized annual surveys and projects. FWP Region 4 Fish Management staff are responsible, annually, for clipping Holter Reservoir AR strain rainbow trout at Big Springs Hatchery near Lewistown, MT.

A total of 46 RB were captured in horizontal gill nets during the Fall of 2023. Survey results revealed that EL strain RB accounted for 76% of the catch with AR strain RB accounting for the other 24%. No wild fish were captured in the fall survey.

Hauser Dam Tailrace Electrofishing

Results and Discussion

A mark-recapture electrofishing estimate was conducted on the 1.7-mile reach of Missouri River below Hauser Dam on September 28 and October 12, 2023. Over two nights of electrofishing, 848 RB, 86 LL, 68 WE, and 52 Burbot were captured. Average lengths were 18.6-inches for RB, 19.7-inches for LL and 16.3-inches for WE.

Population estimates yielded 5,423 RB $\geq$ 6-inches (Figure 4) and 152 LL $\geq$ 6-inches (Figure 4) per mile. The proportion of hatchery fish in the section stayed high at 80.9% in 2023.

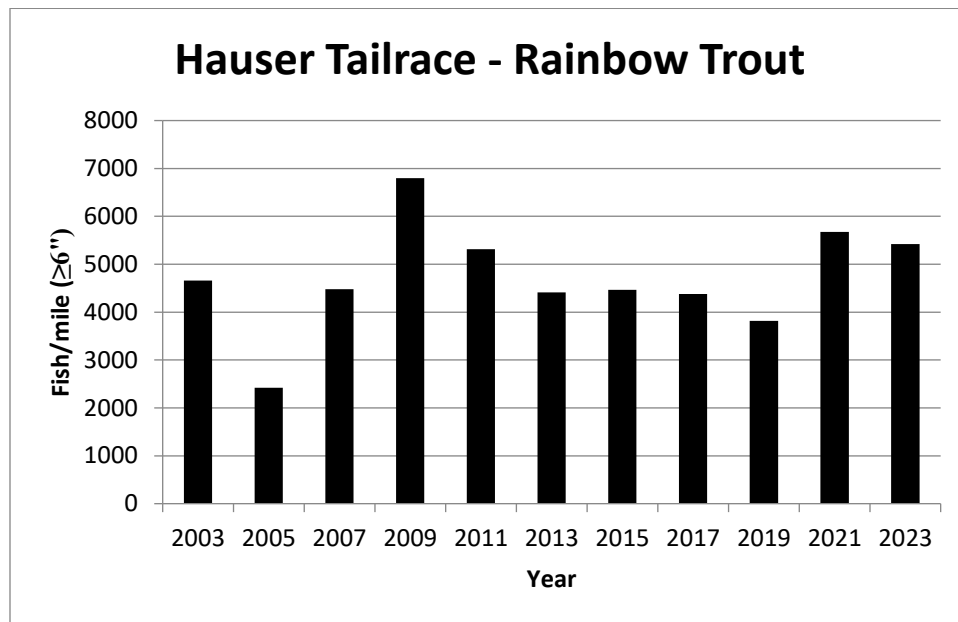


Figure 4. Rainbow trout ($\geq 6''$) population estimate (fish per mile) for the Missouri River below Hauser Dam. Population estimates have been completed biennially since 2003.

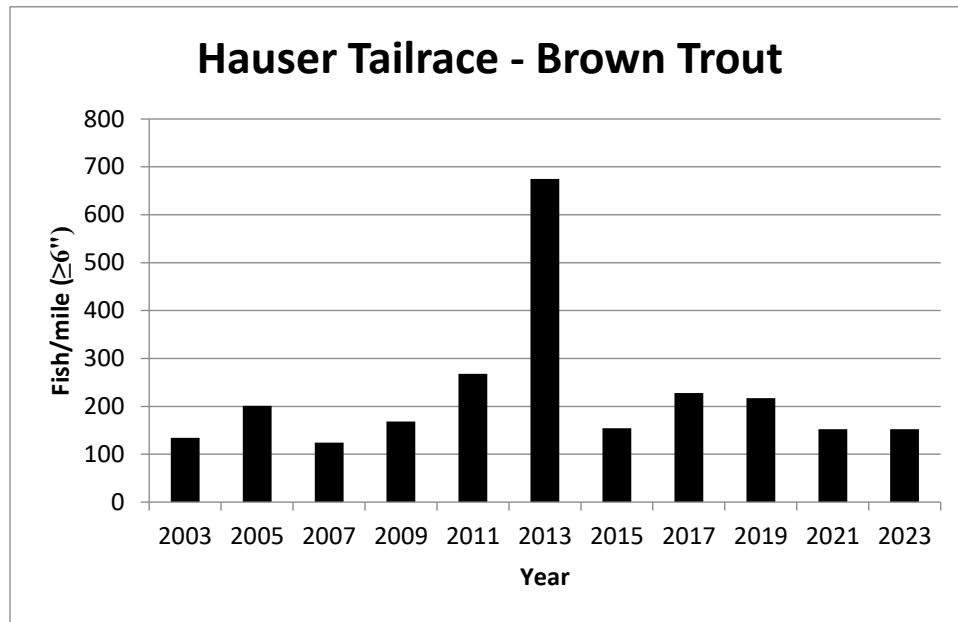


Figure 5. Brown trout ($\geq 6''$) population estimate (fish/mile) for the Missouri River below Hauser Dam. Population surveys have been completed biennially since 2003.

Hauser Tailrace Creel Survey

Results and Discussion

Angler interviews were conducted on the Missouri River from Hauser Dam to Cochrane Gulch (approximately 2 miles) throughout 2023. During the summer months, interviews were conducted on weekends and one day a week, while interviews were conducted only 1 day a week during lower use periods and winter months. A total of 2,394 anglers were interviewed, for a total of 6,618.6 angler hours (Table 5). The average completed fishing trip was 2.9 hours.

Angler catch rates were highest for RB at 0.66 per hour, followed by WE (0.02 per hour), KOK (0.01 per hour) and LL (0.01 per hour). Catch rates were highest for RB in December at 1.11 fish per hour and LL in February at 0.04 fish per hour. Average lengths were 18.0-inches for RB, 18.0-inches for LL, 20.9-inches for KOK and 15.3-inches for WE.

Most anglers interviewed were shoreline anglers (97%) and targeted RB (90.8%), while other anglers fished for LL (3.4%), WE (3.1%), trout/walleye (0.9%), any trout (0.8%), trout/kokanee (0.5%), KOK (0.4%), and northern pike (0.1%). The number of boats counted fishing in the section during the creel decreased from 572 in 2022 to 486 in 2023. In 2023, boat use was highest in May (Table 5).

Most anglers interviewed were from Lewis & Clark Co. (52%), out-of-state (15%) Gallatin Co. (11%), “West-of-Divide” (8%), “East-of-Divide” (5%), Silver Bow Co. (3.0%), and Jefferson County (2%). Remaining interviewed anglers were from other Montana counties or areas.

Table 5. Summary for the 2023 Hauser Dam tailrace creel.

2023 Missouri River (Hauser Tailrace) Creel

Month	# Interv	Hours	RB	KOK	LL	WE	RB/HR	KOK/HR	LL/HR	WE/HR	# Boats
January	26	56.3	42	0	0	0	0.75	0.00	0.00	0.00	0
February	33	72.8	40	0	3	0	0.55	0.00	0.04	0.00	0
March	21	59.4	45	0	0	2	0.76	0.00	0.00	0.03	0
April	442	1402.1	1227	0	4	6	0.88	0.00	0.003	0.004	87
May	344	980.8	871	0	6	35	0.89	0.00	0.01	0.04	126
June	231	515.3	160	0	3	24	0.31	0.00	0.01	0.05	34
July	206	563.4	259	0	7	34	0.46	0.00	0.01	0.06	74
August	276	737.2	376	0	8	5	0.51	0.00	0.01	0.01	74
September	291	812.0	255	3	13	12	0.31	0.004	0.02	0.01	48
October	297	845.5	544	64	13	14	0.64	0.08	0.02	0.02	33
November	143	386.5	314	22	13	3	0.81	0.06	0.03	0.01	10
December	84	187.3	207	0	1	5	1.11	0.00	0.01	0.03	0
Totals	2394	6618.6	4340	89	71	140	0.66	0.01	0.01	0.02	486

Appendices

Appendix A. Number of fish per net (percent composition) of catch in Hauser Spring Floating gillnets (1986-2023).

Number per net (percent composition) by species for spring floating gillnet catches in Hauser Reservoir.													
	RB	LL	KOK	MWF	WE	YP	LNSU	WSU	CARP	U.CHUB	NP	TOTAL #	# NETS
1986	14.4(29.0)	0.1(0.2)	1.4(2.9)	0.1(0.2)	0	0	26.3(52.9)	6.9(13.8)	0.2(0.5)	0.2(0.5)		448	9
1987	3.7(9.7)	0.5(1.3)	13.8(36.0)	0	0	0	13.7(35.8)	6.3(16.4)	0	0.3(0.8)	0	383	10
1988	2.9(17.7)	0.1(0.6)	11.7(71.3)	0.2(1.2)	0	0	1.0(6.1)	0.5(3.1)	0	0	0	164	10
1989	2.2(13.2)	0.3(2.0)	12.4(74.2)	0	0	0	0.9(5.3)	0.9(5.3)	0	0	0	151	9
1990	0.9(5.4)	0.3(1.6)	14.9(88.6)	0	0	0	0.3(1.6)	0.5(2.7)	0	0	0	185	11
1991	1.9(7.8)	0.2(0.7)	21.1(85.6)	0.1(0.4)	0	0	0.5(1.8)	0.4(1.5)	0	0.6(2.2)	0	271	11
1992	3.1(12.7)	0.7(3.0)	11.6(47.6)	0	0.3(1.1)	0	2.6(10.9)	5.9(24.3)	0.1(0.4)	0	0	267	11
1993	2.3(17.2)	0.2(1.6)	9.2(68.0)	0	0	0.1(0.8)	0.3(2.5)	1.2(9.0)	0	0.1(0.8)	0	122	9
1994	1.6(7.0)	0.5(2.0)	12.5(56.1)	0	0.1(0.4)	0.1(0.4)	4.6(20.9)	2.8(12.7)	0	0.1(0.4)	0	244	11
1995	4.6(39.0)	0.1(1.0)	6.8(58.1)	0	0	0	0.1(1.0)	0.1(1.0)	0	0	0	105	9
1996	1.7(9.5)	0.3(1.9)	12.9(73.4)	0	0	0	0.8(5.7)	1.4(9.5)	0	0	0	158	9
1997	3.1(19.2)	0.1(0.7)	6.8(41.8)	0	0.1(0.7)	0	3.0(18.5)	3.1(19.2)	0	0	0	146	9
1998	0.7(10.8)	0.1(1.5)	1.1(16.9)	0	0	0	2.5(38.6)	2.1(32.3)	0	0	0	65	10
1999	0.9(50.0)	0.1(5.6)	0	0	0	0	0.6(33.3)	0.2(11.1)	0	0	0	18	10
2000	0.8(57.1)	0	0	0	0	0	0.1(7.1)	0.5(35.7)	0	0	0	14	10
2001	2.6(65.2)	0.6(14.1)	0.1(2.3)	0	0.1(2.3)	0	0.4(9.2)	0.3(6.9)	0	0	0	43	11
2002	0.7(66.9)	0	0.1(8.3)	0	0	0	0.1(8.3)	0.2(16.5)	0	0	0	12	11
2003	2.4(65.0)	0.3(7.5)	0.2(5.0)	0	0.1(2.5)	0	0.5(12.5)	0.3(7.5)	0	0	0	40	11
2004	4.7(76.5)	0.2(2.9)	0	0	0.1(1.5)	0	1.1(17.6)	0.1(1.5)	0	0	0	68	11
2005	1.5(80.0)	0.1(5.0)	0.1(5.0)	0.1(5.0)	0	0	0	0.1(5.0)	0	0	0	20	11
2006	0.4(57.1)	0.1(14.3)	0	0	0	0	0.2(28.6)	0	0	0	0	7	11
2007	1.8(95.2)	0	0	0	0	0	0	0.1(4.8)	0	0	0	21	11
2008	1.6(90.0)	0.1(5.0)	0	0	0	0	0.1(5.0)	0	0	0	0	20	11
2009	1.8(90.0)	0	0	0	0.1(5.0)	0	0	0.1(5.0)	0	0	0	20	11
2010	2.4(76.5)	0.1(2.9)	0.2(5.9)	0	0.1(2.9)	0	0.2(5.9)	0.2(5.9)	0	0	0	34	11
2011	2.2(100.0)	0	0	0	0	0	0	0	0	0	0	24	11
2012	1.6(89.5)	0.2(10.5)	0	0	0	0	0	0	0	0	0	19	11
2013	3.0(94.3)	0	0	0	0	0	0.2(5.7)	0	0	0	0	35	11
2014	3.0(76.7)	0.3(7.0)	0.2(4.7)	0	0.1(2.3)	0	0.2(4.7)	0.1(2.3)	0	0	0.1(2.3)	43	11
2015	2.3(96.2)	0	0	0	0.1(3.8)	0	0	0	0	0	0	26	11
2016	1.0(78.6)	0	0.1(7.1)	0	0	0	0	0	0.2(14.3)	0	0	14	11
2017	1.7(95.0)	0	0.1(5.0)	0	0	0	0	0	0	0	0	20	11
2018	1.0(69.2)	0	0.1(7.7)	0	0	0	0	0.1(7.7)	0	0	0.2(15.4)	13	9
2019	0.7(66.7)	0.1(8.3)	0.2(16.7)	0	0	0	0	0	0	0	0.1(8.3)	12	11
2020	1.9(95.5)	0	0	0	0	0	0	0	0	0	0.1(4.5)	22	11
2021	3.6(100)	0	0	0	0	0	0	0	0	0	0	40	11
2022	2.0(88.0)	0.2(8.0)	0	0	0	0	0.1(4.0)	0	0	0	0	25	11
2023	3.3(87.8)	0.1(2.4)	0.2(4.9)	0	0.2(4.9)	0	0	0	0	0	0	41	11

Appendix B. Number of fish per net (percent composition) of catch in Hauser Spring
Sinking gillnets (1986-2023).

per net (percent composition) by species for spring sinking gillnet catches in Hauser Reservoir.															
	RB	LL	KOK	MWF	WE	YP	LNSU	WSU	CARP	U.CHUB	BURBOT	SM.BUF	NP	TOTAL #	# NETS
1986														0	0
1987	(0.2)	1.4(1.5)	1.0(1.1)	3.6(3.8)	0	4.4(4.7)	21.8(23.0)	62.0(65.5)	0	0.2(0.2)	0	0	0	473	5
1988	0	0.8(1.2)	2.8(4.2)	3.7(5.4)	0	7.2(10.6)	12.2(17.9)	40.7(60.0)	0	0.3(0.5)	0.2(0.2)	0	0	407	6
1989	0	0.8(0.9)	1.7(1.7)	2.3(2.4)	0.2(0.2)	5.5(5.8)	21.3(22.3)	63.2(66.0)	0	0.3(0.3)	0.2(0.2)	0.2(0.2)	0	574	6
1990	0	0.7(0.7)	2.5(2.7)	1.8(2.0)	0	12.3(13.5)	17.8(19.5)	53.3(58.4)	0	2.8(3.1)	0	0	0	548	6
1991	0	1.2(1.2)	3.3(3.1)	3.2(3.0)	0	14.5(13.7)	22.2(20.9)	59.0(55.7)	0	2.0(1.9)	0.2(0.2)	0.3(0.3)	0	635	6
1992	0	0.2(0.2)	0.5(0.7)	1.2(1.7)	0.5(0.7)	15.2(21.5)	13.8(19.6)	37.7(53.3)	0	0	1.5(2.1)	0.2(0.2)	0	424	6
1993	0	1.7(2.6)	7.5(11.5)	1.3(2.0)	0	11.2(17.1)	15.3(23.5)	26.7(40.8)	0	0.5(0.8)	1.2(1.8)	0	0	392	6
1994	(0.4)	1.3(3.0)	3.2(7.2)	0.7(1.5)	0.3(0.8)	5.8(13.3)	14.2(32.2)	18.0(40.9)	0	0	0.3(0.8)	0	0	264	6
1995	0	1.2(1.4)	1.5(1.9)	2.2(2.7)	0	2.5(3.1)	15.0(18.6)	57.0(70.7)	0.8(1.0)	0.2(0.2)	0.33(0.4)	0	0	484	6
1996	0	1.0(1.4)	0.2(0.2)	0.7(0.9)	0	3.7(5.1)	10.3(14.3)	54.7(75.6)	0.5(0.7)	0	1.3(1.8)	0	0	434	6
1997	(0.4)	1.0(1.2)	0.5(0.6)	0.5(0.6)	0.3(0.4)	4.7(5.5)	33.8(40.0)	42.5(50.3)	0	0	0.8(1.0)	0	0	434	6
1998	0	0.7(1.6)	0	0.7(1.6)	1.2(2.9)	3.7(9.0)	17.7(43.4)	15.7(38.5)	0	0	1.2(2.9)	0	0	244	6
1999	(1.0)	0.5(1.5)	0	0	0.8(2.5)	2.7(8.0)	9.5(28.8)	17.5(53.1)	0	0	1.7(5.1)	0	0	198	6
2000	0	0.2(0.5)	0	0.5(1.4)	1.3(3.8)	1.8(5.2)	10.8(31.2)	19.3(55.7)	0	0	0.7(2.0)	0	0	208	6
2001	(0.6)	0.2(0.6)	0	0.8(2.9)	6.5(23.1)	0.8(2.9)	9.5(33.7)	9.3(33.1)	0	0	0.8(2.9)	0	0	169	6
2002	0	0	0	0.5(2.8)	1.0(5.7)	0.7(3.8)	8.2(46.2)	5.8(33.0)	0	0	1.5(8.5)	0	0	106	6
2003	0	0.5(1.0)	0	1.0(1.9)	0.5(1.0)	4.0(7.7)	7.5(14.4)	38.0(73.1)	0	0	0.5(1.0)	0	0	312	6
2004	0	0	0	1.7(4.5)	0.5(1.3)	3.2(8.5)	5.2(13.8)	26.3(70.5)	0	0	0.5(1.3)	0	0	224	6
2005	(1.0)	0.5(2.8)	0	0.3(1.9)	1.5(8.3)	0.8(4.6)	2.8(15.7)	11.0(61.1)	0	0	0.8(4.6)	0	0	108	6
2006	0	0.7(5.6)	0	0	1.2(9.7)	0.7(5.6)	2.3(19.4)	6.8(56.9)	0.2(1.4)	0	0.2(1.4)	0	0	72	6
2007	0	0.8(3.0)	0	0	6.3(22.9)	1.7(6.0)	2.8(10.2)	14.3(51.8)	0	0	1.7(6.0)	0	0	166	6
2008	0	0.7(3.1)	0	0.2(0.8)	6.5(30.7)	0.5(2.4)	2.7(12.6)	9.2(43.3)	0	0	1.5(7.1)	0	0	127	6
2009	0	0.5(3.2)	0	0.2(1.1)	10.0(64.5)	0.2(1.1)	1.8(11.8)	2.3(15.1)	0.3(2.2)	0	0.2(1.1)	0	0	93	6
2010	0	0.3(3.6)	0	0.3(3.6)	2.3(25.0)	0.7(7.1)	2.5(26.8)	2.2(23.2)	0	0	1.0(10.7)	0	0	56	6
2011	(2.8)	0.5(4.2)	0	0.3(2.8)	3.3(28.2)	0.3(2.8)	3.3(28.2)	2.5(21.1)	0.2(1.4)	0	1.0(8.5)	0	0	71	6
2012	0	0.8(8.5)	0	0.5(5.1)	2.2(22.0)	0.5(5.1)	3.3(33.9)	2.0(20.3)	0	0	0.5(5.1)	0	0	59	6
2013	0	0.8(3.9)	0	0	2.7(12.6)	0.5(2.4)	9.8(46.5)	6.2(29.1)	0	0	1.2(5.5)	0	1.2(5.5)	127	6
2014	(0.9)	0.3(1.8)	0	0.7(3.6)	8.5(45.5)	0.3(1.8)	4.2(22.3)	2.7(14.3)	0	0	1.8(9.8)	0	0	112	6
2015	0	0.8(2.6)	0	0.5(1.5)	3.7(11.2)	6.2(18.9)	4.8(14.8)	15.7(48.0)	0	0	1.0(3.1)	0	0	196	6
2016	0	0.7(3.2)	0	0.2(0.8)	7.2(34.7)	4.3(21.0)	3.8(18.5)	3.0(14.5)	0.2(0.8)	0	1.3(6.5)	0	0	124	6
2017	0	0.7(4.1)	0	0	5.2(32.0)	3.7(22.7)	2.8(17.5)	2.5(15.5)	0.3(2.1)	0	1.0(6.2)	0	0	97	6
2018	(1.4)	0.2(1.4)	0	0	5.5(45.8)	2.0(16.7)	1.7(13.9)	1.2(9.7)	0.2(1.4)	0	1.2(9.7)	0	0	72	6
2019	(2.4)	0.7(4.8)	0	0	4.5(32.1)	0.5(3.6)	2.5(17.9)	3.7(26.2)	0.2(1.2)	0	1.5(10.7)	0	0.2(1.2)	84	6
2020	0	0.3(2.6)	0	0.2(1.3)	7.7(59.0)	0.3(2.6)	2.5(19.2)	1.0(7.7)	0.2(1.3)	0	0.8(6.4)	0	0	78	6
2021	0.5(4.0)	1.0(2.6)	0	0	6.2(48.7)	1.5(11.8)	1.5(11.8)	0.7(5.3)	0	0	2.0(15.8)	0	0	76	6
2022	0	0.3(4.8)	0	0	2.8(40.5)	0.3(4.8)	0.8(11.9)	0.2(2.4)	0	0	2.5(35.7)	0	0	42	6
2023	0.2(2.1)	0.7(8.5)	0	0	4.2(53.2)	0.3(4.3)	0.2(2.1)	0.7(8.5)	0	0	1.7(21.3)	0	0	47	6

Appendix C. Number of fish per net (percent composition) of catch in Hauser Fall Floating gillnets (1986-2023).

Number per net (percent composition) by species for fall floating gillnet catches in Hauser Reservoir.													
Fall-released 0+ Arlee rainbows are not included in table.													
	RB	LL	KOK	MWF	WE	YP	LNSU	WSU	CARP	U.CHUB	NP	TOTAL #	# NETS
1986	8.0(31.3)	0.6(2.5)	14.6(57.3)	1.1(4.3)	0	0.2(0.7)	0.4(1.4)	0.3(1.1)	0	0.4(1.4)	0	281	11
1987	6.6(44.2)	0.2(1.2)	3.7(25.1)	0	0	0	1.9(12.9)	2.4(16.0)	0	0.1(0.6)	0	163	11
1988	16.7(42.0)	0.6(1.4)	19.1(47.9)	0.4(0.9)	0	0	1.0(2.5)	0.2(0.5)	0	1.9(4.8)	0	438	11
1989	6.5(20.9)	0.3(0.9)	22.6(73.2)	0.1(0.3)	0	0	0.3(0.9)	0.1(0.3)	0	1.1(3.5)	0	339	11
1990	6.0(16.5)	0.2(0.5)	28.9(79.3)	0.3(0.7)	0	0	0.1(0.2)	0.1(0.2)	0	0.9(2.5)	0	401	11
1991	3.1(8.1)	0.3(0.7)	26.7(70.0)	0.2(0.5)	0.2(0.5)	0	0	0	0	7.7(20.2)	0	420	11
1992	4.7(15.0)	0.1(0.3)	25.6(81.5)	0.2(0.6)	0	0	0.1(0.3)	0.3(0.9)	0	0.5(1.4)	0	346	11
1993	3.2(17.7)	0.1(0.5)	13.7(76.3)	0	0	0	0	0.2(1.0)	0	0.8(4.5)	0	198	11
1994	3.0(17.0)	0.2(1.0)	9.2(52.1)	0.1(0.5)	0	0	2.5(13.9)	2.1(11.9)	0	0.6(3.6)	0	194	11
1995	2.2(13.1)	0.4(2.2)	13.5(81.4)	0.1(0.5)	0	0	0	0.4(2.2)	0	0.1(0.5)	0	183	11
1996	3.6(17.5)	0.3(1.3)	15.5(74.6)	0	0.4(1.8)	0	0.2(0.9)	0.4(1.8)	0.1(0.4)	0.4(1.8)	0	228	11
1997	2.3(44.6)	0.4(7.1)	2.1(41.1)	0	0.1(1.8)	0	0.1(1.8)	0.2(3.6)	0	0	0	56	11
1998	3.5(44.2)	0.1(1.2)	2.6(32.6)	0	1.0(12.8)	0	0.1(1.2)	0.4(5.8)	0	0.2(2.3)	0	86	11
1999	2.1(46.0)	0.2(4.0)	1.5(32.0)	0	0.1(2.0)	0	0.2(4.0)	0.5(10.0)	0	0	0	49	11
2000	2.8(67.4)	0.9(21.7)	0.1(2.2)	0	0.2(4.3)	0	0.2(4.3)	0	0	0	0	46	11
2001	1.3(38.9)	0.5(13.9)	0.6(19.4)	0	0.4(11.1)	0	0.4(11.1)	0.1(2.8)	0	0.1(2.8)	0	36	11
2002	1.5(18.7)	0.9(11.0)	3.7(45.1)	0.6(6.6)	0.7(8.8)	0	0.6(6.6)	0.2(2.2)	0	0	0	91	11
2003	4.0(29.1)	0.3(2.0)	8.5(61.6)	0.2(1.3)	0.6(4.0)	0	0.3(2.0)	0	0	0	0	151	11
2004	2.2(32.9)	0.3(4.1)	3.7(56.2)	0	0.2(2.7)	0	0.3(4.1)	0	0	0	0	73	11
2005	1.3(28.6)	0.5(10.2)	2.5(57.1)	0	0.2(4.1)	0	0	0	0	0	0	49	11
2006	1.0(27.5)	0.6(17.5)	1.3(35.0)	0	0.5(15.0)	0	0.1(2.5)	0.1(2.5)	0	0	0	40	11
2007	2.1(50.0)	0.9(21.7)	0.8(19.6)	0	0.3(6.5)	0	0.1(2.2)	0	0	0	0	46	11
2008	5.6(83.8)	0.4(5.4)	0.6(8.1)	0	0.1(1.4)	0	0.1(1.4)	0	0	0	0	74	11
2009	4.0(95.7)	0	0.1(2.2)	0	0	0	0	0.1(2.2)	0	0	0	46	11
2010	5.3(92.1)	0.3(4.8)	0.1(1.6)	0	0.1(1.6)	0	0	0	0	0	0	63	11
2011	6.3(93.2)	0.1(1.4)	0.2(2.7)	0	0.2(2.7)	0	0	0	0	0	0	74	11
2012	6.0(80.5)	0.8(11.0)	0.6(8.5)	0	0	0	0	0	0	0	0	74	11
2013	6.8(79.8)	0.9(10.6)	0.4(4.3)	0	0.4(4.3)	0	0.1(1.1)	0	0	0	0	94	11
2014	2.7(85.7)	0.2(5.7)	0.2(5.7)	0	0.1(2.9)	0	0	0	0	0	0	35	11
2015	2.7(81.1)	0.4(10.8)	0.1(2.7)	0	0	0	0	0	0	0	0.1(2.7)	37	11
2016	6.7(90.2)	0.4(4.9)	0.4(4.9)	0	0	0	0	0	0	0	0	82	11
2017	5.1(84.8)	0	0.8(13.6)	0	0.1(1.5)	0	0	0	0	0	0	66	11
2018	4.2(73.0)	0.9(15.9)	0.5(7.9)	0	0.2(3.2)	0	0	0	0	0	0	63	11
2019	2.5(66.7)	0.2(4.8)	0.7(19.0)	0	0.2(4.8)	0	0.1(2.4)	0	0	0	0.1(2.4)	42	11
2020	2.8(75.6)	0.3(7.3)	0.6(17.1)	0	0	0	0	0	0	0	0	41	11
2021	3.1(70.8)	0.4(8.3)	0.7(16.7)	0	0.1(2.1)	0	0	0	0	0	0.1(2.1)	48	11
2022	2.3(55.6)	0.3(6.7)	1.4(33.3)	0	0	0	0	0	0	0	0.2(4.4)	45	11
2023	4.5(77.8)	0.3(4.8)	0.7(12.7)	0	0.3(4.8)	0	0	0	0	0	0	63	11

Appendix D. Number of fish per net (percent composition) of catch in Hauser Fall Sinking gillnets (1986-2023).

Number per net (percent composition) by species for fall sinking gillnet catches in Hauser Reservoir.															
Fall-released 0+ Arlee rainbows are not included in table.															
	RB	LL	KOK	MWF	WE	YP	LNSU	WSU	CARP	U.CHUB	BURBOT	SM.BUF	NP	TOTAL #	# NETS
1986	1.0(0.7)	1.4(1.0)	0.6(0.4)	5.0(3.6)	0	6.8(4.9)	40.4(28.9)	84.8(60.5)	0	0	0	0	0	700	5
1987	2.0(1.4)	0.5(0.4)	5.8(4.2)	3.2(2.3)	0	13.0(9.3)	22.5(16.1)	92.3(66.0)	0	0.2(0.1)	0	0.3(0.2)	0	839	6
1988	0.5(0.5)	0.5(0.5)	9.8(9.1)	2.8(2.6)	0	4.7(4.3)	26.0(24.1)	63.0(58.3)	0	0.2(0.1)	0	0.5(0.5)	0	648	6
1989	1.8(1.8)	0	18.3(18.3)	0.5(0.5)	0	3.5(3.5)	14.7(14.7)	59.3(59.4)	0.2(0.2)	1.3(1.3)	0.3(0.3)	0	0	600	6
1990	0.3(0.3)	0.7(0.7)	10.7(11.1)	2.0(2.1)	0	3.7(3.8)	15.5(16.1)	61.0(63.4)	0	2.2(2.3)	0.2(0.2)	0	0	577	6
1991	0.7(0.7)	0.4(0.4)	20.7(20.6)	1.7(1.7)	0.6(0.6)	11.3(11.2)	16.7(16.6)	45.3(45.0)	0	1.7(1.7)	0.4(0.4)	1.1(1.1)	0	705	7
1992	0.7(0.7)	1.1(1.0)	8.1(7.7)	1.3(1.2)	0.1(0.1)	8.9(8.1)	20.0(18.3)	64.9(59.3)	1.1(1.0)	2.0(1.8)	0.7(0.7)	0	0	765	7
1993	0.1(0.2)	0.7(1.0)	5.0(6.8)	1.1(1.6)	0.1(0.2)	7.9(10.7)	13.7(18.7)	42.0(57.3)	0	1.0(1.4)	0.9(1.2)	0.7(1.0)	0	513	7
1994	0.6(0.4)	1.1(0.9)	5.1(4.0)	1.1(0.9)	0.3(0.2)	9.4(7.4)	15.3(12.0)	57.6(45.1)	38.1(29.1)	0.9(0.7)	0.3(0.2)	0	0	902	7
1995	0.3(0.3)	0.4(0.5)	15.6(18.9)	0.3(0.3)	0	6.6(8.0)	14.9(18.1)	41.6(50.5)	0.1(0.2)	0.3(0.3)	2.3(2.8)	0	0	576	7
1996	0.3(0.4)	1.1(1.4)	1.4(1.8)	0.6(0.7)	0.6(0.7)	10.0(12.5)	17.1(21.4)	47.7(59.4)	0	0.3(0.4)	1.1(1.4)	0	0	562	7
1997	0.4(0.8)	0.1(0.5)	0.4(0.8)	0.1(0.5)	1.0(1.8)	4.1(7.3)	10.0(17.7)	34.7(61.4)	0	0	5.3(9.3)	0	0	396	7
1998	0	0	0.7(1.0)	0.6(0.8)	4.7(6.5)	6.0(8.3)	21.3(29.4)	39.0(53.8)	0	0	0.1(0.2)	0	0	507	7
1999	0	0.1(0.3)	0	0	3.9(7.5)	1.3(2.5)	14.9(28.7)	30.9(59.7)	0.1(0.3)	0.1(0.3)	0.4(0.8)	0	0	362	7
2000	0	0	0	0.7(1.7)	2.3(5.4)	1.4(3.4)	14.1(33.4)	22.9(54.1)	0.1(0.3)	0	0.7(1.7)	0	0	296	7
2001	0.1(0.3)	0.4(1.0)	0	0.3(0.7)	2.0(4.7)	2.0(4.7)	16.0(37.6)	21.4(50.3)	0.1(0.3)	0	0.1(0.3)	0	0	298	7
2002	0	0.3(0.7)	0.6(1.3)	0.6(1.3)	2.0(4.7)	1.9(4.3)	15.4(36.1)	19.0(44.5)	0.4(1.0)	0	2.6(6.0)	0	0	299	7
2003	0	0	0.2(0.3)	0.3(0.6)	2.3(4.3)	9.0(16.6)	12.3(22.7)	29.3(54.0)	0	0	0.8(1.5)	0	0	326	6
2004	0.4(1.1)	0.6(1.5)	1.0(2.7)	1.3(3.4)	2.6(6.9)	1.9(5.0)	10.9(29.1)	18.3(49.0)	0	0.1(0.4)	0.3(0.8)	0	0	261	7
2005	0.1(0.4)	0.1(0.4)	0.1(0.4)	0.4(1.3)	2.9(9.0)	1.9(5.8)	10.4(32.7)	15.6(48.9)	0	0	0.4(1.3)	0	0	224	7
2006	0	0	0	0.4(1.1)	5.6(14.3)	3.4(8.8)	8.9(22.8)	20.0(51.5)	0.4(1.1)	0	0.1(0.4)	0	0	272	7
2007	0.1(0.3)	0.1(0.3)	0	0.3(0.6)	5.9(12.7)	1.3(2.8)	11.1(24.1)	26.7(57.7)	0	0	0.7(1.5)	0	0	324	7
2008	0.3(0.8)	0.3(0.8)	0	0.3(0.8)	5.4(16.6)	1.0(3.1)	5.9(17.9)	18.3(55.9)	0	0	1.3(3.9)	0	0	229	7
2009	0	0.6(2.2)	0	1.1(4.3)	3.3(12.4)	0.1(0.5)	10.0(37.8)	9.7(36.8)	0	0	1.4(5.4)	0	0	185	7
2010	0.3(1.4)	0.1(0.6)	0	0.3(1.4)	4.9(23.8)	0.7(3.5)	5.6(27.3)	7.0(34.3)	0	0	1.6(7.7)	0	0	143	7
2011	0.6(2.5)	0.6(2.5)	0	1.0(4.3)	5.3(22.7)	0.3(1.2)	8.7(37.4)	6.3(27.0)	0.1(0.6)	0	0.4(1.8)	0	0	163	7
2012	0	0.1(0.5)	0.3(1.0)	0.3(1.0)	5.4(19.1)	0.1(0.5)	11.4(40.2)	9.9(34.7)	0.1(0.5)	0	0.7(2.5)	0	0	199	7
2013	0.1(0.5)	0.3(1.0)	0	0	7.7(26.1)	1.6(5.3)	9.6(32.4)	9.6(32.4)	0	0	0.6(1.9)	0	0	207	7
2014	0.3(0.9)	0.3(0.9)	0	0.1(0.4)	7.4(23.0)	3.0(9.3)	8.0(24.8)	12.6(38.9)	0	0	0.4(1.3)	0	0	226	7
2015	0.6(1.4)	0.9(2.1)	0	0	10.0(24.6)	8.0(19.7)	7.9(19.4)	12.4(30.6)	0.1(0.3)	0	0.7(1.8)	0	0	284	7
2016	0.9(3.0)	0.4(1.5)	0	0	4.9(17.1)	5.0(17.6)	6.9(24.1)	9.1(32.2)	0.1(0.5)	0	1.1(4.0)	0	0	199	7
2017	0.1(0.6)	0.3(1.1)	0.1(0.6)	0.1(0.6)	5.9(22.7)	6.7(26.0)	4.0(15.5)	6.9(26.5)	0.1(0.6)	0	1.6(6.0)	0	0	181	7
2018	0.3(1.2)	0.6(2.4)	0.3(1.2)	0	10.1(42.0)	2.1(8.9)	2.3(9.5)	5.0(20.7)	0	0	3.4(14.2)	0	0	169	7
2019	0.6(2.1)	0.3(1.1)	0.7(2.6)	0	11.1(41.3)	1.7(6.3)	5.1(19.0)	5.6(20.6)	0	0	1.9(6.9)	0	0	189	7
2020	0	0	0	0	5.1(33.3)	1.0(6.5)	3.9(25.0)	2.9(18.5)	0	0	2.6(16.7)	0	0	108	7
2021	0.7(5.4)	0.3(2.2)	0.1(1.1)	0	4.4(33.3)	0.4(3.2)	2.7(20.4)	2.1(16.1)	0	0	2.3(17.2)	0	0.1(1.1)	93	7
2022	0.3(1.0)	0.1(0.5)	0	0	7.4(25.6)	10.6(36.5)	4.0(13.8)	3.1(10.8)	0.1(0.5)	0	3.0(10.3)	0	0.3(1.0)	203	7
2023	0.4(1.7)	0.3(1.1)	0.1(0.6)	0	7.9(30.9)	6.9(27.0)	3.4(13.5)	4.3(16.9)	0	0	1.9(7.3)	0	0.3(1.1)	178	7

Appendix E. Number of fish per net (percent composition) of catch in Holter Spring Floating gillnets (1986-2023).

Number per net (percent composition) by species for spring floating gillnet catches in Holter Reservoir.													
	RB	LL	KOK	MWF	WE	YP	LNSU	WSU	CARP	NP	LING	TOTAL #	# NETS
1986	6.8(25.5)	0	0.2(0.6)	0.7(2.5)	1.3(5.0)	0	10.8(40.4)	6.7(24.8)	0.3(1.2)	0	0	161	6
1987	11.1(47.1)	0.4(1.6)	0.6(2.6)	0.4(1.6)	1.8(7.4)	4.8(20.1)	2.4(10.1)	1.9(7.9)	0.4(1.6)	0	0	189	8
1988	13.8(64.3)	0.3(1.2)	0.4(1.7)	0.3(1.2)	0.9(4.1)	4.0(18.7)	0.9(4.1)	0.8(3.5)	0.3(1.2)	0	0	171	8
1989	3.5(25.0)	0	0.4(2.7)	0.1(0.9)	0.3(1.8)	1.3(8.9)	5.4(38.4)	3.1(22.3)	0	0	0	112	8
1990	6.0(61.5)	0.1(1.3)	2.8(28.2)	0	0.5(5.1)	0	0.1(1.3)	0.3(2.6)	0	0	0	78	8
1991	9.9(34.5)	0	13.4(46.9)	0.3(1.2)	4.0(13.9)	0	0.1(0.4)	0.8(2.7)	0.1(0.4)	0	0	258	9
1992	5.2(39.2)	0	1.6(11.7)	0.4(3.3)	0.1(0.8)	5.1(38.3)	0	0.8(5.8)	0.1(0.8)	0	0	120	9
1993	4.7(26.1)	0	1.1(6.2)	0	0.7(3.7)	5.3(29.8)	1.4(8.1)	4.7(26.1)	0	0	0	161	9
1994	3.9(34.0)	0	3.4(30.1)	0.1(1.0)	0.7(5.8)	1.7(14.6)	0.9(7.8)	0.6(4.9)	0.2(1.9)	0	0	103	9
1995	2.6(63.9)	0	0.6(13.9)	0	0.1(2.8)	0	0.1(2.8)	0.7(16.7)	0	0	0	36	9
1996	2.4(36.7)	0	3.4(51.7)	0	0.1(1.7)	0	0.3(5.0)	0.3(5.0)	0	0	0	60	9
1997	7.4(53.6)	0	1.1(8.0)	0	0.2(1.6)	0	1.7(12.0)	3.4(24.8)	0	0	0	125	9
1998	5.4(84.5)	0	0	0.1(1.7)	0	0	0.3(5.2)	0.6(8.6)	0	0	0	58	9
1999	0.7(21.7)	0	0	0	0.4(13.0)	0.7(21.7)	0	1.4(43.4)	0	0	0	23	7
2000	1.9(81.4)	0	0	0	0	0	0	0.4(17.1)	0	0	0	21	9
2001	2.4(40.7)	0.1(1.8)	0	0	0.9(14.8)	0	0.9(14.8)	1.7(27.8)	0	0	0	54	9
2002	5.0(71.4)	0	0	0.1(1.6)	0.4(6.3)	0	0.3(4.7)	1.0(14.3)	0.1(1.6)	0	0	63	9
2003	4.2(61.3)	0	0	0	0.3(4.8)	0.4(6.5)	0.4(6.5)	1.3(19.4)	0.1(1.6)	0	0	62	9
2004	2.1(82.6)	0	0	0	0	0	0	0.4(17.4)	0	0	0	23	9
2005	1.2(78.6)	0	0	0	0.1(7.1)	0.1(7.1)	0	0.1(7.1)	0	0	0	14	9
2006	1.8(66.7)	0	0	0	0.3(9.5)	0	0	0.6(23.8)	0	0	0	21	8
2007	0.6(26.3)	0	0	0	0	1.4(68.4)	0	0.1(5.3)	0	0	0	19	9
2008	4.4(92.1)	0	0	0	0	0	0	0.4(7.9)	0	0	0	35	8
2009	3.1(90.3)	0.1(3.2)	0.2(6.5)	0	0	0	0	0	0	0	0	31	9
2010	2.3(95.5)	0.1(4.5)	0	0	0	0	0	0	0	0	0	22	9
2011	2.4(95.7)	0	0	0	0	0	0	0	0	0	0	23	9
2012	4.8(100.0)	0	0	0	0	0	0	0	0	0	0	43	9
2013	1.6(100.0)	0	0	0	0	0	0	0	0	0	0	14	9
2014	9.7(37.2)	0	0.2(0.9)	0	0.2(0.9)	15.2(58.5)	0.1(0.4)	0.4(1.3)	0	0	0	245	9
2015	1.9(19.5)	0	0	0	0	7.2(74.7)	0	0.6(5.7)	0	0	0	87	9
2016	2.9(70.2)	0.1(2.7)	0.1(2.7)	0	0	0.9(21.6)	0	0.1(2.7)	0	0	0	37	9
2017	3.0(34.3)	0	0	0	0.3(2.9)	5.3(60.0)	0	0.3(2.9)	0	0	0	70	8
2018	1.6(100.0)	0	0	0	0	0	0	0	0	0	0	11	7
2019	1.8(94.1)	0	0	0	0	0	0	0	0.1(5.9)	0	0	17	9
2020	0.8(70.0)	0	0	0	0	0	0	0.2(20.0)	0	0.1(10.0)	0	10	9
2021	2.0(94.7)	0	0	0	0.1(5.3)	0	0	0	0	0	0	19	9
2022	4.0(87.8)	0	0.4(9.8)	0	0.1(2.4)	0	0	0	0	0	0	41	9
2023	3.1(84.8)	0	0	0	0	0.2(6.1)	0	0.2(6.1)	0	0.1(3.0)	0	33	9

Appendix F. Number of fish per net (percent composition) of catch in Holter Spring Sinking gillnets (1986-2023).

Number per net (percent composition) by species for spring sinking gillnet catches in Holter Reservoir.														
	RB	LL	KOK	MWF	WE	YP	LNSU	WSU	CARP	U.CHUB	LING	NP	TOTAL #	# NETS
1986													0	0
1987	1.6(0.9)	1.4(0.8)	0	3.0(1.7)	2.6(1.6)	95.8(57.2)	27.6(16.5)	35.4(21.2)	0.2(0.1)	0	0	0	838	5
1988	1.5(1.4)	0.2(0.2)	0.3(0.3)	4.0(3.6)	2.2(2.0)	37.3(34.0)	19.3(17.6)	44.7(40.7)	0	0.2(0.2)	0	0	658	6
1989	1.0(1.1)	0.2(0.2)	0	4.7(5.1)	2.5(2.8)	26.8(29.5)	10.2(11.2)	45.2(49.7)	0.3(0.4)	0	0	0	545	6
1990	1.2(1.0)	0.8(0.7)	0	4.8(4.0)	2.4(2.0)	46.8(39.2)	13.6(11.4)	49.4(41.4)	0	0.4(0.3)	0	0	597	5
1991	1.0(0.7)	0.2(0.1)	0.8(0.6)	8.7(5.8)	2.2(1.4)	75.2(50.4)	17.7(11.9)	43.3(29.1)	0	0	0	0	894	6
1992	0.3(0.2)	0.2(0.1)	0.2(0.1)	2.8(1.8)	2.5(1.6)	66.7(43.4)	8.3(5.4)	72.0(46.9)	0.5(0.3)	0	0	0	921	6
1993	0.5(0.4)	0	0.2(0.1)	1.8(1.5)	2.3(1.9)	52.3(42.3)	12.8(10.4)	53.5(43.2)	0.2(0.1)	0.2(0.1)	0	0	743	6
1994	0.5(0.5)	0	0.2(0.2)	1.8(2.0)	4.8(5.3)	25.7(28.1)	11.7(12.8)	46.7(51.0)	0.2(0.2)	0	0	0	549	6
1995	2.0(2.3)	0.5(0.6)	0.8(1.0)	0.8(1.0)	1.0(1.2)	26.5(30.9)	5.17(6.0)	48.5(56.6)	0.2(0.2)	0.2(0.2)	0	0	514	6
1996	0.5(0.7)	0.3(0.5)	2.2(3.1)	1.5(2.2)	2.7(3.9)	6.8(9.9)	12.2(17.6)	42.5(61.6)	0.3(0.5)	0	0	0	414	6
1997	0.7(0.8)	0	0	1.0(1.1)	3.0(3.4)	5.0(5.7)	11.5(13.0)	67.0(76.0)	0	0	0	0	529	6
1998	0	0	0	0.2(0.2)	3.8(5.3)	5.7(7.8)	9.3(12.8)	53.8(73.9)	0	0	0	0	437	6
1999	0.3(0.5)	0	0	0.2(0.2)	7.5(10.4)	3.2(4.4)	5.3(7.4)	55.7(77.0)	0	0	0.2(0.2)	0	434	6
2000	0	0.2(0.3)	0	0.2(0.3)	6.2(10.1)	4.2(6.8)	4.5(7.4)	45.0(74.0)	0.5(0.8)	0	0.2(0.3)	0	365	6
2001	0.3(0.5)	0	0	0.5(0.8)	4.3(7.1)	4.0(6.6)	6.8(11.3)	39.7(65.4)	0.5(0.8)	0	0	0	364	6
2002	0	0	0.2(0.3)	0.5(0.7)	7.5(11.2)	10.7(15.9)	5.0(7.4)	43.2(64.3)	0.2(0.3)	0	0	0	403	6
2003	0.6(1.0)	0	0	0.2(0.3)	3.2(4.9)	9.8(15.0)	3.2(4.9)	48.4(74.0)	0	0	0	0	327	5
2004	0.5(1.1)	0.3(0.7)	0.5(1.1)	0.3(0.7)	3.8(8.1)	2.3(4.9)	2.3(4.9)	37.0(77.9)	0.2(0.4)	0	0.2(0.4)	0	285	6
2005	0	0	0.2(0.4)	0.3(0.8)	6.5(16.4)	2.8(7.1)	0.5(1.3)	29.2(73.5)	0.2(0.4)	0	0	0	238	6
2006	0	0	0.2(0.5)	0.7(1.8)	4.2(11.4)	2.2(5.9)	3.5(9.5)	25.7(70.0)	0.2(0.5)	0	0.2(0.5)	0	220	6
2007	0.3(0.8)	0.3(0.8)	0.2(0.4)	0	7.7(19.4)	5.0(12.7)	0.2(0.4)	25.3(64.1)	0.3(0.8)	0	0.2(0.4)	0	237	6
2008	0.7(1.9)	0.7(1.9)	0	0.3(0.9)	5.7(15.9)	2.3(6.5)	0.7(1.9)	24.8(69.6)	0.2(0.5)	0	0.3(0.9)	0	214	6
2009	1.0(2.4)	0	0	0.2(0.4)	4.3(10.6)	6.2(15.1)	3.0(17.3)	25.7(62.9)	0.2(0.4)	0	0.3(0.8)	0	245	6
2010	0.5(1.4)	0	0	0	7.2(20.0)	4.2(11.6)	1.2(3.3)	21.8(60.9)	0.2(0.5)	0	0.8(2.3)	0	215	6
2011	0.2(0.8)	0.2(0.8)	0	0	4.5(21.3)	2.3(11.0)	0.7(3.1)	13.0(61.4)	0	0	0.2(0.8)	0.2(0.8)	127	6
2012	0.7(1.7)	0.2(0.4)	0	0.2(0.4)	7.5(18.9)	3.8(9.7)	2.3(5.9)	24.5(61.8)	0	0	0.5(1.3)	0	238	6
2013	0.3(1.1)	0.2(0.6)	0	0	6.2(20.4)	5.3(17.7)	1.3(4.4)	16.5(54.7)	0	0	0.3(1.1)	0	181	6
2014	0.2(0.1)	0.8(0.6)	0	0	3.3(2.5)	97.5(73.9)	1.8(1.4)	27.3(20.7)	0	0	1.0(0.9)	0	792	6
2015	0.3(0.2)	0.2(0.1)	0	0	3.7(2.5)	116.0(78.5)	3.2(2.1)	22.5(15.2)	0	0	2.0(1.4)	0	887	6
2016	0.7(0.8)	0.2(0.2)	0	0	1.3(1.7)	51.5(65.3)	0.3(0.4)	23.5(29.8)	0	0	1.3(1.7)	0	473	6
2017	0.3(0.3)	0	0	0	2.5(2.1)	94.2(80.3)	0.2(0.1)	19.0(16.2)	0.2(0.1)	0	0.8(0.7)	0.2(0.1)	704	6
2018	0	0	0	0	2.3(4.8)	32.0(65.3)	0	14.0(28.6)	0	0	0.5(1.0)	0.2(0.3)	294	6
2019	0.2(0.3)	0.2(0.3)	0	0	3.3(6.8)	23.3(47.6)	0.2(0.3)	19.7(40.1)	0	0	1.5(3.1)	0.7(1.4)	294	6
2020	0	0	0	0	2.2(9.4)	7.2(30.8)	0.4(1.7)	12.4(53.0)	0	0	0.2(0.9)	1(4.3)	117	5
2021	0.2(0.6)	0	0	0	2.3(8.6)	2.0(7.4)	0.8(3.0)	20.5(75.5)	0.2(0.6)	0	0.7(2.5)	0.5(1.8)	163	6
2022	1.5(2.4)	0	0.5(1.0)	0	4.5(7.1)	27.2(42.7)	1.8(2.9)	25.3(39.8)	0	0	2.0(3.1)	0.8(1.3)	382	6
2023	0.3(0.5)	0	0	0	1.7(2.3)	46.0(64.0)	0.8(1.2)	18.8(26.2)	0	0	3.0(4.2)	1.2(1.6)	431	6

Appendix G. Number of fish per net (percent composition) of catch in Holter Fall Floating gillnets (1986-2023).

Number per net (percent composition) by species for fall floating gillnet catches in Holter Reservoir.													
Fall-released 0+ Arlee rainbows are not included in table.													
	RB	LL	KOK	MWF	WE	YP	LNSU	WSU	NP	CARP	U.CHUB	TOTAL #	# NETS
1986	13.6(77.2)	0.1(0.8)	0.9(4.9)	0.6(3.3)	1.7(9.7)	0	0.6(3.3)	0.1(0.8)	0	0	0	123	7
1987	18.0(76.6)	0.5(2.2)	1.1(4.8)	0	0.1(0.5)	0	1.6(6.9)	2.1(9.0)	0	0	0	188	8
1988	5.5(41.5)	0.3(1.9)	2.9(21.7)	0.4(2.8)	0	0	1.6(12.3)	2.6(19.8)	0	0	0	106	8
1989	6.7(52.1)	0.1(0.9)	4.2(33.0)	0.1(0.9)	0.3(2.6)	0	0.9(7.0)	0.3(2.6)	0	0	0.1(0.9)	115	9
1990	4.8(34.7)	0	7.8(56.5)	0.2(1.6)	0	0	0.9(6.5)	0.1(0.8)	0	0	0	124	9
1991	7.3(53.7)	0.3(1.9)	5.4(39.8)	0.4(2.8)	0	0	0.1(0.9)	0.1(0.9)	0	0	0	108	8
1992	5.9(35.3)	0.2(1.3)	4.8(28.6)	0	0.1(0.7)	0	3.3(20.0)	2.3(14.0)	0	0	0	150	9
1993	3.2(42.0)	0	3.8(49.3)	0	0.2(2.9)	0	0.1(1.4)	0.3(4.3)	0	0	0	69	9
1994	6.9(42.5)	0.1(0.7)	7.6(46.6)	0.2(1.4)	0	0	0.4(2.7)	1.0(6.2)	0	0	0	146	9
1995	4.6(20.0)	0	17.4(76.5)	0	0.4(2.0)	0	0.2(1.0)	0.1(0.5)	0	0	0	205	9
1996	9.3(39.1)	0.1(0.5)	13.0(54.4)	0	1.3(5.6)	0	0	0.1(0.5)	0	0	0	215	9
1997	5.8(64.2)	0.3(3.7)	0.8(8.6)	0.2(2.5)	1.6(17.3)	0	0	0.2(2.5)	0	0	0.1(1.2)	81	9
1998	8.1(55.3)	0.1(0.8)	0.1(0.8)	0	0.2(1.5)	0	1.8(12.1)	4.3(29.5)	0	0	0	132	9
1999	3.9(83.3)	0	0	0.1(2.4)	0.2(4.8)	0	0.1(2.4)	0.2(4.8)	0	0.1(2.4)	0	42	9
2000	5.6(73.5)	0.2(2.9)	0.2(2.9)	0.2(2.9)	0.6(7.4)	0	0	0.8(10.3)	0	0	0	68	9
2001	5.8(76.5)	0.1(1.5)	0.2(2.9)	0.1(1.5)	0.8(10.3)	0	0.2(2.9)	0.2(2.9)	0	0.1(1.5)	0	68	9
2002	5.0(52.9)	0.3(3.5)	2.2(23.5)	0.2(2.4)	1.2(12.9)	0	0	0.4(4.7)	0	0	0	85	9
2003	2.7(64.9)	0.2(5.4)	0.7(16.2)	0	0.3(8.1)	0	0	0.2(5.4)	0	0	0	37	9
2004	7.4(71.4)	0.1(1.0)	2.3(21.4)	0.1(1.0)	0	0	0.2(2.0)	0.2(2.0)	0	0	0.1(1.0)	95	9
2005	2.0(47.4)	0	1.3(31.6)	0.2(5.3)	0.4(10.5)	0	0	0.2(5.3)	0	0	0	38	9
2006	4.8(78.2)	0.1(1.8)	0.6(9.1)	0	0.4(7.3)	0	0	0.2(3.6)	0	0	0	55	9
2007	5.8(75.4)	0	1.3(17.4)	0.1(1.4)	0.2(2.9)	0	0.1(1.4)	0.1(1.4)	0	0	0	69	9
2008	2.9(78.8)	0.1(3.0)	0.7(18.2)	0	0	0	0	0	0	0	0	33	9
2009	6.2(81.2)	0.1(1.4)	1.1(14.5)	0	0.1(1.4)	0	0	0.1(1.4)	0	0	0	69	9
2010	5.8(89.7)	0.2(3.4)	0.3(5.2)	0	0.1(1.7)	0	0	0	0	0	0	58	9
2011	3.6(86.5)	0.3(8.1)	0	0	0.2(5.4)	0	0	0	0	0	0	37	9
2012	7.2(98.5)	0	0	0	0	0	0	0.1(1.5)	0	0	0	66	9
2013	7.1(94.1)	0.1(1.5)	0.2(2.9)	0	0	0.1(1.5)	0	0	0	0	0	68	9
2014	7.7(86.3)	0	0.8(8.8)	0	0	0.4(5.0)	0	0	0	0	0	80	9
2015	8.8(94.0)	0.1(1.2)	0.3(3.6)	0	0	0	0	0.1(1.2)	0	0	0	84	9
2016	3.3(83.3)	0	0.6(13.9)	0	0.1(2.8)	0	0	0	0	0	0	36	9
2017	4.6(73.2)	0.2(3.6)	1.3(21.4)	0	0	0	0	0.1(1.8)	0	0	0	56	9
2018	2.8(83.3)	0	0.6(16.7)	0	0	0	0	0	0	0	0	30	9
2019	2.4(59.5)	0.2(5.4)	1.4(35.1)	0	0	0	0	0	0	0	0	37	9
2020	3.2(90.6)	0	0.1(3.1)	0	0	0	0	0.2(6.3)	0	0	0	32	9
2021	8.1(86.9)	0.1(1.2)	1.0(10.7)	0	0	0	0.1(1.2)	0	0	0	0	84	9
2022	5.4(73.1)	0.1(1.5)	1.6(20.9)	0	0.1(1.5)	0.1(1.5)	0	0	0.1(1.5)	0	0	67	9
2023	4.2(64.4)	0	2.3(35.6)	0	0	0	0	0	0	0	0	59	9

Appendix H. Number of fish per net (percent composition) of catch in Holter Fall Sinking gillnets (1986-2023).

Number per net (percent composition) by species for fall sinking gillnet catches in Holter Reservoir.													
Fall-released 0+ Arlee rainbows are not included in table.													
	RB	LL	KOK	MWF	WE	YP	LNSU	WSU	CARP	BURBOT	NP	TOTAL #	# NETS
1986	4.0(4.3)	0.2(0.2)	0.3(0.4)	1.7(1.8)	2.3(2.5)	22.0(24.0)	22.0(24.0)	39.3(42.8)	0	0	0	551	6
1987	2.5(2.5)	0.3(0.3)	0.2(0.2)	2.0(2.0)	3.2(3.1)	28.8(28.8)	21.5(21.5)	41.7(41.6)	0	0	0	601	6
1988	2.7(2.6)	0	0.5(0.5)	0.5(0.5)	1.3(1.3)	22.2(21.8)	22.3(21.9)	52.2(51.2)	0.2(0.2)	0	0	611	6
1989	1.5(1.8)	0	0.5(0.6)	1.5(1.8)	4.3(5.2)	8.8(10.6)	17.0(20.4)	49.7(59.6)	0	0	0	500	6
1990	2.5(3.1)	0	1.5(1.9)	3.5(4.3)	2.3(2.9)	13.0(16.0)	12.5(15.4)	45.5(56.2)	0.2(0.2)	0	0	486	6
1991	4.2(4.4)	0	1.5(1.6)	1.2(1.3)	2.8(3.0)	10.7(11.3)	19.2(20.3)	54.8(58.1)	0	0	0	566	6
1992	0.7(0.8)	0.2(0.2)	1.2(1.4)	1.8(2.2)	3.5(4.2)	18.0(21.5)	13.0(15.5)	45.0(53.8)	0.3(0.4)	0	0	502	6
1993	1.0(1.5)	0.2(0.2)	1.0(1.5)	1.0(1.5)	4.0(6.0)	6.3(9.4)	11.3(17.0)	41.7(62.3)	0.3(0.5)	0	0	401	6
1994	1.8(2.7)	0	0.8(1.2)	0.2(0.2)	1.7(2.4)	6.8(10.0)	16.0(23.4)	41.0(60.0)	0	0	0	410	6
1995	3.3(3.9)	0	1.8(2.1)	0.5(0.6)	0.5(0.6)	7.7(9.0)	11.0(12.9)	59.8(70.0)	0.7(0.8)	0.2(0.2)	0	513	6
1996	1.3(1.8)	0.2(0.2)	4.8(6.4)	0.5(0.7)	4.5(6.0)	2.2(2.9)	15.0(20.0)	46.2(61.4)	0.5(0.7)	0	0	451	6
1997	1.7(2.8)	0	0.2(0.3)	0.8(1.4)	4.2(7.0)	1.2(2.0)	10.2(17.2)	41.0(69.3)	0	0	0	355	6
1998	0.5(1.0)	0	0	1.0(2.0)	4.2(8.5)	1.3(2.7)	5.3(10.8)	36.8(74.9)	0	0	0	295	6
1999	0.3(0.7)	0	0.2(0.3)	0	9.5(19.1)	0.3(0.7)	8.7(17.4)	30.8(61.9)	0	0	0	299	6
2000	0.3(0.6)	0	0	0.2(0.3)	4.7(8.9)	3.7(7.0)	10.7(20.4)	32.8(62.7)	0	0	0	314	6
2001	0.8(1.5)	0	0	0	4.5(8.3)	3.0(5.6)	8.0(14.8)	37.5(69.4)	0	0.2(0.3)	0	324	6
2002	0.5(1.0)	0	0.2(0.3)	0.2(0.3)	3.0(6.0)	1.7(3.3)	7.2(14.4)	36.8(74.2)	0	0.2(0.3)	0	298	6
2003	0	0	0	0	2.5(5.0)	5.2(10.4)	6.5(13.0)	35.7(71.6)	0	0	0	299	6
2004	0.7(1.5)	0	0.7(1.5)	0.2(0.4)	3.3(7.5)	1.7(3.7)	8.3(18.7)	29.7(66.4)	0	0.2(0.4)	0	268	6
2005	0.8(1.7)	0	0.7(1.4)	0	2.5(5.2)	2.7(5.6)	7.7(16.0)	33.7(70.1)	0	0	0	288	6
2006	0.8(2.0)	0	0.2(0.4)	0	3.3(7.8)	3.8(9.0)	3.8(9.0)	30.2(71.0)	0	0.3(0.8)	0	255	6
2007	0.7(1.7)	0.2(0.4)	0.7(1.7)	0	5.2(13.2)	1.5(3.8)	6.0(15.3)	24.0(61.3)	0	1.0(2.6)	0	235	6
2008	1.7(4.3)	0	0.3(0.9)	0	7.3(18.8)	3.3(8.5)	4.5(11.5)	20.8(53.4)	0	1.0(2.6)	0	234	6
2009	1.7(5.2)	0	0.5(1.5)	0.2(0.5)	7.5(23.2)	0.7(2.1)	4.7(14.4)	15.7(48.5)	0	1.5(4.6)	0	194	6
2010	1.8(5.9)	0	0	0	4.0(12.8)	1.3(4.3)	3.7(11.8)	20.0(64.2)	0	0.3(1.1)	0	187	6
2011	0.7(1.9)	0	0	0.2(0.5)	5.7(15.8)	3.5(9.8)	4.8(13.5)	20.2(56.3)	0	0.8(2.3)	0	215	6
2012	0.8(2.1)	0	0	0	8.2(20.7)	3.5(8.9)	1.5(3.8)	25.0(63.3)	0	0.5(1.3)	0	237	6
2013	2.2(2.0)	0	0	0	11.3(10.4)	66.7(60.9)	2.8(2.6)	24.3(22.2)	0	2.2(2.0)	0	657	6
2014	0.7(0.7)	0	0	0	2.8(3.0)	54.5(57.2)	1.8(1.9)	32.8(34.4)	0	2.7(2.8)	0	572	6
2015	2.5(3.2)	0	0.2(0.2)	0	3.8(4.8)	45.5(57.5)	1.5(1.9)	23.5(29.7)	0	2.2(2.7)	0	475	6
2016	1.2(2.1)	0	0.2(0.3)	0	2.7(4.7)	25.2(44.4)	2.0(3.5)	24.5(43.2)	0	1.0(1.8)	0	340	6
2017	1.7(3.7)	0	0.2(0.4)	0	2.3(5.2)	13.8(30.9)	1.5(3.3)	24.2(53.9)	0	1.2(2.6)	0	269	6
2018	0.5(1.2)	0	0	0	3.5(8.3)	7.0(16.6)	2.3(5.5)	26.5(62.8)	0	2.3(5.5)	0	253	6
2019	0.2(0.5)	0	0	0	1.5(4.5)	1.8(5.5)	1.2(3.5)	27.7(82.6)	0	1.0(3.0)	0.2(0.5)	201	6
2020	1.3(3.5)	0.3(0.9)	0.2(0.4)	0	4.0(10.5)	4.2(11.0)	2.2(5.7)	24.5(64.5)	0	0.5(1.3)	0.8(2.2)	228	6
2021	1.3(2.1)	0	0	0	5.5(8.8)	30.2(48.4)	0.3(0.5)	20.7(33.2)	0	3.5(5.6)	0.8(1.3)	374	6
2022	1.0(1.7)	0.2(0.3)	0	0	4.2(7.0)	32.0(53.8)	1.3(2.2)	17.5(29.4)	0	2.5(4.2)	0.8(1.4)	357	6
2023	1.3(2.4)	0	0.8(1.5)	0	4.3(7.6)	28.5(50.3)	0.5(0.9)	18.5(32.6)	0	2.5(4.4)	0.2(0.3)	340	6

References

- Berg, R.K., and M. Lere. 1983. Fish populations of Hauser and Holter Reservoirs, Montana with emphasis on tributary recruitment. USDI, Bureau of Reclamation Progress Report. Montana Fish, Wildlife & Parks, Ecological Services Division, Helena, Montana, USA.
- Lere, M. 1986. Statewide Fisheries Investigations. Mid-Missouri River Reservoirs Study. Fed. Aid to Fish and Wild. Rest. Project No. F-36-R-2, Job II-f. 66 pp.
- Lere, M. 1987. Statewide Fisheries Investigations. Mid-Missouri River Reservoirs Study. Fed. Aid to Fish and Wild. Rest. Project No. F-36-R-2, Job II-f. 52 pp.
- Montana Department of Fish, Wildlife and Parks. 1985. Upper Missouri River reservoir operating guidelines for fish, wildlife and recreation. 38 pp.
- Montana Department of Fish, Wildlife and Parks. 2013. Fisheries Information System. Helena.
- Montana Department of Fish, Wildlife and Parks. 2020. Upper Missouri River Reservoirs Fisheries Management Plan, 2020-2029.
- NorthWestern Energy. 2018. Five Year Plan (2019-2023) to Protect, Mitigate, and Enhance Fisheries in Hauser and Holter Reservoirs and the Missouri River. 32 pp.
- Ricker, W.E. 1975. Computation and Interpretation of biological statistics of fish populations. Bulletin of the Fisheries Research Board of Canada. Department of Fisheries and Oceans, Pacific Biological Station. Nanaimo, B.C. V9R 5K6
- Skaar, D. and T. Humphrey. 1997. Statewide Fisheries Investigations. Hauser and Holter Reservoirs Study part B: Flushing losses of hatchery rainbow trout from three mid-Missouri River reservoirs. Fed. Aid to Fish and Wild. Rest. Project No. F-46-R-5, Job II-F. 54 pp.
- Slipke, J.W. and M. Maceina. 2005. Fishery Analyses and Simulation Tools FAST 2.1. Auburn University, Alabama.
- Spinelli, J.P. 2010. Spatial and temporal entrainment of fish from Hauser Reservoir, Montana. Master's Thesis. Montana State University, Bozeman.