Fisheries Division
Federal Aid Job Progress Report

Montana Statewide Fisheries Management

Federal Aid Project Number: F-113-R-6

July 1, 2020 – June 30, 2021

Project Title: Montana Statewide Fisheries Management

Job Title: Havre Area Coldwater Fisheries Management

Abstract:

The coldwater fisheries in Hill, Blaine, and Phillips Counties maintained favorable water levels in 2019/2020. However, several severe algal blooms were observed at multiple reservoirs by August and September. Rainbow trout survival in Beaver Creek Reservoir has been marginal the past few years and correlates with lower trout densities, likely due to predation by walleye and pike shortly after stocking. Rainbow trout densities and growth in Bearpaw Lake have been stable but white sucker densities continue to remain high. Beaver Creek Reservoir, Bearpaw Lake and select ponds and reservoirs in Hill, Blaine, and Phillips Counties were monitored in 2020 and results and management recommendations for all these waters are presented.

OBJECTIVES AND DEGREE OF ATTAINMENT

Survey and Inventory: Objective is to survey and monitor the characteristics and trends of fish populations, angler harvest and preference, and to assess habitat conditions in selected waters. Objective accomplished, data presented.

Fish Population Management: Objective is to implement fish stocking programs and/or fish eradication actions to maintain fish populations at levels consistent with habitat conditions and other limiting factors. Objective accomplished, data presented.

Technical Guidance: To review projects by federal, state and local government agencies and private parties that has the potential to affect fisheries resources, and to provide technical advice or decisions to mitigate impacts on these resources. Provide landowners and other private parties with technical advice and information to sustain and enhance fisheries resources. Objective accomplished: (2) 310 and (4) 124 projects were reviewed along with one stormwater review with local agencies; attended one walleye unlimited meeting and helped with two school programs and fishing events related to the "Hooked on Fishing" program.

METHODS

Floating and sinking multi-filament experimental gill nets 125 feet in length and 6 feet deep consisting of 25-foot panels of ¾", 1", 1 ¼", 1 ½", and 2 ½" mesh were set to acquire information on adult fish populations in ponds and reservoirs. Whenever possible, fish were measured for total length (TL: inches (in.)) and weighed to the nearest 0.01 pound (lbs.).

RESULTS AND DISCUSSION

Beaver Creek Reservoir

Beaver Creek Reservoir, located south of Havre, is a 185-acre reservoir with a maximum depth of 80 feet. Its proximity to the city of Havre makes this reservoir a valuable local resource and it has been managed intensively for a variety of species. The statewide fishing pressure survey for 2019/2020 indicated it received 930 (± 562) angler days (MTFWP Fisheries Bureau 2020). The decrease in pressure observed in 2019 may be due to annual drawdowns in the reservoir by more than 15 feet and recent harmful algal blooms in August/September.

This reservoir was initially managed as a rainbow trout fishery in the 1970's. However, the illegal introductions of northern pike (1980s) and yellow perch (1980s) created a variable rainbow trout fishery. As a result, the fisheries management plan was expanded to include other warm water species, which were legally introduced to control white suckers and enhance the fishing opportunity within the reservoir. Currently this reservoir receives annual plants of 20,000 catchable size Arlee x Erwin and Gerrard rainbow trout, as well as 10,000 fingerling and 5,000 advanced fingerling walleye.

Population Status of Adult Fishes

Water levels in September 2020 were down approximately 12 feet during our sampling effort, with a strong algal bloom occurring. Gill netting was conducted overnight with three sinking and three floating experimental gill nets. Prior to 1986, adult fish populations were monitored, however sampling was neither uniform, nor consistent enough to develop useful trend data on sport fish population size or composition. As a result, this data was excluded from analysis and is only included within the tables for reference to the illegal introduction of northern pike and yellow perch.

Rainbow Trout

Historically, rainbow trout densities have exhibited high annual variation. This variability can be attributed to rainbow trout stocking densities, predation by northern pike and walleye, and entrainment during high water events.

In 2006, stocking densities of rainbow trout reflected historical densities (70,000 RB/year) and relative abundance increased to target levels (10 trout/net) in 2007 and 2008 (Tables 1 and 2). Rainbow trout relative abundance fell below target levels in 2009, 2010, 2011 and 2013 (Table 1), major flood events occurred in three of the four years. In 2014, rainbow trout relative abundance increased to its highest level in 11 years (14 fish/net) and dropped slightly in 2015 to 11.83 fish/net ($\bar{x}$ length=12.78), remaining above historic abundances (Table 1).

Rainbow trout relative abundances dropped to 4.33 trout/net in 2016, the lowest abundance observed since 2011(Table 1). In 2017 and 2019, sampling took place at the same time as the fall rainbow trout plant. This was unintentional and resulted in inflated rainbow trout relative abundance and reduced average length (Table 1). Rainbow relative abundance observed in 2020 was the lowest ever documented at 0.17 trout/net (Table 1). Since 2008, rainbow trout stocking densities into Beaver Creek Reservoir were decreased due to budget cuts and hatchery space, stocking densities increased in 2020 (Table 2). Walleye densities have doubled their historic abundance averages and could be increasing the predation of stocked rainbow trout as well (Table 1).

Table 1. Summary of relative abundance (catch per unit effort (CPUE)), average total length, and relative weights of fishes collected in fall gillnetting surveys in Beaver Creek Reservoir, 1974-2020.

			Rainbow Trout			Yellow Perch			Northern Pike			Smallmouth bass			Walleye			Longnose sucker		White sucker	
Date		Nets	Rel. Ab (fish/net)	Ave TL (in.)	Rel Wt	Rel. Ab (fish/net)	Ave TL (in.)	Rel Wt	Rel. Ab (fish/net)	Ave TL (in.)	Rel Wt	Rel. Ab (fish/net)	Ave TL (in.)	Rel Wt	Rel. Ab (fish/net)	Ave TL (in.)	Rel Wt	Rel. Ab (fish/net)	Ave TL (in.)	Rel. Ab (fish/net)	Ave TL (in.)
Sep-74	1974	3	24.00	10.91	111.26	--	--	--	--	--	--	--	--	--	--	--	--	7.33	10.49	82.33	10.23
Nov-77	1977	3	35.00	10.05	86.31	--	--	--	--	--	--	--	--	--	--	--	--	2.33	9.66	113.00	9.75
Sep-80	1980	3	23.33	10.12	81.04	--	--	--	--	--	--	--	--	--	--	--	--	1.33	6.33	156.00	8.86
Sep-81	1981	3	7.33	10.88	82.77	--	--	--	--	--	--	--	--	--	--	--	--	6.67	8.78	165.33	8.70
Oct-82	1982	3	8.33	11.78	99.67	--	--	--	2.33	15.79	109.67	--	--	--	--	--	--	3.33	9.66	109.67	9.69
Oct-83	1983	3	3.33	11.79	94.66	--	--	--	3.67	25.10	117.07	--	--	--	--	--	--	1.33	--	98.33	--
Sep-84	1984	3	3.00	11.26	95.43	--	--	--	3.67	26.64	111.21	--	--	--	--	--	--	0.67	11.00	58.33	10.50
Sep-86	1986	6	15.00	11.50	98.90	--	--	--	4.17	16.68	109.86	--	--	--	--	--	--	0.00	--	42.00	--
Sep-87	1987	6	11.33	13.61	92.06	0.33	6.30	--	5.17	22.43	91.71	--	--	--	0.00	--	--	0.00	--	18.00	--
Sep-88	1988	6	9.67	14.74	90.40	8.17	5.93	105.50	3.00	27.55	123.61	--	--	--	0.67	10.58	86.48	4.00	--	14.00	--
Sep-89	1989	6	10.67	13.15	93.45	9.17	7.59	96.04	1.17	30.31	94.56	--	--	--	0.00	--	--	2.50	--	14.33	4.13
Sep-90	1990	6	18.50	11.96	88.66	4.00	8.51	95.13	0.67	20.95	100.49	--	--	--	2.67	13.69	81.72	9.17	8.04	9.67	14.12
Sep-91	1991	6	15.50	12.78	93.26	12.00	7.39	103.98	2.33	16.57	95.37	--	--	--	5.67	13.98	90.24	2.83	--	8.17	--
Sep-92	1992	6	13.67	13.74	93.42	6.00	6.37	91.54	3.33	25.64	113.39	--	--	--	2.33	17.84	94.80	1.33	--	7.67	--
Sep-93	1993	6	3.17	16.43	94.48	12.33	7.20	109.06	2.00	27.49	100.01	--	--	--	3.33	16.75	95.36	0.00	--	8.67	--
Sep-94	1994	6	27.67	11.73	99.87	23.83	7.65	101.80	2.83	25.52	114.54	--	--	--	1.67	17.39	103.33	0.00	--	6.00	--
Sep-95	1995	6	20.17	13.42	96.73	20.00	7.71	102.97	3.50	21.66	96.62	--	--	--	2.50	17.96	90.90	0.00	--	12.83	--
Sep-96	1996	6	7.83	12.56	96.59	38.00	7.58	105.79	2.83	24.86	103.02	0.17	10.10	119.26	3.33	16.68	96.53	0.00	--	11.00	3.75
Sep-97	1997	6	6.83	13.00	91.31	39.50	7.22	94.54	4.17	21.70	99.11	0.00	--	--	2.17	17.65	96.90	0.00	--	6.17	--
Sep-98	1998	6	4.50	15.53	86.75	47.17	7.55	93.84	4.83	24.43	94.79	0.33	11.65	114.91	4.33	18.04	96.05	0.00	--	10.17	13.74
Sep-99	1999	5	4.20	12.26	104.04	40.60	8.39	93.18	2.20	24.17	105.00	0.80	8.95	119.90	4.40	15.24	95.74	0.20	17.30	4.60	13.39
Sep-00	2000	6	1.00	15.07	93.40	25.00	7.52	96.67	2.50	25.33	99.20	0.50	7.80	104.56	4.67	16.66	96.31	0.00	--	4.17	0.00
Sep-01	2001	6	14.50	12.09	92.76	30.67	7.39	100.86	1.00	27.73	96.81	0.17	10.40	108.60	4.50	13.93	93.62	0.17	17.10	8.67	14.72
Sep-02	2002	6	3.33	11.98	96.85	21.67	7.98	100.11	1.17	25.76	96.31	0.50	9.43	99.04	7.67	14.90	89.57	0.17	--	5.33	--
Sep-03	2003	5	15.80	11.46	102.26	12.20	7.94	125.10	2.00	13.90	108.18	0.20	10.40	96.53	3.60	14.74	101.16	0.00	--	2.60	--
Sep-04	2004	6	12.83	11.62	93.09	16.17	8.34	99.43	0.67	23.90	103.89	0.33	8.20	103.42	2.50	15.32	68.68	0.17	19.20	5.17	15.99
Sep-05	2005	6	5.50	13.63	97.00	12.33	8.35	102.88	0.50	29.23	104.05	0.00	--	--	3.33	15.29	96.82	0.00	--	6.00	16.57
Sep-06	2006	6	3.00	13.38	143.90	23.00	7.71	101.30	1.50	26.94	97.10	0.00	--	--	3.00	15.08	98.10	0.00	--	3.00	16.89
Sep-07	2007	6	9.00	11.80	95.70	29.33	7.90	107.00	1.67	27.50	101.50	0.17	9.20	107.20	5.17	12.80	103.80	0.00	--	17.00	17.20
Sep-08	2008	6	10.00	12.05	104.30	26.50	8.01	102.48	1.00	28.10	97.53	0.17	14.00	113.20	2.67	19.80	94.20	0.00	--	1.83	16.89
Sep-09	2009	6	4.00	11.80	100.90	20.00	8.20	100.40	2.33	26.40	95.16	0.17	15.70	124.59	3.67	18.26	104.72	0.00	--	0.83	16.90
Sep-10	2010	6	3.67	12.12	110.10	19.20	7.35	106.30	0.83	24.32	92.23	0.17	10.20	113.73	1.33	14.48	87.10	0.00	--	1.17	16.59
Aug-11	2011	4	3.75	12.93	98.08	26.50	7.76	92.06	1.75	18.10	83.31	0.25	8.20	76.40	0.75	13.63	81.05	0.00	--	6.00	16.07
Sep-12	2012	6	12.33	11.75	105.68	36.33	8.53	157.05	1.00	24.07	106.95	0.33	9.40	111.89	3.83	11.76	99.32	0.00	--	3.20	15.14
Sep-13	2013	6	5.33	11.56	104.79	26.00	8.81	104.64	0.33	22.05	92.04	--	--	--	2.50	10.18	87.06	0.00	--	5.33	16.28
Sep-14	2014	6	14.00	12.22	98.22	8.50	8.34	92.12	1.50	25.46	100.97	0.33	13.50	104.83	1.83	15.25	83.76	0.00	--	2.66	16.31
Sep-15	2015	6	11.83	12.78	96.40	12.33	8.79	95.82	2.00	24.95	101.28	0.66	11.75	108.10	4.66	12.72	94.03	0.00	--	1.83	16.84
Sep-16	2016	6	4.33	13.57	95.91	5.00	8.24	98.79	1.16	23.23	95.79	0.83	13.50	103.27	8.33	13.82	89.11	0.00	--	2.50	17.64
Sep-17	2017	4	23.25	9.21	110.26	7.50	7.64	92.54	1.50	24.62	100.71	--	--	--	8.50	14.04	87.75	0.00	--	1.00	16.60
Sep-18	2018	6	0.67	17.45	107.56	4.67	7.87	98.67	1.67	24.65	103.82	0.33	11.50	105.35	8.67	14.01	89.26	0.00	--	1.67	17.64
Sep-19	2019	6	13.17	8.09	106.75	20.67	5.95	94.81	2.17	21.95	103.71	0.17	14.60	99.95	13.17	14.68	85.71	0.00	--	0.67	18.80
Sep-20	2020	6	0.17	14.90	92.58	20.33	6.48	94.23	3.50	28.61	101.54	--	--	--	6.50	16.31	84.57	0.00	--	1.17	17.91

Table 2. Rainbow trout historic stocking rates as it relates to densities stocked, strain, length and month on Beaver Creek Reservoir, 1997-2020. Strains include A-Arlee I- Eagle Lake T- Erwin N- Arlee x Eagle Lake R- Arlee x Erwin G- Gerrard.

Year	# Stocked	Strain	Length (Inches)	Month Stocked
1997	19,990	T	6.7-7.3	April
1997	52,722	A	3.6	May
1997	19,219	I	5.9	June
1998	11,358	T	6.8	April
1998	5,200	T	7.3	May
1998	40,086	A	4.0	June
1998	19,992	I	5.6	June
1999	17,010	T	7.0	April
1999	10,413	A	6.8	April
1999	4,858	T	8.7	June
1999	18,691	A	5.8	July
1999	6,975	I	3.0	August
2000	10,557	A	6.0	April
2000	25,010	T	6.7	April
2000	18,955	I	4.2	July
2000	36,758	A	6.8	September
2001	21,151	T	6.2	April
2001	6,012	N	4.2	June
2001	52,578	A	6.5	September
2001	15,433	I	4.6	September
2002	20,010	T	6.5	April
2002	4,992	A	3.2	April
2002	47,721	A	6.7-7.3	September
2002	2,992	T	9.0	September
2003	20,705	T	6.2	April
2003	48,563	A	5.6-7.2	September
2003	15,175	N	6.4	September
2004	20,040	T	5.9	April
2004	7,000	I	4.1	August
2004	17,149	I	4.4	September
2004	45,663	A	6.3-7.0	September
2004	9,998	I	3.8	October
2005	10,440	T	6.6	April
2005	30,976	A	7.7	September
2006	20,045	T	6.7	April
2006	19,125	A	3.2	May
2006	54,854	A	6.7-7.9	September
2007	19,121	I	8.0	April
2007	52,058	A	6.5-7.6	September
2007	24,823	I	4.3	September
2008	20,168	R	6.9	April
2008	50,222	A	6.1-7.5	September
2009	10,005	R	7.2	April
2009	8,364	I	8.6	May
2009	49,210	A	7.8-8.4	September
2010	19,995	R	6.9	April
2011	10,120	R	6.6	April
2011	24,486	A	7.7	August
2012	30,124	A	8.6	September
2013	20,120	AxI	7.2	April
2013	30,000	A	6.2	September
2014	50,362	A, R	5.9	April/September
2015	36,160	A, R	7-8.2	April/September
2016	20,137	R	6.0-7.0	April
2017	41,424	A, R	7.0-8.5	April/September
2018	24,020	A, R	7.1	May/September
2019	22,483	A, R	7.5	April/September
2020	20,740	G	5.3	October
2020	82,709	A, R	3.7	July
2020	20,500	R	6.8	April

Bearpaw Lake

Bearpaw Lake is a very popular 45 surface-acre reservoir located on Beaver Creek in the Bearpaw Mountains and received 9,390 (± 2,986) angler days in 2019/2020 (MTFWP Fisheries Bureau 2020). Bearpaw Lake has been managed as a trout fishery since 1960 and is currently maintained with annual plants of 20,000 catchable size Arlee rainbow trout. Stocking of cutthroats was discontinued in 2010 due to poor growth rates and overall condition of these fish in Bearpaw Lake. Wild brook trout migrating out of Beaver Creek are also found in the reservoir.

Bearpaw Lake and Beaver Creek also sustain a very robust population of white suckers, which negatively impacts the rainbow trout fishery (Leslie 2007). To limit white sucker abundance, FWP introduced smallmouth bass and they have been naturally reproducing within the reservoir since 1998. Walleye were illegally introduced in the 1990s and were then utilized as a control measure for white suckers with periodic stockings from 1992 to 1997. In 2006, a supplemental plant of 5,000 advanced fingerlings occurred to replenish the ageing walleye population. Following a chemical rehabilitation of Bearpaw Lake conducted in 1983, a manual sucker control program was initiated in 1989 to reduce food competition between trout and white suckers and improve growth and survival of rainbow trout. From 2016-2019, no removal effort of white suckers was conducted, and their abundance increased (Table 3).

Population Status of Adult Fishes

Adult fish populations were monitored at three fixed experimental gillnetting sites, established in 1984. Gill netting was conducted over-night utilizing one sinking experimental gill net and two floating experimental gill nets. The sinking and floating experimental gill nets were 125 feet in length and 6 feet deep consisting of 25-foot panels of ¾", 1", 1 ¼", 1 ½", and 2 ½" mesh. Fish were measured for total length (TL: inches) and weighted to the nearest 0.01 pound (lb).

Since 1989, manual control of white suckers has been attempted annually. Control efforts involve setting five or more trap nets for one to two weeks during their peak spawning period (April/May). Traps are checked daily and white suckers are killed and returned to the lake or dumped at a landfill. Due to sampling conflicts, no additional trap netting occurred from 2016-2019 to remove adult white suckers.

Rainbow Trout

Rainbow trout have been stocked in Bearpaw Lake since the 1960s and have been stocked at a rate of 20,000 catchables annually (Table 4). Stocking densities were reduced in 2018 and 2019 due to reduced hatchery budgets but increased in 2020 (Table 4).

The relative abundance of rainbow trout has varied greatly since their introduction (Table 3). The primary reasons for these fluctuations are stocking densities, fishing pressure, stream flows (entrainment) over spillway, and competition with white suckers. In 2015, relative abundance of rainbow trout increased to their highest level since chemical rehabilitation occurred in 1983 (55.7 fish/net), this was the second consecutive year record rainbow trout relative abundance was documented (Table 3). Rainbow trout relative abundance decreased by 60% to 22.3 rainbow trout/net in 2016 and fell to their lowest level since 2009 in 2019 (11.67 fish/net; Table 3). Rainbow relative abundance increased to 31.3 fish/net in 2020 (Table 3).

Rainbow and brook trout have had relatively poor growth rates due to competition with white suckers for food. However, since the initiation of manual control effort of white suckers and the introductions of smallmouth bass (1992) and walleye (legally in 1995; Table 5), the average length of trout has increased from lengths recorded in the late 1990s (Figure 2; Table 3).

White Sucker

The white sucker population has been significantly reduced since control efforts were initiated in 1984 (Figure 1; Table 3). Chemical rehabilitation was attempted in 1983 however white suckers quickly re-populated the lake from upstream sources in Beaver Creek. In 1989, a manual removal program was

initiated. In 1992 and 1995 smallmouth bass and walleye were introduced to help control YOY and adult white sucker populations. From 1989 to 2020, 151,184 white suckers have been removed using trap and gill nets (Table 5). Overall the average size of white suckers has remained high ($\bar{x}$ TL=12.0 inches; Table 3), indicating that control efforts reduced spawning adult abundance.

In 2016, white sucker relative abundance increased by 38% to 53 white sucker/net (Table 3). White suckers accounted for 80% of the total catch during fall surveys and densities have increased since 2011 (Table 3). Results from 2017-2020 show the white sucker population continues to increase (> 60 white sucker/net; Table 3). Removal efforts may have been able to slightly reduce the adult population of suckers from 2016-2020; however, in recent years (2008-2012), when significant declines in white sucker relative abundance occurred (Table 3), significant outflows from Bearpaw Lake were recorded. It appears entrainment of suckers during high water events may have a greater influence on white sucker abundance than manual removal efforts. No significant water events have occurred on Bearpaw Lake since 2013.

Smallmouth Bass

Smallmouth bass were introduced legally in 1992 to assist with the control of YOY white suckers. Since 1998, smallmouth bass have been successfully reproducing and recruiting into the population. In addition to providing control of white suckers, smallmouth bass have become an important addition to the fishery. Anglers continue to report catching many smallmouth bass throughout the reservoir during the summer months.

Walleye

Walleye were illegally introduced into Bearpaw Lake in the early 1990s. They were first documented in the lake in 1992. From 1992 to 1997, walleye fry and fingerlings were stocked to help control adult white sucker populations. Walleye were last stocked in 2006 with 5,000 advanced fingerlings to replenish the ageing walleye population. Since their legal introduction, walleye have exhibited slow growth and their densities continue to decline and are likely extirpated from Bearpaw Lake (no walleye captured during last seven fall surveys; Table 3).

Figure 1. - Comparison of white sucker relative abundance during fall gill netting surveys and average length of rainbow trout sampled in Bearpaw Lake (1984-2020).

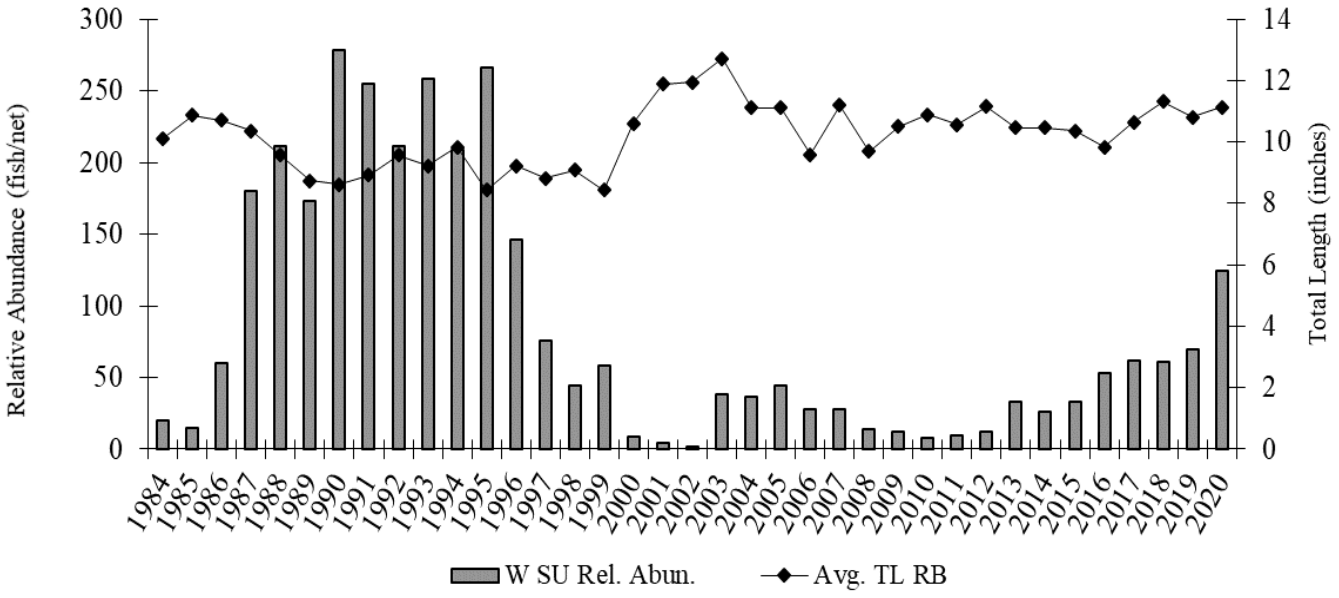


Table 3.- Summary of relative abundance (catch per unit effort (CPUE)), total length (TL), and relative weights of fishes collected in fall gillnetting surveys in Bear Paw Lake since chemical rehabilitation in 1983.

			Rainbow Trout			Brook Trout			Yellowstone Cutthoat Trout			White Sucker			Smallmouth Bass			Walleye		
Date		Nets	CPUE (fish/net)	Ave TL (in.)	Rel Wt	CPUE (fish/net)	Ave TL (in.)	Rel Wt	CPUE (fish/net)	Ave TL (in.)	Rel Wt	CPUE (fish/net)	Ave TL (in.)	Rel Wt	CPUE (fish/net)	Ave TL (in.)	Rel Wt	CPUE (fish/net)	Ave TL (in.)	Rel Wt
Sep-84	1984	2	0.00	--	--	0.00	--	--	15.50	10.13	86.34	13.50	8.00	--	--	--	--	--	--	--
Sep-85	1985	3	1.33	12.03	97.49	1.00	9.05	109.72	27.33	11.50	86.83	6.33	--	--	--	--	--	--	--	--
Sep-86	1986	3	0.00	--	--	3.33	10.41	106.78	16.67	11.01	86.45	94.33	6.40	--	--	--	--	--	--	--
Sep-87	1987	3	17.00	11.27	93.31	3.00	10.31	103.48	25.67	9.52	86.21	192.67	7.00	--	--	--	--	--	--	--
Aug-88	1988	3	9.33	10.66	83.05	1.33	10.48	100.24	9.00	7.60	90.08	210.33	11.67	93.74	--	--	--	--	--	--
Sep-89	1989	3	15.33	8.64	88.09	0.67	9.50	106.91	19.33	8.08	85.50	173.67	8.00	--	--	--	--	--	--	--
Aug-90	1990	3	9.00	9.95	81.94	0.33	7.20	86.56	22.33	8.71	77.85	277.67	8.00	--	--	--	--	--	--	--
Aug-91	1991	3	4.00	10.23	88.55	0.67	7.45	104.75	15.00	9.12	85.36	255.33	8.00	--	--	--	--	--	--	--
Sep-92	1992	3	17.00	9.83	90.97	0.33	10.10	90.14	58.67	8.79	77.22	212.00	8.00	--	--	--	--	0.33	13.90	97.61
Sep-93	1993	3	0.00	--	--	0.33	9.30	105.94	6.00	9.15	81.65	258.33	8.00	--	0.00	--	--	0.00	--	--
Sep-94	1994	3	6.33	10.59	101.87	0.00	--	--	13.67	9.09	79.87	208.67	8.00	--	0.00	--	--	0.00	--	--
Sep-95	1995	2	21.50	9.07	92.20	0.00	--	--	89.50	7.82	81.30	399.00	8.00	--	1.00	5.80	111.70	0.00	--	--
Sep-96	1996	3	1.67	10.36	102.97	0.33	8.40	90.25	60.67	8.94	85.64	146.00	8.80	--	0.67	6.80	96.44	1.33	8.73	81.46
Sep-97	1997	3	24.67	9.16	93.58	0.00	--	--	26.00	8.47	80.26	76.00	10.00	--	0.67	9.90	103.82	1.00	7.73	72.03
Sep-98	1998	3	10.00	9.34	86.71	0.00	--	--	3.67	8.84	72.68	44.33	12.02	84.89	0.33	6.00	90.19	1.33	8.43	80.59
Sep-99	1999	3	43.33	8.31	97.60	0.00	--	--	19.33	8.54	79.14	57.33	12.00	--	0.00	--	--	1.33	10.43	83.95
Sep-00	2000	2	46.00	11.36	97.54	1.50	9.67	98.77	20.00	10.81	80.53	14.00	12.00	--	6.00	9.76	103.09	3.50	11.30	88.39
Sep-01	2001	2	11.00	13.39	98.99	6.50	11.36	101.16	15.00	10.91	81.14	6.00	8.00	--	2.00	10.83	102.66	0.00	--	--
Sep-02	2002	2	19.50	12.58	98.57	0.00	--	--	6.50	11.31	83.45	3.00	13.52	99.67	0.00	--	--	2.00	19.50	82.57
Sep-03	2003	3	16.33	12.72	94.32	0.00	--	--	0.00	--	--	37.67	8.00	--	5.67	12.21	112.80	1.00	19.60	101.96
Sep-04	2004	3	13.33	11.11	--	0.00	--	--	0.00	--	--	36.67	12.60	--	0.33	14.50	--	0.67	20.45	--
Sep-05	2005	3	24.67	11.12	92.19	0.00	--	--	0.33	--	--	44.67	13.14	99.05	5.67	9.07	112.75	1.33	20.53	101.17
Sep-06	2006	3	32.00	10.62	98.00	0.00	--	--	0.67	9.35	96.10	28.00	15.31	108.20	9.00	9.84	109.80	0.33	15.40	104.20
Sep-07	2007	3	13.33	11.20	96.30	0.00	--	--	2.33	9.20	80.90	28.00	13.40	102.30	9.00	9.00	115.70	4.33	7.60	96.10
Sep-08	2008	3	30.33	9.73	94.58	0.00	--	--	7.67	9.03	84.95	14.00	14.12	108.86	5.67	10.94	147.97	5.00	8.07	97.96
Sep-09	2009	3	9.66	10.50	73.45	0.33	10.00	100.88	9.00	9.33	62.37	12.33	14.58	95.00	7.66	11.31	104.73	2.66	10.25	80.07
Sep-10	2010	3	14.33	10.90	104.35	0.33	10.00	111.49	0.00	--	--	7.67	13.80	104.10	1.67	8.94	117.20	6.00	10.62	98.00
Aug-11	2011	3	26.33	10.56	98.91	0.33	10.60	106.02	0.00	--	--	10.00	14.28	102.92	0.00	--	--	0.67	12.40	103.88
Sep-12	2012	3	34.67	11.15	99.37	1.33	9.73	99.80	0.00	--	--	12.00	12.26	103.03	0.66	10.80	106.63	1.66	14.90	102.83
Sep-13	2013	3	24.00	10.47	146.81	0.66	8.55	98.05	0.00	--	--	33.33	12.79	106.65	1.66	12.20	104.72	0.33	17.10	109.51
Sep-14	2014	3	52.30	10.46	97.25	4.00	10.05	90.72	0.00	--	--	25.70	13.01	98.94	0.33	12.90	106.22	0.00	--	--
Sep-15	2015	3	55.67	10.36	91.26	0.00	--	--	0.00	--	--	33.00	12.18	94.10	0.33	12.90	107.95	0.00	--	--
Sep-16	2016	3	22.30	9.83	90.11	0.00	--	--	0.00	--	--	53.00	14.00	95.10	0.00	--	--	0.00	--	--
Sep-17	2017	3	27.00	10.64	93.51	0.00	--	--	0.00	--	--	61.70	14.43	97.30	2.33	10.77	95.77	0.00	--	--
Sep-18	2018	3	28.00	11.31	88.00	0.33	10.30	82.45	0.00	--	--	60.70	11.97	93.55	2.67	14.49	108.22	0.00	--	--
Sep-19	2019	3	11.67	10.82	93.93	0.00	--	--	0.00	--	--	69.70	11.97	89.95	0.33	8.40	92.02	0.00	--	--
Sep-20	2020	3	31.33	11.13	98.87	0.00	--	--	0.00	--	--	124.00	12.32	92.75	4.33	12.28	103.43	0.00	--	--

Table 4. Stocking summary of rainbow trout, Yellowstone cutthroat trout, smallmouth bass, and walleye in Bearpaw Lake, 1984-2020. Strains include A-Arlee I- Eagle Lake D- Lake DeSmet M- McBride Lake G- Goose Lake.

	Rainbow Trout				Yellowstone Cutthoat Trout			Smallmouth Bass		Walleye	
Date	# Stocked	Strain	Month	Size (inches)	# Stocked	Strain	Month	# Stocked	Month	# Stocked	Month
1984	--	--	--	--	21,234	M	April/Sept.	--	--	--	--
1985	--	--	--	--	8,120	M	May/Aug.	--	--	--	--
1986	--	--	--	--	12,727	M	June/Sept.	--	--	--	--
1987	13,008	D and I	April/Sept.	6.9	19,248	M	April/Sept.	--	--	--	--
1988	8,018	I	Sept.	5.2	28,904	M	April/Sept.	--	--	--	--
1989	500		May	6	6,000	M	May	--	--	--	--
1990	--	--	--	--	5,025	M	May	--	--	--	--
1991	9,965	A	Sept.	6.8	7,574	M	May	--	--	--	--
1992	6,879	A	Sept.	8.8	8,023	M	May	25,000	Aug.	--	--
1993	11,040	A	Sept.	7.1	5,058	M	May	41,250	July/Aug.	--	--
1994	9,394	A	Sept.	7.4	5,040	M	May	23,995	July/Aug.	--	--
1995	--	--	--	--	10,064	M	May	--	--	5,000	June
1996	11,398	A	Sept.	7.2	9,997	M	May	20,000	July	4,000	June
1997	13,448	A	Sept.	6.8	8,924	M	May	5,000	Aug.	6,000	June
1998	13,904	A	Sept.	6.8	5,047	M	May	5,000	July	--	--
1999	17,160	A	June	5	4,048	M	May	--	--	--	--
2000	4,995	A	Sept.	6.5	3,973	M	May	--	--	--	--
2001	10,000	A	Sept.	6.4	3,991	M	May	--	--	--	--
2002	10,700	A	Sept.	7.3	4,320	M	May	--	--	--	--
2003	15,215	A	Sept.	6.5	4,200	M	May	--	--	--	--
2004	12,549	A	Sept.	6.5	4,384	M	May	--	--	--	--
2005	14,520	A	Sept.	7.7	5,600	M	May	--	--	--	--
2006	12,628	A	Sept.	6.7	6,214	M	April/May	--	--	5,112	Sept.
2007	20,000	A and I	Sept.	6	8,127	M	May	--	--	--	--
2008	15,000	A	Sept.	7.3	7,293	G	May	--	--	--	--
2009	15,000	A	Sept.	8	5,024	G	May	--	--	--	--
2010	5,000	I	June	7.6	--	--	--	--	--	--	--
2011	5,104	I	June	7.7	--	--	--	--	--	--	--
2012	15,828	A	Sept./Nov.	8.7	--	--	--	--	--	--	--
2013	20,000	A	Sept./Nov.	6.9	--	--	--	--	--	--	--
2014	20,536	A	June/Sept.	6.7	--	--	--	--	--	--	--
2015	20,328	A and I	May/Sept.	7.5	--	--	--	--	--	--	--
2016	19,777	A and I	May/Sept.	6.4	--	--	--	--	--	--	--
2017	17,725	A and I	Sept./Oct.	8	--	--	--	--	--	--	--
2018	12,757	A and I	Sept./Oct.	7	--	--	--	--	--	--	--
2019	12,715	A and I	Sept./Oct.	7.3	--	--	--	--	--	--	--
2020	30,214	A and I	July/Sept.	3.3-7.3	--	--	--	--	--	--	--

Table 5. - Number of white suckers removed from Bearpaw Lake by trap netting and fall gill netting, 1989-2020.

Year	Number Trap Netting	Number Gill netting	Total Number	Total Pounds
1989	12,545	521	13,066	9,359.19
1990	44,622	833	45,455	10,396.52
1991	18,140	766	18,906	4,932.86
1992	4,133	636	4,769	955.42
1993	5,239	775	6,014	1,205.33
1994	6,995	626	7,621	882.49
1995	5,653	798	6,451	2,396.44
1996	1,991	438	2,429	817.39
1997	13,485	228	13,713	8,227.80
1998	6,708	133	6,841	5,309.22
1999	8,239	172	8,411	7,614.72
2000	2,225	28	2,253	2,591.20
2001	331	12	343	562.69
2002	17	6	23	21.65
2003	1,564	113	1,677	2,362.17
2004	222	110	332	418.32
2005	1,895	134	2,029	2,311.74
2006	1,893	84	1,977	2,491.02
2007	1,705	84	1,789	2,111.02
2008	560	42	602	818.72
2009	175	37	212	290.44
2010	104	23	127	173.99
2011	310	30	340	418.20
2012	409	36	445	547.35
2013	641	100	741	911.43
2014	1,560	77	1,637	2,013.51
2015	1,392	99	1,491	1,491.00
2016	--	159	159	196.00
2017	--	185	185	263.00
2018	--	182	182	263.00
2019	--	209	209	192.00
2020	383	372	755	385.05
Totals	143,136	8,048	151,184	72,931

Blaine County Ponds

Ponds throughout Blaine County were sampled using gill and trap nets to assess species composition, relative abundance, and size distribution of fish or the voluntary creel boxes were maintained.

Choteau Reservoir

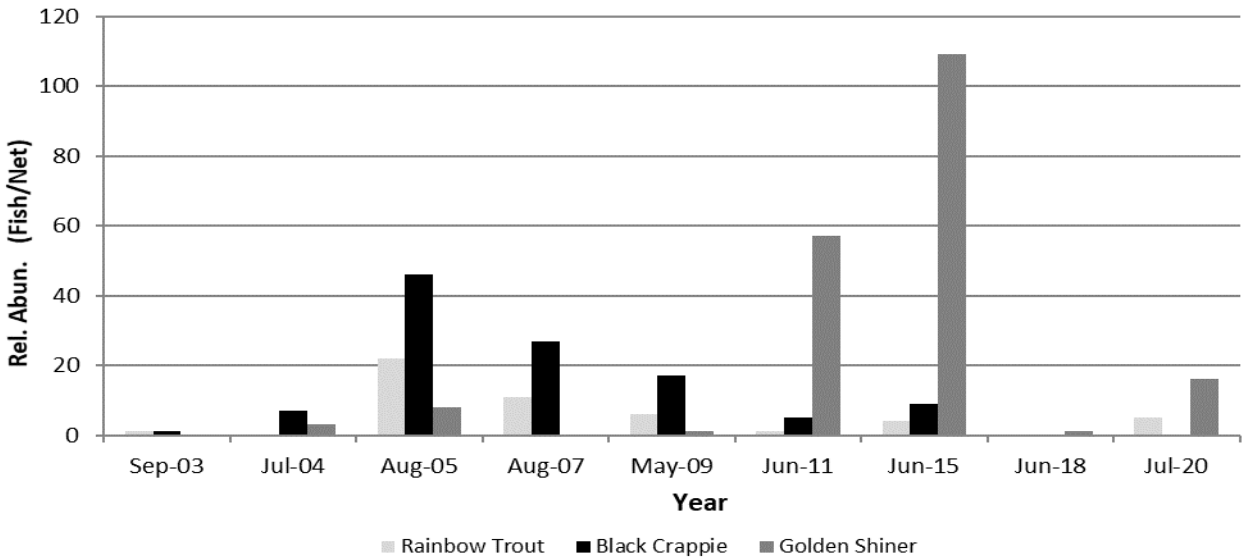
Choteau Reservoir is located in northcentral Blaine County and contains a rainbow trout and black crappie fishery. Black crappies were introduced in 2002. The reservoir is currently maintained with annual plants of 2,000 fingerling Arlee rainbow trout. Choteau also has a windmill aerator system to assist with over-winter survival of fish.

In 2005, a voluntary creel box was erected to determine fishing pressure, angler success, and angler satisfaction, the creel box was maintained in 2020. Choteau Reservoir experienced a partial winterkill in 2011 as water levels were very low (max depth 7ft.) and aquatic vegetation was abundant.

In 2011, two trap nets and one gill net were set overnight to indicate the severity of winterkill, effects of flushing due to high spring runoff, and to disease test black crappie for trap and transfer purposes. The trap and gill nets contained black crappie, rainbow trout, fathead minnows, and golden shiners (Figure 2). In 2015, one gill net contained four rainbow trout ($\bar{x}$ TL=17.85), nine black crappie ($\bar{x}$ TL=6.92), and 109 golden shiners (Figure 2). One trap net contained three black crappie, 285 golden shiner, and 1,180 fathead minnows. In 2018, no rainbow trout were observed in the gill net and the traps captured one ($\bar{x}$ TL=5.1), likely planted in 2018. No black crappie were observed in any of the sampling gear used. Choteau Reservoir most likely experienced an entire winterkill of gamefish during the winter of 2017/2018. Dissolved oxygen levels on March 14, 2018 were <3.11 MG/L at mid-level depths and zero near the bottom. Dead adult black crappie were also observed in late April following ice off.

In 2020, one gill net contained five rainbow trout (($\bar{x}$ TL=9.3) and 16 golden shiner. Two trap nets captured a total of three rainbow trout ($\bar{x}$ TL=13.6), one black crappie, 200 golden shiner and 1,600 fathead minnows.

Figure 2. - Relative abundance of rainbow trout, black crappie, and golden shiner in Choteau Reservoir based on gill netting surveys from 2003 to 2020.



RECOMMENDATIONS

Beaver Creek Reservoir: Continue annual stocking of up to 30,000 catchable size Arlee rainbow trout. Continue to monitor fishery annually with the use of seining and gill netting at fixed sites. Continue to monitor the impacts to the fishery during extreme water years and impacts of entrainment over the spillway.

Bearpaw Lake: Continue annual stocking of 10,000 catchable size Arlee and 5,000 Eagle Lake rainbow trout. Continue manual removal of adult suckers by trapping and/or electrofishing in the spring, and gill netting in the fall. Continue to monitor fishery annually with the use of fall gill netting at fixed stations.

Blaine County Ponds: Monitor ponds every two to three years to assess survival and growth of stocked fish. Continue public education program alerting the public to the problems associated with the use of live bait (where illegal) and illegal dumping of fish into Montana waters. Continue to look for other ponds with suitable habitats to create new fisheries, work with area wardens and landowners to help identify potential ponds.

Phillips County Ponds: Monitor ponds every two to three years to assess survival and growth of stocked fish. Continue to look for other ponds with suitable habitats to create new fisheries, work with area wardens and landowners to help identify potential ponds. Include pond updates in periodic Region 6 Pond Fishing Guide.

Waters Codes:

154560	Bearpaw Lake
150340	Beaver Creek
154570	Beaver Creek Reservoir
154745	Choteau Reservoir

Key Words or Fish Species:

Region 6; ponds; Hill County; Blaine County; Phillips County; Havre; Chinook; Malta; Arlee; Eagle Lake; Erwin; rainbow trout, brown trout; brook trout; mottled sculpin; longnose dace; mountain sucker; fathead minnow; lake chub; white sucker; white sucker control; smallmouth bass; walleye; northern pike; largemouth bass; yellow perch; Beaver Creek Reservoir; Bearpaw Lake

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Prepared by: Cody J. Nagel
Date: April 1, 2020

Appendix 1. Arlee rainbow trout stocking from 2001-2020 on select ponds and reservoirs in Blaine and Phillips Counties. Table highlights year and month, as well as number and size of fish stocked. Note-Brookie Pond did receive several brook trout (EB) plants during the period of reference.

YEAR	Brookie Pond	Current Reservoir	Plutz Reservoir	Rebate Reservoir	Rotator Cup Reservoir	Sentinel Reservoir	Shallow Reservoir	Spanky Reservoir
2001 (April)	--	2,415 (2.8")	1,610 (2.8")	805 (2.8")	--	5,175 (2.8")	--	805 (2.8")
2002 (April)	--	3,000 (3")	1,004 (3")	--	1,000 (4")	5,000 (3")	--	--
2003 (April)	--	2,971 (3.1")	--	--	--	6,022 (3.1")	1,003 (3.1")	1,000 (3.1")
2004 (April)	--	3,045 (2.6")	2,030 (2.6")	1,015 (2.6")	1,015 (2.6")	6,090 (2.6")	--	--
2005 (April)	--	3,035 (2.9")	--	--	--	6,016 (2.9")	1,030 (2.9)	1,030 (2.9")
2006 (April)	--	3,300 (3.1")	2,200 (3.1")	--	1,100 (3.1")	6,601 (3.1")	--	--
2007 (April)	EB-3,000 (4")	3,020 (3.2")	--	982 (3.2")	--	6,040 (3.2")	982 (3.2")	982 (3.2")
2008 (April)	EB-2,000 (4.7")	3,047 (3.3")	--	--	--	6,022 (3.3")	--	--
2009 (May)	--	2,993 (4")	2,010 (4")	--	--	5,986 (4")	1,026 (4")	1,026 (4")
2010 (May)	--	3,000 (3.6")	--	--	--	6,000 (3.6")	--	--
2011 (June)	EB-1,500 (3.9")	3,000 (3.6")	2,000 (3.6")	--	--	6,000 (3.6")	1,000 (3.6")	1,000 (3.6")
2012 (May)	EB-1,500 (4.3")	3,000 (2.7")	--	--	--	6,000 (2.7")	--	--
2013 (June)	EB-1,500 (4.5")	3,000 (3.2")	2,000 (3.4")	1,000 (3.4")	--	6,000 (3.2")	1,000 (3.4")	1,000 (3.4")
2014 (April)	--	3,000 (2.1")	--	--	--	6,000 (2.1")	--	--
2015 (April)	EB-1,500 (4.9")	3,000 (1.9")	2,000 (1.9")	--	--	6,000 (1.9")	1,000 (1.9")	1,000 (1.9")
2016 (April)	--	3,000 (2.1")	--	1,000 (2.1")	1,000 (2.6")	6,000 (2.1")	--	--
2017 (April)	1,000 (2")	3,000 (2")	2,000 (2")	--	--	6,000 (2.6")	1,000 (2")	1,000 (2")
2018 (June)	1,000 (2.5")	3,000 (3.1")	1,000 (1.9")	1,000 (1.9")	1,000 (1.9")	6,000 (2.5")	1,000 (1.9")	--
2019 (May)	1,000 (2.7")	3,000 (2.7")	2,000 (2.7")	1,000 (2.7")	--	6,000 (2.7")	1,000 (2.7")	1,000 (2.7")
2020 (May)	500 (3.21")	3,000 (3.21")	1,000 (3.21")	250 (3.21")	1,000 (3.21")	6,105 (3.08")	250 (3.21")	250 (3.21")