MONTANA FISH, WILDLIFE, & PARKS
FISHERIES DIVISION
JOB PROGRESS REPORT

STATE: MONTANA PROJECT TITLE: STATEWIDE FISHERIES INVESTIGATIONS

PROJECT NO.: F-113-R-4 STUDY TITLE: SURVEY AND INVENTORY OF COLDWATER AND WARMWATER ECOSYSTEMS

JOB NO.: V-d TITLE: NORTHEAST MONTANA COLDWATER ECOSYSTEM INVESTIGATIONS

PROJECT PERIOD: JULY 1, 2009 THROUGH JUNE 30, 2010

ABSTRACT

The coldwater fisheries in Hill, Blaine, and Phillips counties have been impacted in various locations by drought over the past ten years, however the installation of windmill aeration systems and years with increased winter snowfall and summer rains are allowing these populations to recover.

Rainbow trout growth and survival in Beaver Creek Reservoir has been good in the past few years. Rainbow and Yellowstone cutthroat trout fisheries in Bearpaw Lake have responded well to control efforts of white suckers. Fishing pressure has increased in response in increased size of trout within Bearpaw Lake. Growth and condition of rainbow trout in Choteau, Sentinel, and Faber Reservoir remains good. Ponds in Hill, Blaine, and Phillips, counties were monitored in 2009 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 have 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: ten 310 projects were reviewed and six 124 projects were reviewed with state and local agencies; attended six walleye unlimited meetings and helped with four 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" mesh were fished to acquire information on adult fish populations in ponds and reservoirs. Whenever possible, fish were measured for total length (TL: inches) and weighed to the nearest 0.01 pound.

RESULTS AND DISCUSSION

Beaver Creek Reservoir

Beaver Creek Reservoir, located south of Havre, is a 200-acre reservoir, which has a maximum depth of 90 feet. Its proximity to the city of Havre makes this reservoir a valuable local resource and it has been managed intensively in recent years for a variety of species. The statewide fishing pressure survey for 2005/2006 indicated it was the fifth most fished reservoir in Region Six (McFarland 2006).

This reservoir was established as a rainbow trout fishery in 1975. However, the illegal introduction of northern pike (1980s) and yellow perch (1980s) has resulted in the rainbow trout fishery having varying success. As a result, the fisheries management plan was expanded to include other warm water species, which were introduced to control undesirable species and enhance the fishing opportunity within the reservoir. Currently this reservoir receives annual plants of 70,000 catchable size Eagle Lake, Erwin and Arlee rainbow trout as well as 5,000 advanced fingerling walleye.

In an effort to maintain the balance between the rainbow trout fishery and the warm water fishery, the use of live minnows for bait has been allowed since March of 2000. The regulation is intended to increase harvest of northern pike and perhaps open up a winter fishery for walleye. Though fishermen use live minnows regularly, a winter fishery for walleye has not developed. The trout daily limit was reduced from 5/day to 3/day in March of 2002 due to increasing fishing pressure.

Population Status of Young of Year Fishes

The abundance and reproductive success of sport and forage fishes were monitored at six predetermined stations. Beach seining was conducted in early August using a 100- x 9-foot x ¼ inch square mesh beach seine. The fish were sorted by species and counted.

Summer seining efforts indicate that forage fish and northern pike had very good spawning success in 2009 and the survival of stocked fingerling walleye appeared good as well (Table 1).

Table 1. – Summary of young of year yellow perch (YP), white sucker (W SU), spottail shiner (SP SH), Iowa Darter (IOWA), fathead minnow (FH MN), largemouth bass (LMB), northern pike (NP), walleye (WE), and other fishes captured by beach seining in Beaver Creek Reservoir, 1980 to 2009.

Date	Sites	YP (yoy)	YP (adult)	W SU	SP SH	IOWA	FH MN	LMB	SMB (yoy)	SMB (adult)	NP (yoy)	NP (adult)	WE (yoy)	WE (adult)	Other Sp.[1]
Jul-80	5	--		650	--	0	42	--	--		--		--		46
Jul-81	5	--		1,671	--	0	75	12	--		--		--		38
Jul-82	5	--		7	--	0	0	54	--		0		--		0
Jun-83	5	--		46	--	0	0	5	--		5		--		0
Aug-84	7	--		189	--	10	0	4	--		0		--		0
Sep-85	5	--		2,648	--	11	0	33	--		3		--		7
May-86	4	--		1,749	0	2	0	0	--		1		--		24
Jun-86	6	--		3,132	0	2	0	0	--		1		--		1
Aug-86	6	--		134	0	8	0	2	--		9		--		0
Sep-86	6	--		1,111	0	34	29	184	--		6		--		11
Jul-87	6	1,968		2,276	1	24	3	0	--		20		11		3
Aug-87	6	2,315		973	0	59	1	16	--		19		19		5
Jun-88	6	20		17	0	6	0	0	--		1		3		0
Aug-88	6	4,973		62	1	4	0	0	--		1		2		0
Aug-89	6	50		48	603	0	0	0	--		2		4		5
Aug-90	6	42		1	93	2	0	0	--		2		0		1
Aug-91	6	8,642		348	835	0	0	0	--		17		0		4
Aug-92	6	1,888		492	156	4	0	0	--		4		0		0
Aug-93	6	42		0	355	11	0	0	--		27		0		0
Aug-94	6	707		49	181	0	0	0	--		11		0		0
Aug-95	6	7,210		6	1,438	0	0	0	--		13		0		0
Aug-96	6	51		261	248	7	0	0	0		5		7		0
Aug-97	6	17		31	193	6	0	0	8		13		2		0
Aug-98	6	872		0	141	0	0	0	41		6		1		0
Aug-99	6	592		4	87	0	0	0	16		7		2		0
Aug-00	6	402		1	190	0	1	0	12		3		23		0
Aug-01	6	357		10	216	0	0	0	8		0		3		0
Aug-02	6	333		0	592	0	0	0	7		0		93		0
Aug-03	6	557		19	2,355	2	0	0	9		15		1		0
Aug-04	6	1,545		0	0	1	0	0	5		2		2		0
Jul-05	6	185		3	1	0	0	0	0		36		12		0
Aug-06	6	1,154		8	608	0	0	0	12		32		11		0
Jul-07	6	253		0	0	0	0	0	13		4		9		0
Jul-08	6	113		0	0	0	0	0	2		0		0		0
Aug-09	6	1,177	135	0	3	0	0	0	1	1	15	1	63	1	0

[1] Consists of emerald shiners, northern redbelly dace, lake chub, western silvery/plains minnow, brassy minnow, and longnose dace

Population Status of Adult Fishes

Adult fish populations were monitored at six fixed experimental gillnetting stations, which were established in 1986. Gillnetting was conducted over night utilizing three sinking and three floating experimental gill nets (6 net-days). The sinking and floating experimental gill nets were 125 feet in length and 6 feet deep consisting 25-foot panels of ¾", 1", 1 ¼", 1 ½", and 2" mesh. Fish were measured for total length (TL: inches) and weighted to the nearest 0.01 pound (lb). Prior to 1986, adult fish populations were monitored, however sampling was neither uniform, nor consistent enough to develop useful trend data on game 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

Rainbow trout population levels fell below target levels of 10 fish/net in 2005 and 2006 however they increased to 9 fish/net in 2006 (Table 2). In 2003 and 2004, the abundance of rainbow trout was above the target however, during these years 84,443 and 61,459 Arlee and Eagle Lake rainbow trout were stocked, respectively. In 2005, 41,416 rainbow trout were stocked which may account for the decreased abundance (CPUE=5.5 fish/net) of rainbow trout. In addition the yellow perch populations were at their highest levels since 2001/2002 and northern pike have been increasing. Decreased stocking levels in 2005 due to PCB cleanup at Big Springs Fish hatchery, combined with increased competition and predation are the primary causes for decreased catch rates of rainbow trout. In 2006, stocking rates of rainbow trout returned to normal (70,000 RBT / year) and catch rates increased to target levels in 2007 and 2008. Rainbow trout catch rates fell below target levels in 2009. The affects of high yellow perch and northern pike densities could be the primary contributing factor limiting rainbow trout catch rates. This is similar to observations made in 2005/2006, both yellow perch and northern pike densities will be monitored very closely in future years.

Table 2.- 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, 1974-2009.

			Rainbow Trout			Yellow Perch			Northern Pike			Smallmouth bass			Walleye			Longnose sucker		White sucker	
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.)	CPUE (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

Bearpaw Lake

Bearpaw Lake is a very popular 45 surface-acre reservoir located on Beaver Creek in the Bearpaw Mountains and is currently ranked number four in Region 6 for fishing pressure (2005/2006; McFarland 2006). Bearpaw Lake has been managed as a trout fishery since 1960 and is currently maintained with annual stocks of 15,000 catchable size Arlee rainbow trout and 5,000 catchable McBride Yellowstone cutthroat trout. Stocking of cutthroats will be discontinued in 2010 due to poor growth rates and condition of these fish in Bearpaw Lake. Because of this lakes popularity and the desire by the public to catch larger fish, the daily limit for trout was reduced from five to three fish per day in the spring of 2002.

Bearpaw Lake also sustains a very healthy population of white suckers, which has negatively impacted the rainbow trout fishery. As a result walleye and smallmouth bass have been established within the reservoir. Smallmouth bass 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 & 2007, a supplemental plant of 5,000 advanced fingerlings was conducted to replenish the aging walleye population. In addition, since chemical rehabilitation of Bearpaw Lake was conducted in 1983 a manual sucker control program was initiated in 1989 in an effort to reduce food competition between trout and white suckers and thus improve growth and survival of rainbow trout.

Population Status of Adult Fishes

Adult fish populations were monitored at three fixed experimental gillnetting stations, which were established in 1984. Gill netting was conducted over night utilizing two sinking experimental gill nets and one floating experimental gill net (3 net-days). 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" 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 on an annual basis. Control efforts involve setting five trap nets for one to two weeks during the spawning season (April). Traps are checked daily and white suckers are transferred to other lakes, given to local farmers for fertilizer, or killed and returned to the lake.

Rainbow and Yellowstone Cutthroat Trout

Rainbow trout and Yellowstone cutthroat trout have been stocked in Bearpaw Lake since the 1960s and 1980s, respectively. Rainbow trout are currently stocked in Bearpaw Lake at a rate of 15,000 catchables per year. Yellowstone cutthroat trout are stocked annually at a rate of 5,000 catchables. In 2004, stocking rates were significantly increased due the need reduce the number of fish at the Big Springs Fish Hatchery for cleanup of PCB contamination. As a result, 12,550 catchables and 5,115 fingerling rainbow trout and 75,883 fingerling Yellowstone cutthroat trout were stocked.

The relative abundance of rainbow and Yellowstone cutthroat trout has fluctuated greatly since their introduction (Table 3). The primary reasons for these fluctuations are stocking densities, fishing pressure, and changes in survivability as a result of multiple factors including competition with white suckers. In 2005 and 2006, catch rates (Table 3) were significantly increased which is most likely due to the increased stocking density in 2004 and continued control efforts on white suckers. In 2007 catch rates of rainbow trout returned to normal levels (13.33 fish/net) and catch rates of Yellowstone cutthroat trout increased to 2.33 fish/net. Catch rates for rainbow and Yellowstone cutthroat trout returned to very high levels again in 2008 (30.33 fish/net; 7.67 fish/net). Rainbow trout catch rates were slightly lower than normal in 2009 (9.66 fish/net) and Yellowstone cutthroat catch rates remained at elevated levels (9 fish/net; Table 3). However, the condition of these fish remains a concern and will be continually monitored.

Rainbow trout and Yellowstone cutthroat trout have had relatively poor growth rates due to fishing pressure and competition with white suckers for food. However, since the initiation of manual

control of white suckers and the introduction of smallmouth bass (1992) and walleye (legally in 1995), the average length of trout has increased from lengths recorded in the late 1990s (Figure 1; Table 3). Since 2004, average length of trout has decreased slightly, however this is most likely as a result of increased stocking of rainbow and Yellowstone cutthroat trout in 2004.

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 Beaver Creek. In 1989, a manual removal program was initiated and in 1992 and 1995 smallmouth bass and walleye were introduced to help control YOY and adult white sucker populations. Since 1989, 144,913 white suckers have been removed using trap nets and gill nets (Table 4). Overall the average size of white suckers has been increasing, indicating that control efforts have helped prevent adults from spawning, and smallmouth bass have been helping control YOY populations. In 2009, spring trap netting and fall gill netting removed a total of 290 pounds of white suckers.

Smallmouth Bass

Smallmouth bass were introduced 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. In 2009, fall gillnetting surveys resulted in similar catch rates of smallmouth bass when compared to historic catch rates, however average total length continues to increase (Table 3). Also the abundance of crayfish has decreased with the increasing numbers of smallmouth bass.

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. In 2006 and 2007, supplemental plants of 5,000 advanced fingerlings were stocked to replenish the aging walleye population. Since their legal introduction, walleye have assisted with the control of white suckers and provided a new addition to this popular fishery.

Figure 1. - Comparison of white sucker catch rate during fall gill netting surveys and average length of trout (rainbow, brook, and Yellowstone cutthroat) in Bearpaw Lake (1984-2009).

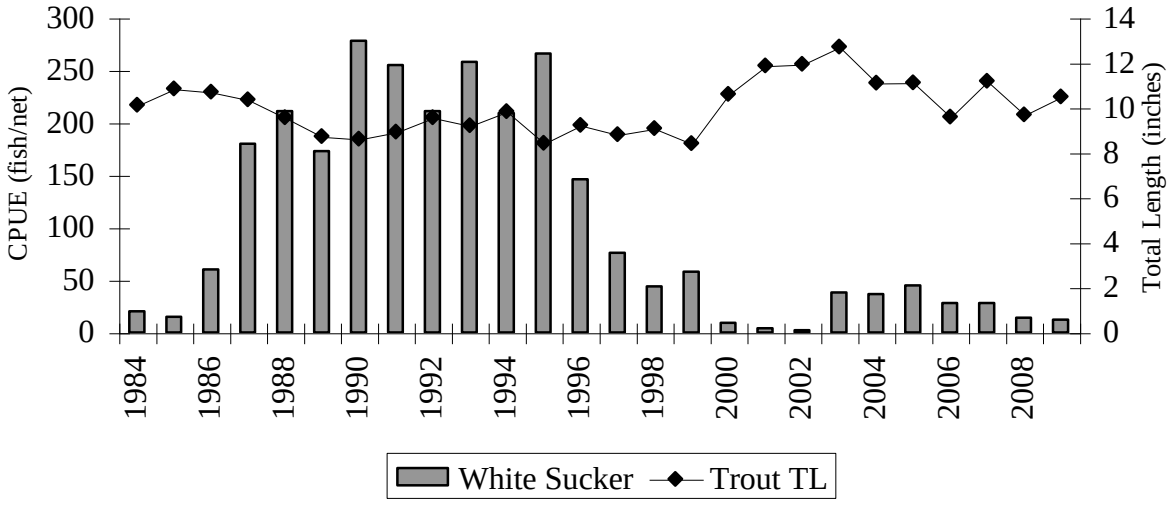


Table 3.- Summary of relative abundance (catch per unit effort (CPUE)), total length, and relative weights of fishes collected in fall gillnetting surveys in Bear Paw Lake since chemical rehabilitation in 1983.

			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

Table 4. - Numbers of white suckers removed from Bearpaw Lake by trap netting and fall gill netting, 1989-2009.

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
Totals	138,337	6,576	144,913	66,076

Blaine County Ponds

Ponds throughout Blaine County were either 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 north central Blaine County and contains a rainbow trout and black crappie fishery. Black crappie were introduced in 2002. In 2003, 1,500 fingerling rainbow trout were stocked, an additional 6,000 fingerling rainbow trout were stocked in 2004, and 3,000 in 2005. The reservoir is currently maintained with biennial plants of 1,500 fingerling 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 2009. In 2005, five creel cards were filled out and no fish were caught. In 2006, three creel cards were filled out and again no fish were caught. In 2007, nine creel cards were filled out and anglers reported catch rates of rainbow trout as 0.715 fish/hour.

In 2008, anglers reported spring catch rates of rainbow trout at 0.11 fish/hour (n=23) and summer catch rates of rainbow trout at 0.18 fish/hour (n=7). Anglers expressed great satisfaction in the size of the fish caught.

In 2009, one gill net set overnight captured six rainbow trout (Avg. TL=17.1 in., Avg. Wt.=2.42), 17 black crappie (Avg. TL=10.5 in., Avg. Wt.=0.80), and one golden shiner. One trap net set overnight captured, 11 black crappie (Avg. TL=5.9 in.), 330 fathead minnows, and 38 golden shiners.

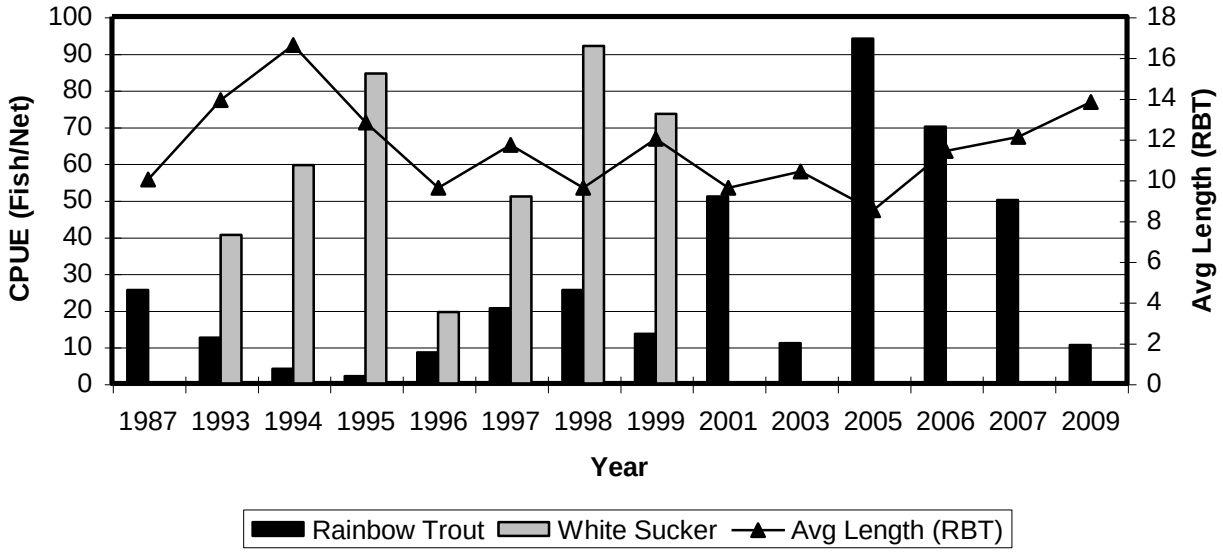
Faber Reservoir

Faber Reservoir, a 25-surface-acre reservoir located 30 miles south of Chinook near Cleveland, is one of the most popular fishing access sites in north central Montana. This reservoir became a fishing access site in 1986 and the contract was renewed in 2006 for another 20 years. Faber reservoir ranked 12th in the region for fishing pressure in 2005/2006, with a total of 2,316 angler days. Faber has been a consistent producer of quality rainbow trout for three decades.

This reservoir was rehabilitated in 2000 due to the illegal introduction of largemouth bass and white suckers. Fingerling Arlee rainbow trout were re-stocked in the spring of 2001 and approximately 10,000 fingerling trout are stocked annually. However, in 2004 an additional 10,000 fingerling rainbow trout were stocked. In 2007 a partial summer kill of rainbow trout was reported.

Since the rehabilitation in 2000, rainbow trout populations have been recovering (Figure 2). In 2005, gill netting resulted in very high catch rates of rainbow trout, which was most likely a result of increased stocking rates in 2004. Rainbow trout ranged in size from 6.5 to 18.8 inches TL ($\bar{x}$ =8.54 in.) and weighed 0.13 to 2.76 pound ($\bar{x}$ =0.3 lb). In 2006, catch rates were slightly decreased (CPUE = 70 fish/net) because no surplus rainbow trout were stocked since 2004, however the size of rainbow trout present increased. Rainbow trout ranged in size from 5.5 to 21.0 inches TL ($\bar{x}$ =10.82 in.) and weighed 0.08 to 4.1 pounds ($\bar{x}$ =0.62 lbs). In 2007, rainbow trout catch rates and size decreased slightly to 50 fish/net and ranged in size from 5.7 to 15.2 inches TL ($\bar{x}$ =11.5 in.) and weighed 0.10 to 1.50 pounds ($\bar{x}$ =1.27 lbs.). Gill net surveys conducted in 2009 indicated that rainbow trout catch rates have greatly decreased since 2007 (CPUE= 10.5 fish/net) however, average total length greatly increased (Avg. TL= 13.8). One trap net set overnight captured 700 fathead minnows.

Figure 2. - Relative abundance of rainbow trout and white sucker and Avg. length of rainbow trout in Faber Reservoir based on gill netting surveys from 1987 to 2009.



FR Reservoir

FR reservoir is located on BLM land in south Blaine County. This reservoir has been managed as a fishery since 1983. The reservoir was maintained with annual plants of 1,000 three-inch Arlee rainbow trout until 2005. In 2005, gill netting survey's indicated excellent growth and survival of stocked rainbow trout. The catch rate of rainbow trout was 2.21 fish/net hour (42 fish/net) and they had an average length of 12.23 inch (TL=6.53 to 17.0 in.). In 2009, gill netting survey's indicated excellent growth and survival of rainbow trout from the last stocking that occurred in 2005. The catch rate of rainbow trout was 16 fish/net and they had an average length of 17 in. and average weight of 2.17 lbs.

To access this reservoir, the public must cross private land, which is currently closed to public access. The BLM is working to gain permanent access to this reservoir for the public. If this is not obtained, stocking will cease.

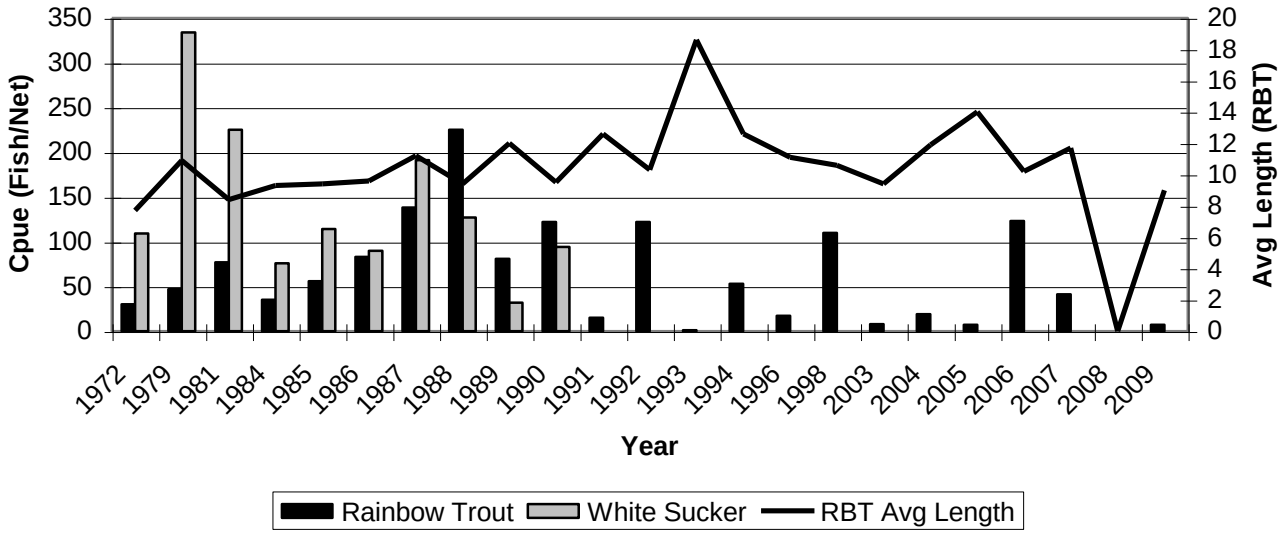
Grasshopper Reservoir

Grasshopper Reservoir is a privately owned 19-surface-acre reservoir located approximately 12 miles south of Chinook. Grasshopper Reservoir was first stocked with rainbow trout in 1947, and trout have exhibited good growth and survival rates in this reservoir. Grasshopper is currently maintained with annual plants of 2,500 fingerling Arlee rainbow trout and biennial plants of 3,000 advanced fingerling Eagle Lake rainbow trout. Additionally, Grasshopper ranked 23rd in the region for angler pressure in 2005/2006 (McFarland 2006).

Grasshopper experienced another winterkill in 2007/2008. Anglers who filled out creel cards reported catching no fish during late ice (n=2) and one reported seeing over 100 dead trout along the east bank. In the spring of 2008 heavy rains raised water levels and the reservoir received a supplemental stocking of 2,500 Arlee rainbow trout.

Gill netting surveys conducted in 2009 resulted in lower rainbow trout catch rates (CPUE= 7 fish/net) when compared to historic averages (Figure 2). Rainbow trout averaged 9 inches in length (TL= 5.4-14 in.) and weighed 0.55 lbs. (weight= 0.04-1.26 lbs.). One trap net was set overnight and captured 3,025 fathead minnows.

Figure 3. - Relative abundance of rainbow trout and white suckers and average total length of rainbow trout in Grasshopper reservoir based on gill netting surveys from 1972 to 2009.



Jensen Reservoir

Jensen pond is a privately owned pond, which has been open to public fishing since 2003. A windmill aeration system was installed to assist with over winter survival and the reservoir is maintained with annual plants of 1,000 fingerling Arlee rainbow trout. In 2008, the voluntary-creel survey box was maintained.

In 2005, anglers expressed high satisfaction rates with their fishing experience, primarily due to the size of fish caught. Anglers reported summer catch rate of rainbow trout as 0.35 fish/hour (n=11) and fall catch rates of 0.37 fish/hour (n=16) with frequent catches of one to six pound trout. However in 2006 anglers did not report catching any fish during the spring and summer (n=6). In 2007, anglers reported good catch rates of rainbow trout and high satisfaction with the size of fish caught. Anglers reported spring catch rates of 2.90 fish/hour (n=3), summer catch rates of 0.78 fish/hour (n=6), and fall catch rates of rainbow trout at 1.11 fish/hour (n=6). In 2008, one angler reported catching three rainbow trout but did not specify the number of hours fished.

In 2009, one gill net and one trap net were set overnight. The gill net captured 21 rainbow trout (Avg. TL=7.4, Avg. Wt.= 0.22 lbs.) and the trap net captured one rainbow trout, 4,000 fathead minnows, and 1,520 brassy minnows.

Ross Reservoir

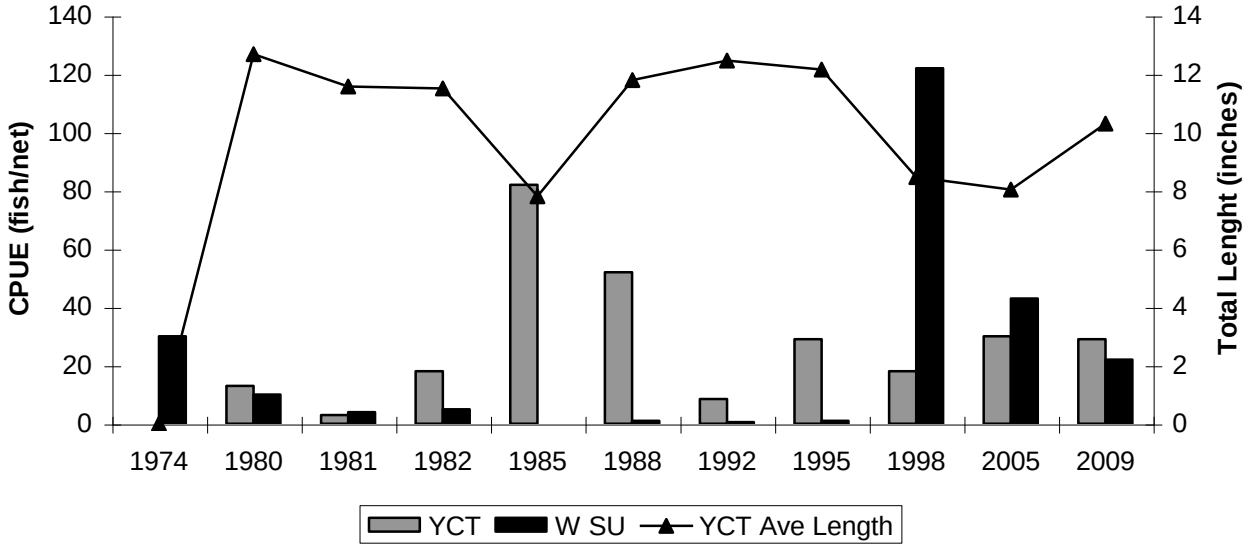
Ross Reservoir is located in the Bearpaw Mountains on Wind Creek. This is a privately owned reservoir, which was managed as a rainbow trout fishery from 1953 to 1974 at which point it was switched to a Yellowstone cutthroat trout fishery. Additionally in 2005, this reservoir ranked 74th in angler pressure for the region with a total of 34 angler days (McFarland 2006).

The fishery is currently maintained with annual stocks of 2,000 catchable size cutthroat trout and in 2004, 5,352 fingerling cutthroat trout were stocked. This beautiful mountain cutthroat fishery and Wind Creek were rehabilitated in 2000 to rid it of white suckers. It was closed in 2001 to allow fish to grow to acceptable size. Fishermen were not disappointed when the pond was opened in May of 2002. Good catches of 13- to15-inch cutthroat were made. However, this pond is again plagued with a white sucker problem (Figure 4), most likely as a result of the use of illegal live bait. The abundance of white suckers has a negative impact on the growth of Yellowstone cutthroat trout (Figure 4) and will have to be dealt with.

In 2006, trap nets were set to remove white suckers and assess the size and distribution of white suckers in the reservoir. Four traps (3' x 4' with ¼" mesh) were set for two nights and a total of 581 white suckers were removed (CPUE =3.63 fish/hr; $\bar{x}$ TL = 8.06 in., $\bar{x}$ wt.=0.45 lbs.). Additionally 302 Yellowstone cutthroat trout were collected (CPUE =1.88 fish/hr; $\bar{x}$ TL = 10.88 in., $\bar{x}$ wt.=0.41 lbs.). In an attempt to control white sucker population levels within the reservoir tiger musky (n=6, $\bar{x}$ TL=6.0 in.) were introduced in 2007. In 2009, one gill net and one trap net were set overnight. The gill net captured 29 Yellowstone cutthroat trout (Avg. TL= 10.3 in.) and 22 white suckers. The trap net captured 5 Yellowstone cutthroat trout (Avg. TL= 8.3) and 39 white suckers.

The population levels will continue to be monitored and the effectiveness of the tiger musky introduction will be determined.

Figure 4. - Comparisons of gill net catch rates (CPUE) of Yellowstone cutthroat trout (YCT), white suckers (W SU) and average length of Yellowstone cutthroat trout (YCT), (1974 to 2009).



Phillips County Ponds

The voluntary creel boxes were maintained and gill and trap netting surveys conducted on the following ponds are reported.

King Reservoir

King Reservoir is a 9.8-acre pond located on BLM land in south Phillips County. This reservoir has been managed as a fishery since the 1930s and has been managed as a rainbow trout fishery since the 1960s. King is maintained with biennial plants of 3,000 fingerling Arlee rainbow trout. This fishery has a windmill aeration system and is fenced to exclude livestock. In 2005, a voluntary creel box was erected and one angler from Phillips County reported a summer catch rate of rainbow trout as 0.86 fish/hour (n=1). This angler had a high satisfaction rate due to the number of fish caught. In 2006, the box was destroyed by cows and not replaced.

In 2009, one gill and one trap net were set overnight. The gill net contained two rainbow trout that averaged 19.1 inches and 3.07 pounds. The trap net contained 129 fathead minnows.

Plutz Reservoir

Plutz is located on BLM land in south Phillips County. This reservoir was constructed in a deep coulee and has been managed as a fishery since 1994. This reservoir receives biennial plants of 2,000 fingerling rainbow trout and there were brown trout stockings in 2000 and 2001. There is currently no plan to continue stocking brown trout.

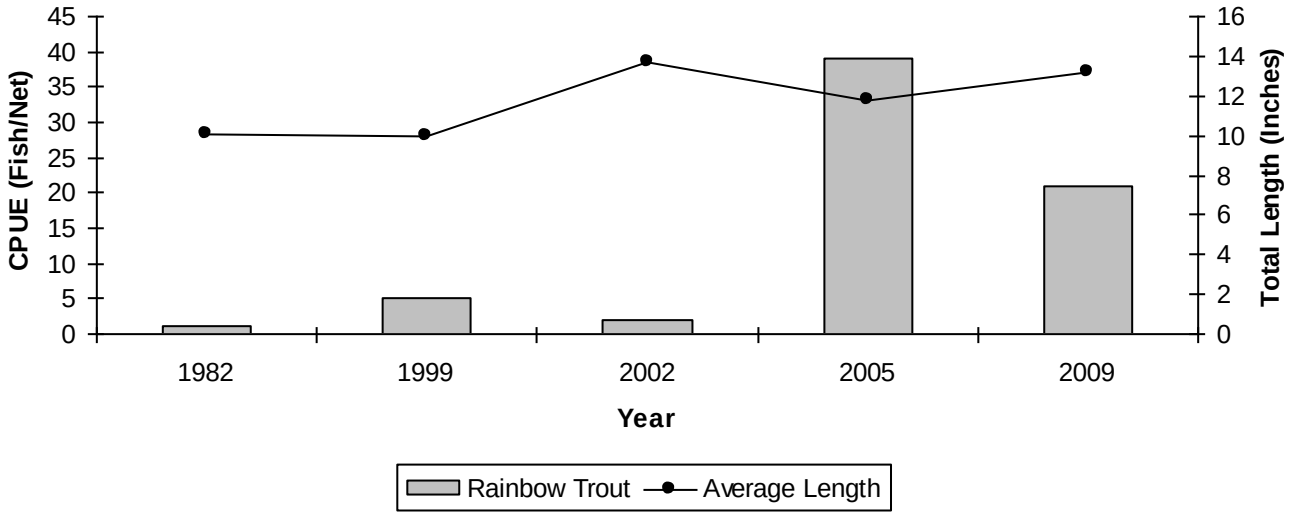
Rainbow trout and brown trout have exhibited good growth and survival within Plutz, however not as high as some of the neighboring ponds. In 2002, the CPUE of rainbow trout was 5 fish/net and for brown trout it was 3 fish/net. Rainbow trout had an average length of 8.48 inches (TL=7.40 to 9.35 in.) and brown trout had an average length of 9.63 inches (TL=8.20 to 11.50 in.). In 2005, the CPUE of rainbow trout was 17 fish/net and for brown trout it was 7 fish/net. Rainbow trout had an average length of 9.66 inches (TL=7.70 to 13.00 in.) and brown trout had an average length of 13.39 inches (TL=11.35 to 15.15 in.). In 2009, the CPUE of rainbow trout was 49 fish/net and had an average length of 7.1 inches. No brown trout were collected in 2009.

Sentinel Reservoir

Sentinel is located on BLM land in South Phillips County. This reservoir has been managed as a rainbow trout fishery since 1970. Sentinel receives annual plants of 6,000 fingerling rainbow trout.

In 2009, one gill net and one trap net were set overnight. The CPUE of rainbow trout was 21 fish/net and had an average length of 13.2 inches and average weight of 1.22 pounds. The trap net captured 961 fathead minnows.

Figure 5. - Relative abundance and average total length of rainbow trout in Sentinel reservoir based on gill netting surveys from 1982 to 2009.



Shallow Reservoir

Shallow reservoir is located on BLM land and has been managed as a rainbow trout fishery since 1994. The fishery is currently maintained with biennial stocking of 1,000 fingerling rainbow trout. Survival of rainbow trout has been fair and may be due to fluctuations in water levels. In 2005, the CPUE of rainbow trout was 3 fish/net and the average length was 10.27 inches (TL=7.0 to 15.5 in.). In 2009, the CPUE of rainbow trout was 17 fish/net and the average length was 8.9 inches (TL=5.4 to 15.7 in.). One trap net set overnight captured four rainbow trout averaging 10.2 inches and 270 fathead minnows.

RECOMMENDATIONS

Beaver Creek Reservoir: Continue annual stocking of 50,000 catchable size Eagle Lake, Erwin and Arlee rainbow trout. Continue to monitor fishery annually with the use of seining and gillnetting at fixed stations. Continue with three fish/day fishing limits.

Bearpaw Lake: Discontinue annual stockings of 8,000 catchable- size McBride strain Yellowstone cutthroat. Continue annual stocking of 15,000 catchable size Arlee rainbow trout. Add additional walleye stockings to supplement the population to assist with the control of high-density white sucker population. Continue manual removal of adult suckers by trapping and/or electrofishing in the spring, and gillnetting in the fall. Continue to monitor fishery annually with the use of fall gillnetting at fixed stations.

Blaine County Ponds: Monitor ponds every two to three years to assess survival and growth of stocked fish. Attempt to establish riparian fencing around some of the ponds to prevent over grazing of shoreline vegetation to improve the fisheries. Also, start a more aggressive public education program alerting the public to the problems associated with the use of live bait.

Phillips County Ponds: Monitor ponds every two to three years to assess survival and growth of stocked fish. Attempt to establish riparian fencing around some of the ponds to prevent over grazing of shoreline vegetation to improve the fisheries. Look into establishing alternative forage/sport fishing opportunities in ponds containing only largemouth bass with the introduction of bluegill and black crappie.

Waters Codes:

154770	Beaver Creek Reservoir		
154560	Bearpaw Lake	167880	King Reservoir
154745	Choteau Reservoir	167662	Plutz Reservoir
155140	Faber Reservoir	159160	Ross Reservoir
165155	FR Reservoir	168220	Sentinel Reservoir
153880	Grasshopper Reservoir	168255	Shallow Reservoir
155780	Jensen Pond		

Key Words or Fish Species:

Arlee; Eagle Lake; Erwin; rainbow trout, Yellowstone cutthroat 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;

Literature Cited

McFarland, B. 2006. 2005 Statewide Angling Pressure Use Report. Montana Fish, Wildlife & Parks, Helena, MT. Pp. 173.

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