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

STATE: MONTANA PROJECT TITLE: STATEWIDE FISHERIES INVESTIGATIONS

PROJECT NO.: F-113-R-6 STUDY TITLE: SURVEY AND INVENTORY OF COLDWATER AND WARMWATER ECOSYSTEMS

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

PROJECT PERIOD: JULY 1, 2012 THROUGH JUNE 30, 2013

ABSTRACT

The coldwater fisheries in Hill, Blaine, and Phillips Counties continue to exhibit excellent growth of hatchery stocked rainbow and brook trout following the historic spring run-off in 2011. Water levels were down in many areas when compared to 2011 due to extremely warm temperatures and little precipitation in July and August. However, the majority of reservoirs were only down approximately three to five feet and overwinter water levels should be good in many areas. Rainbow trout growth and survival in Beaver Creek Reservoir has been good the past few years. Rainbow and brook trout fisheries in Bearpaw Lake have responded favorably to control efforts of white suckers and fishing pressure has increased in response to increased size of trout within Bearpaw Lake. Growth and condition of rainbow trout in Faber, Grasshopper, H.C. Kuhr, and North Faber Reservoirs remains good. Anglers reported black spot in a number of rainbow trout caught at H.C.Kuhr and bacterial infections were seen on a few rainbow trout caught at Faber Reservoir. Ponds in Hill and Blaine Counties were monitored in 2012 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: (17) 310 and (19) 124 projects were reviewed along with one waste water review with state and local agencies; attended seven walleye unlimited meetings and helped with five 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 with 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 for a variety of species. The statewide fishing pressure survey for 2009/2010 indicated it received 8,520 angler days (McFarland 2009).

This reservoir was established as a rainbow trout fishery in 1975. However, the illegal introduction 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 undesirable species and enhance the fishing opportunity within the reservoir. Currently this reservoir receives annual plants of 30,000 catchable size Eagle Lake, Erwin and Arlee rainbow trout as well as 10, 000 fingerling and 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 in an effort to maintain trout densities under increased 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 reproductive success for many species was average. However, yellow perch reproductive success was the highest recorded in 17 years (Table 1). Stable to slightly rising spring water levels created excellent spawning conditions for yellow perch. A high abundance of adult yellow perch due to limited angling pressure (no ice) during the 2011/2012 winter may have been a contributing factor as well.

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), smallmouth bass (SMB), northern pike (NP), walleye (WE), and other fishes captured by beach seining in Beaver Creek Reservoir, 1980 to 2012.

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
Aug-10	6	0	491	0	0	0	0	0	6	0	0	0	2	4	0
Aug-11	6	201	66	629	0	0	0	0	1	0	1	2	0	0	0
Aug-12	6	3,206	24	4	0	0	0	0	5	0	12	1	7	0	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

Water levels in September were down approximately 12 feet due to severe drought conditions and increased irrigation demands. Though water levels were low, all six sampling sites were utilized. Gill netting was conducted over night with three sinking and three 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" mesh. Fish were measured for total length (TL: inches) and weighed 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

In 2003 and 2004, 84,443 and 61,459 Arlee and Eagle Lake rainbow trout were stocked and the relative abundance of rainbow trout rose above 12 trout/net, respectively (Table 2 and Table 3). Rainbow trout relative abundance fell below 6 trout/net in 2005 and 2006, however they increased to 9 fish/net in 2007 (Table 2). In 2005, 41,416 rainbow trout were stocked which may account for the decreased relative abundance (CPUE=5.5 fish/net; Table 3). In addition, yellow perch populations were at their highest levels since 2001/2002 and northern pike densities were increasing. Decreased stocking levels in 2005 due to PCB cleanup at Big Springs Fish hatchery, combined with increased competition and predation were likely causes for the decreased abundance of rainbow trout in 2005/2006.

In 2006, stocking rates of rainbow trout returned to normal (70,000 RBT / year) and relative abundance increased to target levels (10 trout/net) in 2007 and 2008 (Table 2 and Table 3). Rainbow trout relative abundance fell below target levels again in 2009, 2010, and 2011 (Table 2). In 2012, rainbow trout relative abundance increased to its highest level in eight years (12.33 fish/net; Table 2).

There are a number of variables influencing rainbow trout densities in Beaver Creek Reservoir: high spring flow's increasing flushing loss of fish, abundance of quality and memorable sized walleye and northern pike, and reduced plants are all contributing factors to the recent trends. Yellow perch, walleye, and northern pike will be monitored closely and rainbow trout stocking densities and size may be adjusted accordingly.

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, 1974-2012.

			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
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

Table 3. Rainbow trout historic stocking rates as it relates to densities stocked, strain, length and month on Beaver Creek Reservoir, 1997-2012.

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

Bearpaw Lake

Bearpaw Lake is a very popular 45 surface-acre reservoir located on Beaver Creek in the Bearpaw Mountains, receiving 10,058 angler days in 2009 (2009/2010; McFarland 2009). Bearpaw Lake has been managed as a trout fishery since 1960 and is currently maintained with annual plants of 15,000 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 moving out of Beaver Creek are also found in the 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 and Beaver Creek also sustain a very healthy population of white suckers, which negatively impacts 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. Since 2006, a supplemental plant of 5,000 advanced fingerlings has been planted to replenish the aging walleye population. Following a chemical rehabilitation of Bearpaw Lake 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 or more trap nets for one to two weeks during their spawning period (April/May). 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 (Table 5). Rainbow trout are currently stocked in Bearpaw Lake at a rate of 15,000 catchables per year (Table 5).

The relative abundance of rainbow and Yellowstone cutthroat trout has fluctuated greatly since their introduction (Table 4). 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 2012, relative abundance of rainbow trout increased to their highest level in 12 years (34.67 fish/net) and brook trout relative abundance was at its highest level in 11 years (1.33 fish/net).

Rainbow and brook 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; Table 5), the average length of trout has increased from lengths recorded in the late 1990s (Figure 1; Table 4).

White Sucker

The white sucker population has been significantly reduced since control efforts were initiated in 1984 (Figure 1; Table 4). 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. In 1992 and 1995 smallmouth bass and walleye were introduced to help control YOY and adult white sucker populations. From 1989 to 2012, 145,825 white suckers have been removed using trap and gill nets

(Table 6). Overall the average size of white suckers has remained high (Table 4), indicating that control efforts have reduced spawning adult abundance, and walleye and smallmouth bass have been helping control YOY populations. In 2012, spring trap netting and fall gill netting removed a total of 445 pounds of white suckers (Table 6).

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. In 2012, fall gillnetting surveys yielded two smallmouth bass (Table 4). However anglers did report catching many smallmouth bass throughout the summer along the dam.

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. Since 2006 supplemental plants of 5,000 advanced fingerlings were stocked to replenish the aging walleye population. Since their legal introduction, walleye have exhibited slow growth and their contributions with control of larger white suckers are unclear.

Figure 1. - Comparison of white sucker relative abundance during fall gill netting surveys and average length of trout (rainbow, brook, and Yellowstone cutthroat) in Bearpaw Lake (1984-2012).

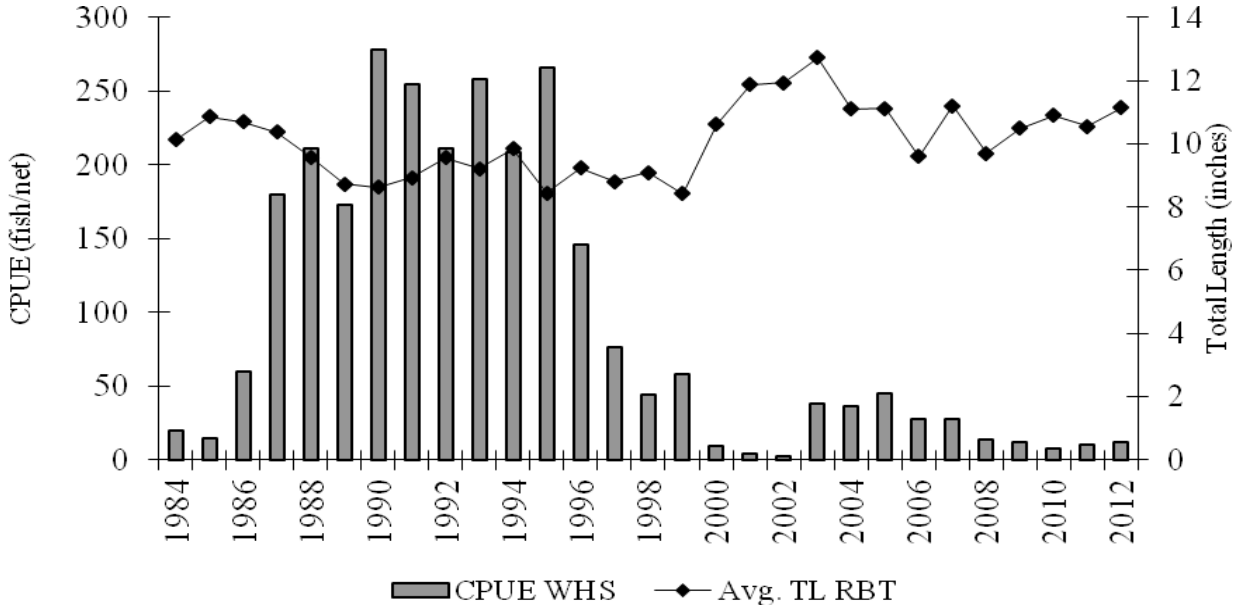


Table 4.- Summary of relative abundance (catch per unit effort (CPUE)), total length (TL), and relative weights of fishes collected in fall gillnetting surveys in Bear Paw Lake since chemical rehabilitation in 1983.

			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

Table 5. Stocking summary of rainbow trout, Yellowstone cutthroat trout, smallmouth bass, and walleye in Bearpaw Lake, 1984-2012.

	Rainbow Trout			Yellowstone Cutthoat Trout			Smallmouth Bass		Walleye	
Date	# Stocked	Strain	Month	# 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.	19,248	M	April/Sept.	--	--	--	--
1988	8,018	I	Sept.	28,904	M	April/Sept.	--	--	--	--
1989	500		May	6,000	M	May	--	--	--	--
1990	--	--	--	5,025	M	May	--	--	--	--
1991	9,965	A	Sept.	7,574	M	May	--	--	--	--
1992	6,879	A	Sept.	8,023	M	May	25,000	Aug.	--	--
1993	11,040	A	Sept.	5,058	M	May	41,250	July/Aug.	--	--
1994	9,394	A	Sept.	5,040	M	May	23,995	July/Aug.	--	--
1995	--	--	--	10,064	M	May	--	--	5,000	June
1996	11,398	A	Sept.	9,997	M	May	20,000	July	4,000	June
1997	13,448	A	Sept.	8,924	M	May	5,000	Aug.	6,000	June
1998	13,904	A	Sept.	5,047	M	May	5,000	July	--	--
1999	17,160	A	June	4,048	M	May	--	--	--	--
2000	4,995	A	Sept.	3,973	M	May	--	--	--	--
2001	10,000	A	Sept.	3,991	M	May	--	--	--	--
2002	10,700	A	Sept.	4,320	M	May	--	--	--	--
2003	15,215	A	Sept.	4,200	M	May	--	--	--	--
2004	12,549	A	Sept.	4,384	M	May	--	--	--	--
2005	14,520	A	Sept.	5,600	M	May	--	--	--	--
2006	12,628	A	Sept.	6,214	M	April/May	--	--	5,112	Sept.
2007	20,000	A and I	Sept.	8,127	M	May	--	--	--	--
2008	15,000	A	Sept.	7,293	G	May	--	--	--	--
2009	15,000	A	Sept.	5,024	G	May	--	--	--	--
2010	5,000	I	June	--	--	--	--	--	--	--
2011	5,104	I	June	--	--	--	--	--	--	--
2012	15,828	A	Sept./Nov.	--	--	--	--	--	--	--

Table 6. - Numbers of white suckers removed from Bearpaw Lake by trap netting and fall gill netting, 1989-2012.

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
Totals	139,160	6,665	145,825	67,216

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.

Faber Reservoir

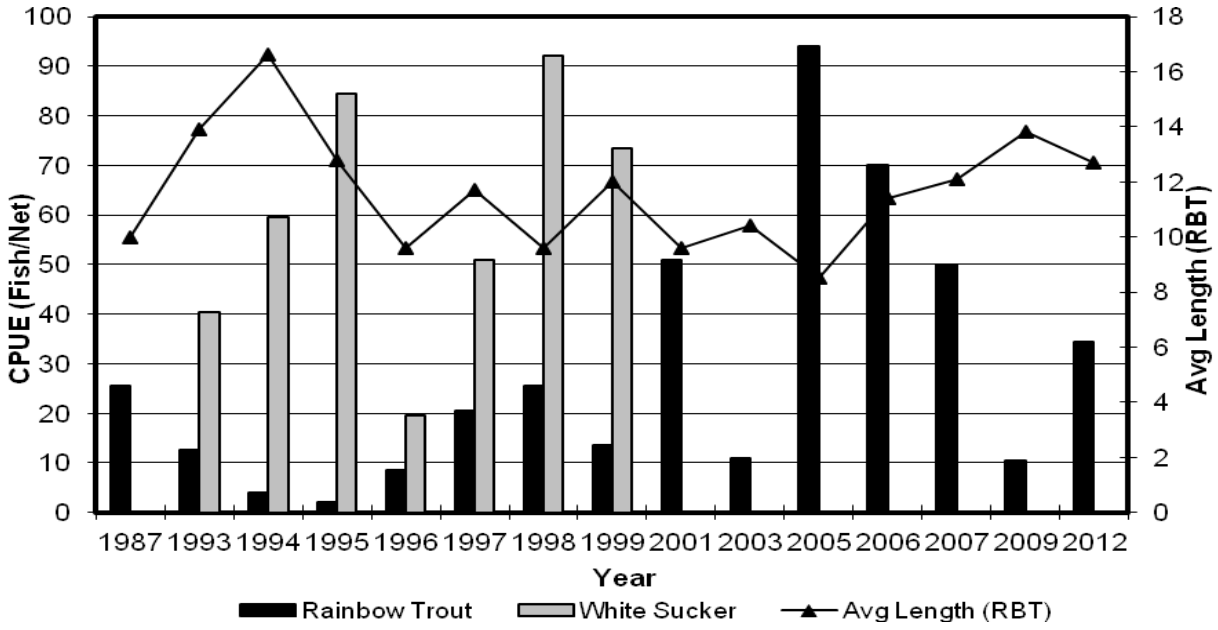
Faber Reservoir, a 25 surface-acre reservoir located 30 miles south of Chinook near Cleveland is a very popular fishing access sites in north central Montana. This reservoir became a fishing access site in 1986 and the contract was renewed in 2006 for another 20 years. Faber reservoir ranked 12th in the region for fishing pressure in 2008/2009, with a total of 2,123 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. In 2004, Faber received an additional 10,000 fingerling rainbow trout. In 2007 a partial summer kill of rainbow trout was reported.

Since the rehabilitation in 2000, rainbow trout densities have been very good (Figure 2). Gill net surveys conducted in 2009 indicated that rainbow trout relative abundance decreased significantly. This may be due to the summer kill that was reported in 2007. Surveys conducted in 2012 suggest the rainbow trout relative abundance has increased (CPUE= 34.5 rainbow trout/net; Figure 2). The average length of rainbow trout sampled in 2012 was 12.72 inches (TL range= 5.7-18.6 in; Figure 2).

In 2011 and 2012, anglers reported catching trout in late August with exterior abnormalities and cyst looking bumps protruding from the skin. In response to these reports crews set one gillnet for approximately 8 hours in 2011 and two rainbow trout (TL=15.4 and 15.1; weight 1.15 and 1.05 lbs.) were captured that showed no evidence of the reported abnormalities. In 2012, anglers were asked to bring trout caught with abnormalities to the Havre area resource office for further evaluation. Three trout with external growths were sent to the fish health lab for analysis. The lab determined the fish had a bacterial infection caused by warm water temperatures and elevated stress levels.

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 2012.



Grasshopper Reservoir

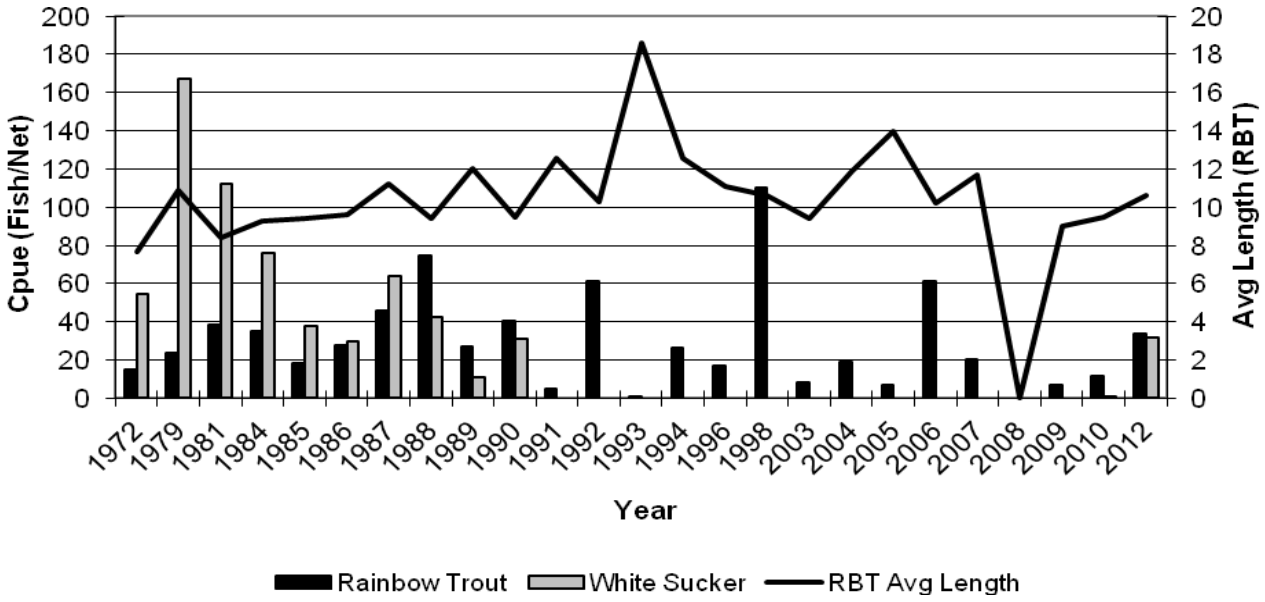
Grasshopper Reservoir is a privately owned 19 surface-acre reservoir located approximately 12 miles south of Chinook. Grasshopper Reservoir was first stocked with rainbow trout in 1947 and trout have exhibited good growth and survival rates in this reservoir. Grasshopper is currently maintained with annual plants of 2,500 fingerling Arlee rainbow trout and biennial plants of 3,000 advanced fingerling Eagle Lake rainbow trout. In 2011, FWP and S Bar B Ranch entered into a 5-year agreement through the Private Lands Public Fishing program to ensure public access to the reservoir remains. In return FWP provided $7,800 to upgrade the access road across the dam.

Grasshopper experienced a 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 2010 resulted in lower rainbow trout relative abundance (CPUE= 12 fish/net) when compared to historic averages (Figure 3). Rainbow trout averaged 9.5 inches in length (TL range= 6.5-21 in.) and weighed 0.42 lbs. (WT range= 0.08-3.5 lbs.). White suckers were chemically removed in 1991 and were undetected in netting surveys until 2010 when one white sucker (TL=7.4; WT=0.16lbs.) was captured.

In 2012 rainbow trout relative abundance climbed to 33.5 fish/net with an average length of 10.6 inches (TL range= 5.4-20 in; Figure 3). Netting surveys also revealed a growing white sucker population (CPUE= 31.5 fish/net; Figure 3) that needs to be addressed. Conversations with the S Bar B Ranch hinted at controlling the white sucker population without the use of chemicals. FWP plans to stock approximately 250-500 advanced fingerling tiger muskie in the fall of 2013 to biologically control the white sucker population. If this does not work, chemical application may need to be re-addressed.

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 2012.



H.C. Kuhr Reservoir

H.C. Kuhr reservoir is a 25 surface-acre reservoir located on private land south of Chinook. H.C. Kuhr has been open to public fishing since the 1960s and was entered into a 10-year contract under the Private Lands Fishing Access program in 2005. H.C. Kuhr is currently managed as a rainbow trout fishery with annual stocks of 3,000 4-inch trout. In 2012, Gordon Cattle Co. received $25,000 through the Community Pond Program to reconstruct the earthen spillway at H.C. Kuhr Reservoir and line it with geo-textile fabric and small rip rap.

Prior to 1996, the reservoir was managed as a warm water fishery with varying densities of black crappie, yellow perch, tiger muskie, walleye, sauger, and white suckers (Figure 4). In 1996 as a result of

decreased white sucker populations, rainbow trout abundance began to increase. In 2003, drought all but dewatered H.C. Kuhr and the opportunity to kill off a remnant yellow perch, tiger muskie, and white sucker population presented itself. The reservoir was restocked in 2003 and closed to fishing until 2004. When the fishery reopened in 2004, there were reports of 3 to 4 pound rainbow trout being caught in the reservoir.

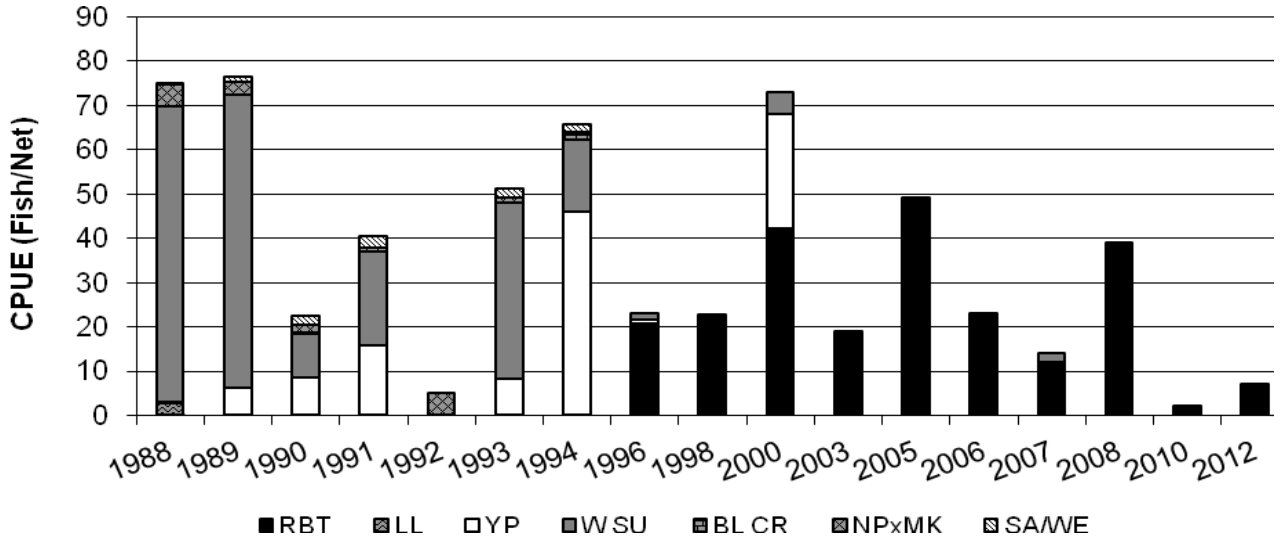
Since the restoration in 2003, the fishery has been monitored using summer gill netting surveys. In addition, a voluntary creel box was erected in 2005 to assess fishing pressure and angler success rates.

In 2010 reservoir levels were once again excellent and the spillway was running for over a month. One gill and trap net were set overnight to assess population densities. The gill net contained two rainbow trout and the trap net contained 305 fathead minnows and 36 brook stickleback.

Netting surveys conducted in 2012 suggests the rainbow trout population is stable to slightly increasing. One gill net captured seven rainbow trout averaging 14.14 inches and 1.45 lbs. (Figure 4). One trap net captured five brassy minnows, 15 creek chubs, five spottail shiner, 296 fathead minnows, and one rainbow trout (TL=14.4 in; WT= 1.54 lbs.).

In 2012, anglers reported catching trout in late August with black spot disease located on the fillets. A press release was issued educating local anglers on life cycle of black spot and addressed concerns over consumption of these fish, the article was well received among anglers.

Figure 4.- Relative abundance of rainbow trout (RBT), brown trout (LL), white sucker (W SU), black crappie (BL CR), tiger muskie (NPxMK), and sauger/walleye (SA/WE) in H.C. Kuhr based on gillnetting data from 1988 to 2012. Rehabilitation of this reservoir and restocking of rainbow trout occurred in 2003.



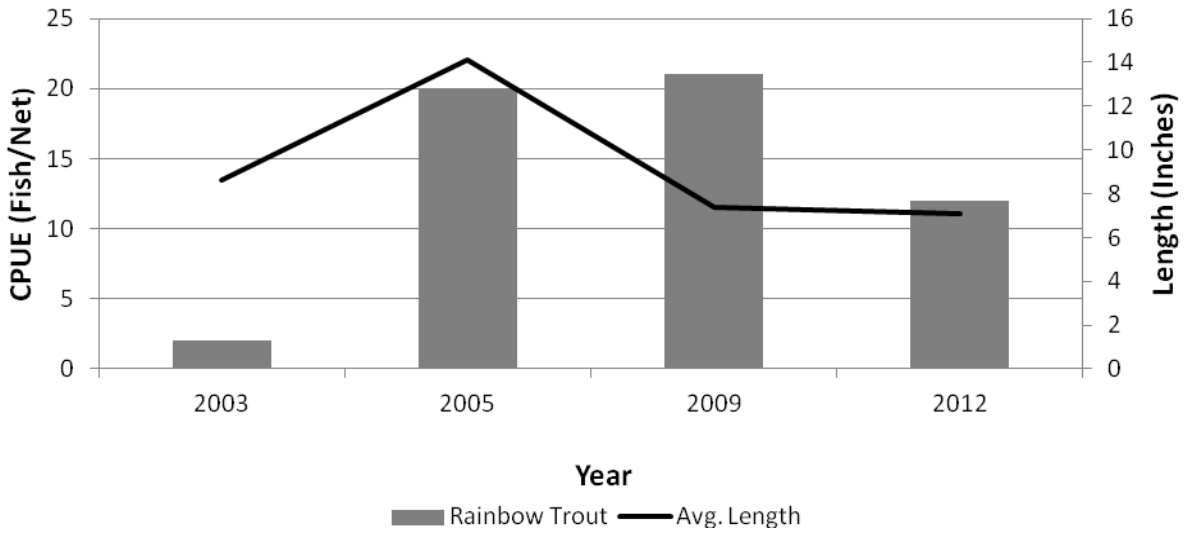
Jensen Reservoir

Jensen reservoir 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 500 fingerling Arlee rainbow trout.

In 2009, one gill net and one trap net were set overnight. The gill net captured 21 rainbow trout ($\bar{x}$ TL=7.4, $\bar{x}$ Wt.= 0.22 lbs.). The trap net captured one rainbow trout, 4,000 fathead minnows, and 1,520 brassy minnows. In 2012, one gill net captured 12 rainbow trout that averaged 7.6 inches and 0.35 lbs. (Figure 5). One trap net captured 1,764 brassy minnows and one rainbow trout.

Netting surveys suggest very little over-winter habitat remains, even with the windmill aeration system installed. High sediment load occurred during the historic run-off event in the spring of 2011 which reduced the maximum depth of this reservoir from 12 to 9 feet. Annual rainbow trout stocking will continue due to the popularity of this fishery and personal investments made by the landowner. However, very few trout will make it through the winter months in most years and obtain the quality size many anglers have become accustomed to at Jensen.

Figure 5. Relative abundance and average total length of rainbow trout in Jensen Reservoir based on gill netting surveys from 2003 to 2012.



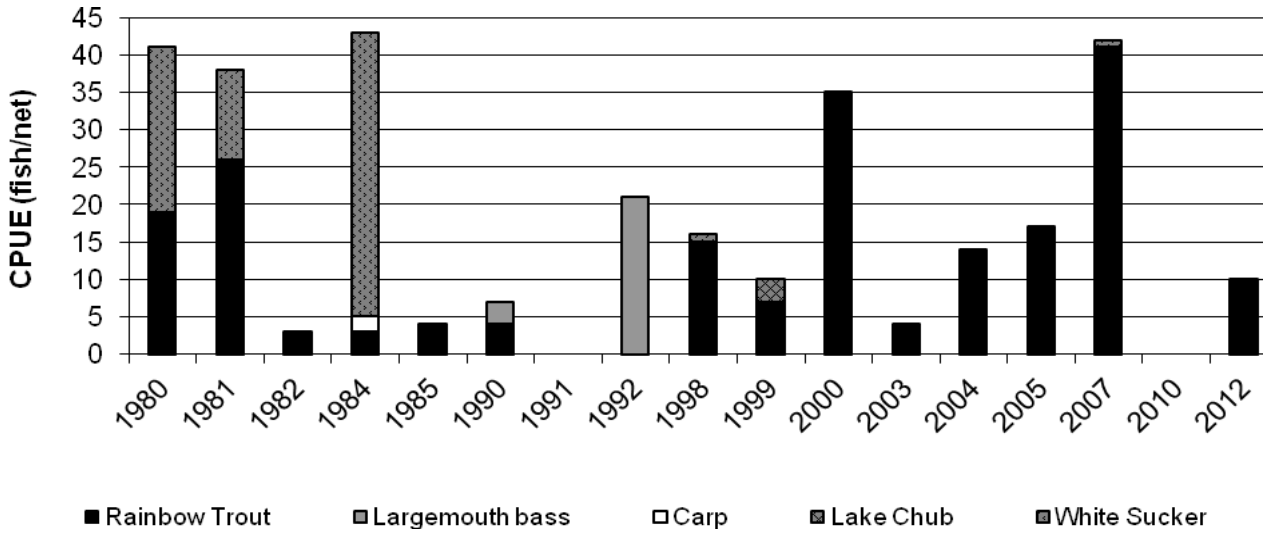
North Faber Reservoir

North Faber reservoir is a five-acre pond located on BLM land that has been managed as a rainbow trout fishery since 1972. This reservoir is maintained with annual plants of approximately 1,500 fingerling rainbow trout. Other species have been found within the reservoir during annual surveys however the stocking records are not complete, so it is not clear if these fish were legally or illegally introduced. Since the partial winter kills in 1991 and 1992, rainbow trout has been the predominate species in North Faber.

In 2007, summer gill netting surveys suggested high abundance of rainbow trout, (41 fish/net; Figure 6). Rainbow trout collected ranged in total length from 5.7 to 15.3 inches ($\bar{x}$ =9.8 in.) and in weight from 0.08 to 1.24 pounds ($\bar{x}$ =0.49 lbs.). In August 2007, a partial summer kill was observed due to low water levels and increased water temperatures. In 2010, gill and trap net surveys suggest a winterkill occurred as no rainbow trout were captured. The trap net contained 20 fathead minnows. North Faber received 1,500 rainbow trout in May 2010 and 2011. Bluegill and largemouth bass were also stocked in 2011 due to increased water levels and to diversify the fishery.

In 2012, one gill net captured 10 rainbow trout (Figure 6). Rainbow trout ranged in length from 5.3-18.3 inches ($\bar{x}$ =14.38 in.) and weighed 0.07-3.40 lbs. ($\bar{x}$ =1.54 lbs.). One trap net captured 5 brook stickleback, one rainbow trout (TL=13.9 in; WT=0.98 lbs.), and 40 bluegill ($\bar{x}$ TL= 7.52; $\bar{x}$ WT= 0.47 lbs.). Anglers also reported catching largemouth bass from 6-12 inches throughout the summer.

Figure 6. - Relative abundance of rainbow trout, largemouth bass, carp, lake chub, and white suckers in North Faber Reservoir, 1980 to 2012.



Phillips County Ponds

Douchette Reservoir

Douchette Reservoir is a 6 surface-acre reservoir located on BLM land approximately 10 miles northeast of Dodson. Historically, Douchette has been managed as a rainbow trout fishery, stocked with rainbow trout fingerlings from 1979-1996, annually. Largemouth bass were also stocked in 1987 in an attempt to diversify the fishery. Adult and juvenile largemouth bass were captured in netting surveys conducted in 1993 and 1998 (Table 7), largemouth bass captured ranged in length from 5.4-13.0 inches.

Severe drought conditions impacted the area from 2000-2003 and observations documented the reservoir down approximately 20 feet in the summer, 2004. Low water levels persisted for several more years and the stocking plan was eliminated. Near record snowfall and spring run-off conditions in 2011 filled Douchette. The reservoir was immediately stocked with 1,000 fingerling rainbow trout and 3,000 fingerling largemouth bass were stocked in the summer of 2012. This reservoir will continue to be stocked biannually with 1,000 rainbow trout and largemouth bass (as needed).

In 2012, one gill and trap net were set overnight to assess the fish population. The gill net captured 33 rainbow trout that ranged in length from 12.6-15.2 inches ($\bar{x}$ =13.95 in.) and averaged 1.22 lbs (Table 7). The trap net captured no fish.

Table 7. - Relative abundance and average total length of rainbow trout and largemouth bass in Douchette Reservoir based on gill netting surveys from 1980 to 2012.

	Rainbow Trout		Largemouth Bass	
Date	CPUE	Avg. Length	CPUE	Avg. Length
04/22/80	--	--	--	--
08/23/93	5	9.12	17	8.94
09/21/98	--	--	1	6.2
07/06/12	33	13.95	--	--

RECOMMENDATIONS

Beaver Creek Reservoir: Continue annual stocking of up to 50,000 catchable size Eagle Lake, Erwin, and Arlee rainbow trout. Continue to monitor fishery annually with the use of seining and gill netting at fixed stations. Re-evaluate and possibly change the three trout/day fishing limit to five trout/day.

Bearpaw Lake: 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 gill netting in the fall. Continue to monitor fishery annually with the use of fall gill netting at fixed stations. Re-evaluate and possibly change the three trout/day fishing limit to five trout/day.

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 and water quality. Also, 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. Attempt to establish riparian fencing around some of the ponds to prevent over grazing of shoreline vegetation to improve the fisheries and water quality. Continue to look for other ponds with suitable habitats to create new fisheries, work with area wardens and landowners to help identify potential ponds.

Waters Codes:

154770	Beaver Creek Reservoir
154560	Bearpaw Lake
155036	Douchette Reservoir
155140	Faber Reservoir
153880	Grasshopper Reservoir
155880	H.C. Kuhr Reservoir
155780	Jensen Reservoir
156535	North Faber Reservoir

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;

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McFarland, B. 2010. 2009 Statewide Angling Pressure Use Report. Montana Fish, Wildlife & Parks, Helena, MT. Pp. 170.

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Date: March 6, 2013