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, 2005 THROUGH JUNE 30, 2006

ABSTRACT

The coldwater fisheries in Hill, Blaine, and Phillips counties have been impacted by drought over the past five years, however the installation of windmill aeration systems 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. Northern pike populations may be increasing in Beaver Creek Reservoir and the effects may have to be addressed in the future. 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. Growth and condition of rainbow trout at Grasshopper Reservoir remains good following a winterkill in the winter of 2002-2003. Faber Reservoir was restocked with fingerling rainbow following rehabilitation in 2000 and netting indicates good survival and growth. Growth and condition of rainbow trout in H.C. Kuhr Reservoir remain good following their reintroduction in 2003. Ponds in Hill, Blaine and Phillips counties were monitored in 2005 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. To provide landowners and other private parties with technical advice and information to sustain and enhance fisheries resources. Objective accomplished: five 310 projects were reviewed and three 124 projects were reviewed with state and local agencies; advised Rocky Boy Reservation on habitat enhancement projects at Bonneau Reservoir, Box Elder Creek, East Fork Reservoir, and the east fork of Beaver Creek; supplied comments to Bureau of Land Management (BLM) relative to development of new fishing Reservoirs; twelve meeting, school programs, and fishing events were attended with schools related to the “Hooked on Fishing” program.

METHODS

Floating and sinking standard experimental gill nets 125 feet in length and 6 feet deep consisting of 25-foot panels of 3/4-, 1-, 1 1/4-, 1 1/2-, and 2-inch mesh were fished to acquire information on adult fish populations. 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 2003 indicated it was the fifth most fished reservoir in Region Six.

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.

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 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 experimental gill nets 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 of 25-foot panels of 3/4 -, 1-, 1 1/4-, 1 1/2-, and 2-inch 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

In 2003 and 2004, the abundance of rainbow trout was above the target levels of 10 fish/net (Table 1). 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 compared to 2004. In 2005 there was also increase in the average size of rainbow trout in Beaver Creek Reservoir. The increased size of rainbow trout may be due to decreased abundance of and competition with yellow perch and white suckers.

Seining results indicated that northern pike had a very successful spawn in 2005. As a result northern pike populations may increase over the next few years and cause a significant decline in the abundance or rainbow trout within Beaver Creek Reservoir. The effects of increased pike populations will be monitored and stocking rate adjustments will be made if necessary.

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, 1974-2005.

		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	3	24.00	10.91	111.26	--	--	--	--	--	--	--	--	--	--	--	--	7.33	10.49	82.33	10.23
Nov-77	3	35.00	10.05	86.31	--	--	--	--	--	--	--	--	--	--	--	--	2.33	9.66	113.00	9.75
Sep-80	3	23.33	10.12	81.04	--	--	--	--	--	--	--	--	--	--	--	--	1.33	6.33	156.00	8.86
Sep-81	3	7.33	10.88	82.77	--	--	--	--	--	--	--	--	--	--	--	--	6.67	8.78	165.33	8.70
Oct-82	3	8.33	11.78	99.67	--	--	--	2.33	15.79	109.67	--	--	--	--	--	--	3.33	9.66	109.67	9.69
Oct-83	3	3.33	11.79	94.66	--	--	--	3.67	25.10	117.07	--	--	--	--	--	--	1.33	--	98.33	--
Sep-84	3	3.00	11.26	95.43	--	--	--	3.67	26.64	111.21	--	--	--	--	--	--	0.67	11.00	58.33	10.50
Sep-86	6	15.00	11.50	98.90	--	--	--	4.17	16.68	109.86	--	--	--	--	--	--	0.00	--	42.00	--
Sep-87	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

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 six for fishing pressure. Bearpaw Lake is managed primarily as a trout fishery with annual stocks of 1500 catchable size Arlee rainbow trout and 5,000 catchable size McBride Yellowstone cutthroat trout. Walleye and smallmouth bass have also been introduced to assist with the control of white suckers.

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. In addition, chemical rehabilitation of Bearpaw Lake was conducted in 1983 and a manual sucker control program was initiated in 1989 in an effort to reduce food competition between trout and white suckers and thus improving 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. Gillnetting 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 3/4 -, 1-, 1 1/4-, 1 1/2-, and 2-inch 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. Traps are checked daily and white suckers are transferred to other lakes, given to local farmers, or killed and returned to the lake. Additionally, white suckers that are captured during fall gill netting are also 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 8,000 catchables. In 2004, stocking rates were significantly increased due to PCB contamination at Big Springs Fish Hatchery. 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 2). 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, catch rates (Table 2) were significantly increased which is mostly likely due to the increased stocking density in 2004.

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 (Figure 1; Table 2).

White Sucker

The white sucker population has been significantly reduced since control efforts were initiated (Figure 2; Table 2). Chemical rehabilitation was attempted in 1983, however white suckers quickly repopulated 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, 140,333 white suckers have been removed using trap nets and gill nets (Table 3). 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.

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 2005, smallmouth bass ranging in length from 9.6- to 15.4-inches ($\bar{X}$ =11.29 in.) were captured during spring trap netting surveys. Fall gillnetting surveys indicate good catch rates and size distributions of smallmouth bass as well (Table 2).

Walleye

Walleye were illegally introduced within Bearpaw Lake in the early 1990s. They were first documented within the lake in 1992. From 1992 to 1997, walleye fry and fingerlings were stocked to help control adult white sucker populations. Since their legal introduction, walleye have assisted with the control of white suckers and provided a new addition to this popular fishery. Since 2000, the walleye population has matured and currently consists of numerous preferred (TL=20 to 25 in.) and memorable (TL>25 in.) size fish (Table 2). This population is currently between 9 and 11 years old, and the stocking of fry or fingerling walleye should be considered to continue the persistence of walleye in Bearpaw Lake. An alternative to stocking walleye would be in the introduction of low densities of tiger musky to control the white sucker population.

Figure 1. - Comparison of white sucker catch rate during fall gillnetting surveys and average length of trout (rainbow, brook, and Yellowstone cutthroat) in Bearpaw Lake (1979-2005).

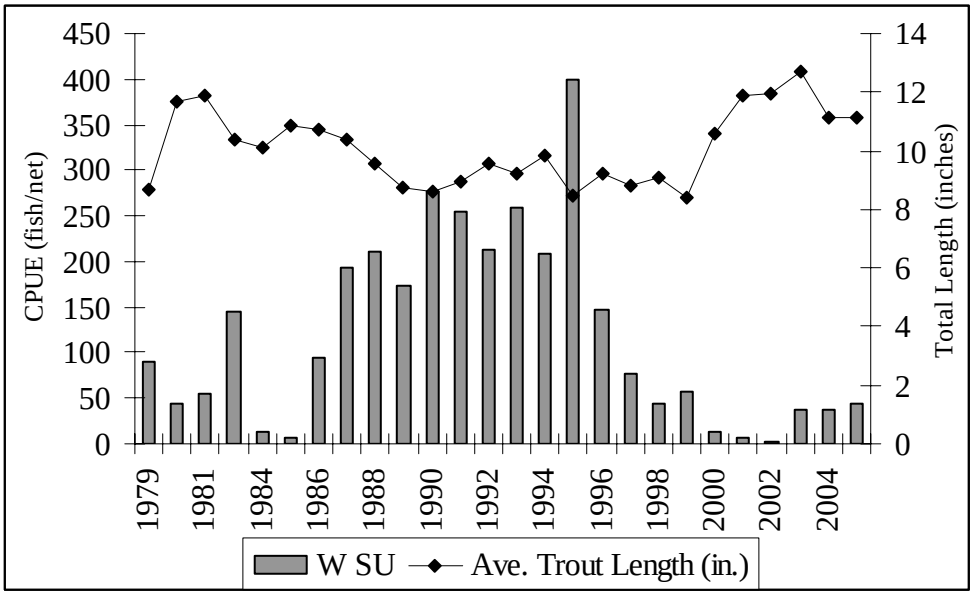


Table 2.- Summary of relative abundance (catch per unit effort (CPUE)), total length, and relative weights of fishes collected in fall gillnetting surveys in Bear Paw Lake since chemical rehabilitation in 1983.

		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	2	0.00	--	--	0.00	--	--	15.50	10.13	86.34	13.50	8.00	--	--	--	--	--	--	--
Sep-85	3	1.33	12.03	97.49	1.00	9.05	109.72	27.33	11.50	86.83	6.33	0.00	--	--	--	--	--	--	--
Sep-86	3	0.00	--	--	3.33	10.41	106.78	16.67	11.01	86.45	94.33	6.40	--	--	--	--	--	--	--
Sep-87	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	3	13.33	11.11	--	0.00	--	--	0.00	--	--	36.67	12.60	--	0.33	14.50	--	0.67	20.45	--
Sep-05	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

Table 3. - Numbers of white suckers removed from Bearpaw Lake by trap netting and fall gillnetting, 1989-2005.

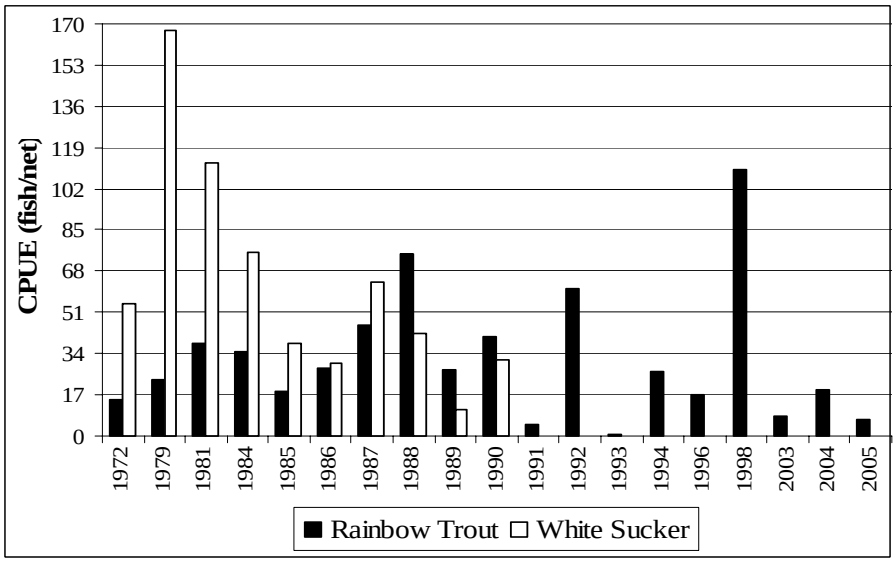
Year	Number Trap Netting	Number Gillnetting	Total Number	Total Pounds
1989	12,545	521	13,066	9359.19
1990	44,622	833	45,455	10396.52
1991	18,140	766	18,906	4932.86
1992	4,133	636	4,769	955.42
1993	5,239	775	6,014	1205.33
1994	6,995	626	7,621	882.49
1995	5,653	798	6,451	2396.44
1996	1,991	438	2,429	817.39
1997	13,485	228	13,713	8227.80
1998	6,708	133	6,841	5309.22
1999	8,239	172	8,411	7614.72
2000	2,225	28	2,253	2591.20
2001	331	12	343	562.69
2002	17	6	23	21.65
2003	1,564	113	1,677	2362.17
2004	222	110	332	418.32
2005	1,895	134	2,029	2311.74
Totals	134,004	6,329	140,333	60,365

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. A recent winterkill occurred in 2002-2003, due to marginal over winter water levels in recent years as a result of drought and increased irrigation demand downstream. The reservoir was restocked with 5,600 four-inch rainbow trout in the summer and fall of 2003, and they exhibited excellent growth reaching 8.6-10.7 inches by the fall. In the spring of 2004, 2,000 four-inch rainbow trout were stocked into the reservoir. During the summer of 2004, a sinking experimental gill net fished for 14 hours, captured 19 rainbow trout ranging in length from 8 to 18 inches. The average length was 11.9 inches; the average weight was 0.8 pounds, with an average relative weight of 112.4.

In 2005, water levels were a few feet low but stable. A voluntary creel box was installed and a sinking experimental gill net was fished overnight to determine the relative abundance of rainbow trout. Twenty-six anglers filled out creel cards reporting catch rates of 0.41 rainbow trout/hour and an occasional catch of 4 and 5 pound trout. Gill netting surveys resulted in a catch rate of 0.44 fish/net, with an average size of 14.04 inches (TL=7.5 to 19.63 in.) and 1.80 pounds (weight=0.2 to 3.3 lbs.) The low catch rates in 2005 may be a factor of higher water temperatures and fish residing deeper within the reservoir.

Figure 2. - Relative abundance of rainbow trout and white suckers in Grasshopper reservoir based on gill netting surveys from 1972 to 2005.



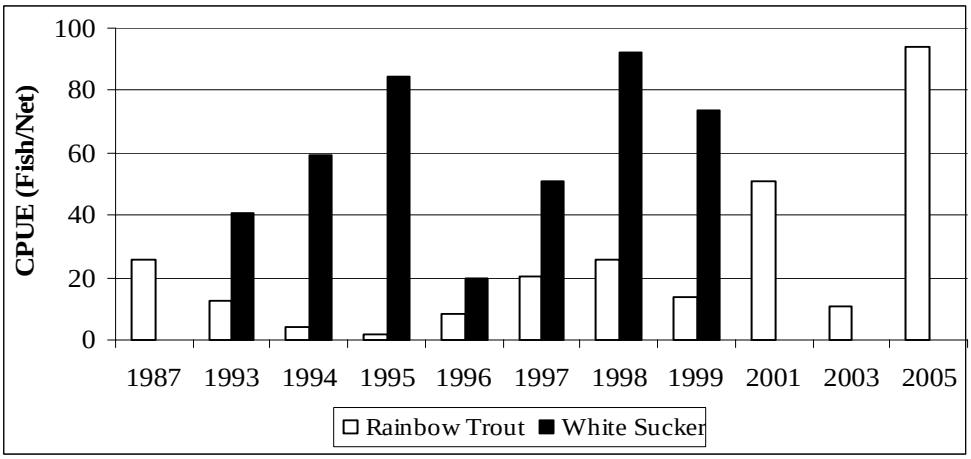
Faber Reservoir

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 16 in the region for fishing pressure in 2003. 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.

Since the rehabilitation in 2000, rainbow trout populations have been recovering (Figure 3). No netting was conducted in 2004; however we received reports of high catch rates with many 13 to 15 inch rainbow trout and the occasional four-pound rainbow trout being caught. In 2005, gillnetting 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) and weighed 0.13 to 2.76 pound ($\bar{x}$ =0.3).

Figure 3. - Relative abundance of rainbow trout and white sucker in Faber Reservoir based on gill netting surveys from 1987 to 2005.



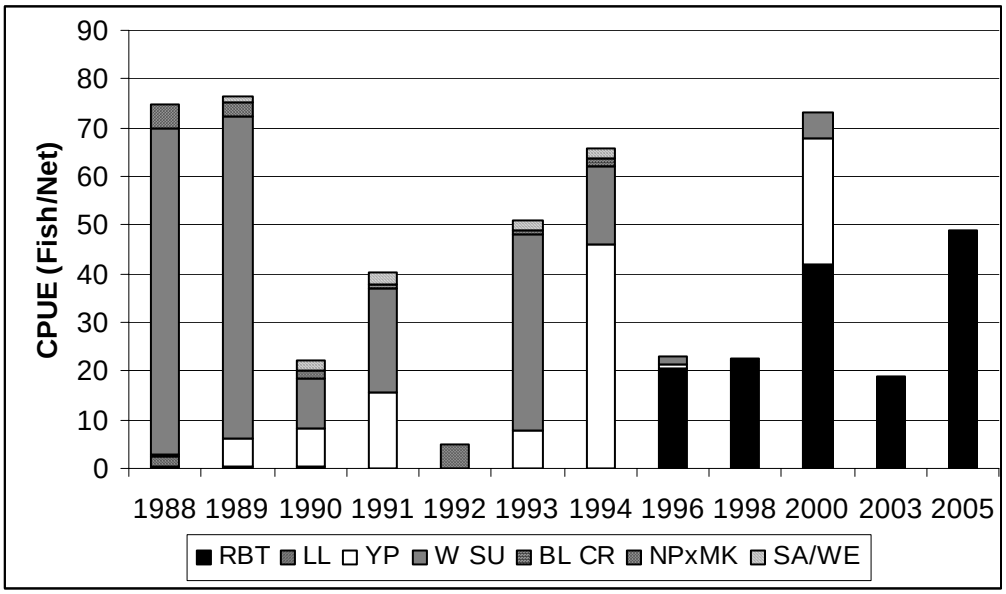
H.C. Kuhr Reservoir

H.C. Kuhr reservoir is a 25-acre privately owned reservoir located 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 managed as a rainbow trout fishery with annual stocks of 3,000 4-inch trout.

Prior in 1996, this fishery 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 sucker populations, the rainbow trout fishery began to increase. And in 2003, drought all but dewatered H.C. Kuhr and the opportunity was seized to kill off a remnant yellow perch, tiger muskie, and white sucker population. 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.

In the fall of 2003, a gill netting survey captured 19 trout ranging from 6.8 to 10.6 inches (CPUE=19 fish/net). The fish were in excellent shape and no white suckers or yellow perch were netted, indicating a successful rehabilitation. In 2005, the abundance of rainbow trout had increased (CPUE= 49 fish/net) and the fish ranged in total length from 7.43 to 21.5 inches ($\bar{T}$ =10.56 in.) and in weight from 0.19 to 4.82 pounds ($\bar{T}$ =0.95 lbs.).

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 2005. Rehabilitation of this reservoir occurred in 2003 and rainbow trout were restocked.



Blaine County Ponds

Ponds throughout Blaine County were sampled to determine fish abundance using 125-foot experimental multifilament sinking gillnets. All nets were set perpendicular to the dam and were fished overnight. Voluntary creel boxes were also erected at many of the ponds to determine fishing pressure, catch rates, and satisfaction.

Anderson Reservoir

Anderson reservoir is a privately owned reservoir, which has been managed as a rainbow trout fishery since 2003. This reservoir is maintained by annual plants of 2,000 four-inch Arlee rainbow trout.

In 2003 and 2005, this reservoir was sampled to assess the fishery. In addition a creel box was erected during the summer but was destroyed by cows.

Since their initial introduction, rainbow trout have exhibited excellent growth and survival in Anderson reservoir. In 2003, rainbow trout (CPUE=30 fish/net) had an average length of 10.41 inches (TL=9.66 to 11.22 in.) and an average weight of 0.58 pounds (weight=0.47 to 0.73 lbs.). In 2005, rainbow trout (CPUE=10 fish/net) had an average length of 14.54 inches (TL=7.7 to 20.0 in.) and an average weight of 1.88 pounds (weight=0.20 to 3.55 lbs.). Only one creel card was returned for Anderson reservoir. This angler was from Hill County and had a catch rate of 0.5 fish/hour and had a high satisfaction rate with the size of fish caught.

Burns Reservoir / BR 045

Burns reservoir is a 17-acre pond located on BLM land in Blaine County. This reservoir has historically been a popular fishery and was last stocked with rainbow trout in 2001. In 2005, no fish were caught during gillnetting surveys however 85 tiger salamanders were collected. Water levels were very low since 2001, which is most likely the cause of the failure of the 2001 fish stocking. There are currently no plans for restocking this reservoir.

Bus Reservoir

Bus reservoir is a small reservoir located in Blaine County. This reservoir has incomplete stocking records and was last stocked with channel catfish in 1994. Sampling records from 1993 to 1995 indicate the presence of rainbow trout and northern pike as well. In 2005, no fish were collected in gill netting surveys. Like many reservoirs, water levels have been marginal over the last decade and are most likely the cause of the elimination of the fishery. There are currently no plans for restocking this reservoir.

Floyd Flynn (BR06)

Floyd Flynn reservoir is a small pond located on BLM land north of Chinook. This pond is designated by the BLM as a "kid's fishery" and has been managed as such since 2003. In 2003, bluegill, rainbow trout and channel catfish were introduced. In 2004 and 2005, 500 catchable size rainbow trout were stocked. In 2005, rainbow trout (CPUE=0.21 fish/net hour; $\bar{x}$ TL=15.67 in.), bluegill (CPUE= 0.14 fish/net; $\bar{x}$ =4.0 in.), and channel catfish (0.07 fish/net; $\bar{x}$ =7.4 in.) were collected. Water levels are low and stocking has been cancelled for 2006.

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 is currently maintained with annual plants of 1,000 three-inch Arlee rainbow trout. 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.).

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.

Jensen Pond

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 2005, gill netting surveys were conducted and a self-creel survey box was erected.

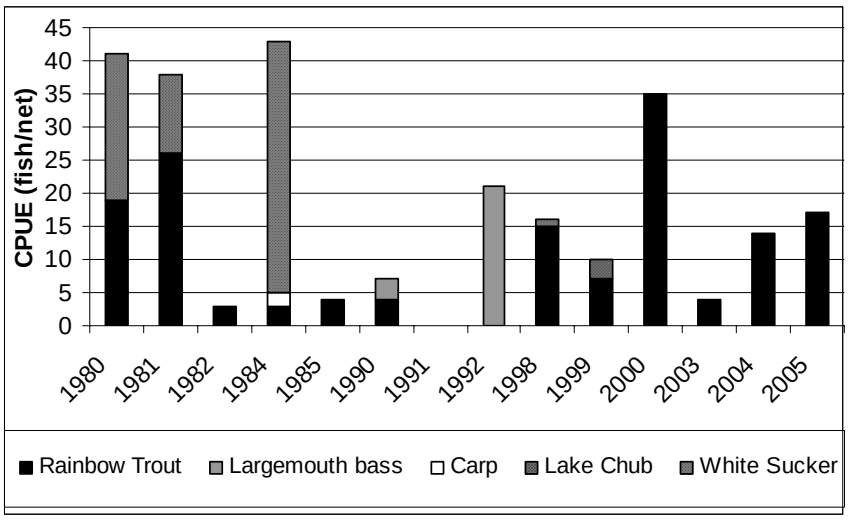
The rainbow trout within this reservoir have exhibited excellent growth and condition, feeding primarily on freshwater shrimp. In 2005, the catch rate of rainbow trout was 1.66 fish/net hour (20 fish/net) and the average length was 14.11 inches (TL = 5.85 to 23.40 in.) and the average weight was 2.26 lbs. (weight = 0.1 to 7.15 lbs). Anglers have expressed high satisfaction rates with their fishing experience, primarily due to the size of fish caught. Anglers reported a catch rate 0.256 fish/hour and frequent catches of one to six pound trout.

North Faber Reservoir

North Faber reservoir is a five-acre pond that has been managed as a rainbow trout fishery since 1972. This reservoir is maintained with annual plants of approximately 2,500 fingerling rainbow trout. Various other species have been found within the reservoir during annual surveys (Figure 5), 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. Water levels within this reservoir have fluctuated over the last five years, however they are relatively stable and the fishery is recovering. In 2005, rainbow trout ranged in length from 6.3 to 15.3 inches ($\bar{T}$ =7.88) and in weight from 0.08 to 1.45 lbs. ($\bar{T}$ =0.22 lbs.). With continued increases in water levels, this fishery should continue to recover.

Figure 5. - Relative abundance of rainbow trout, largemouth bass, common carp, lake chub, and white sucker in North Faber Reservoir based on gill netting surveys from 1980 to 2005.



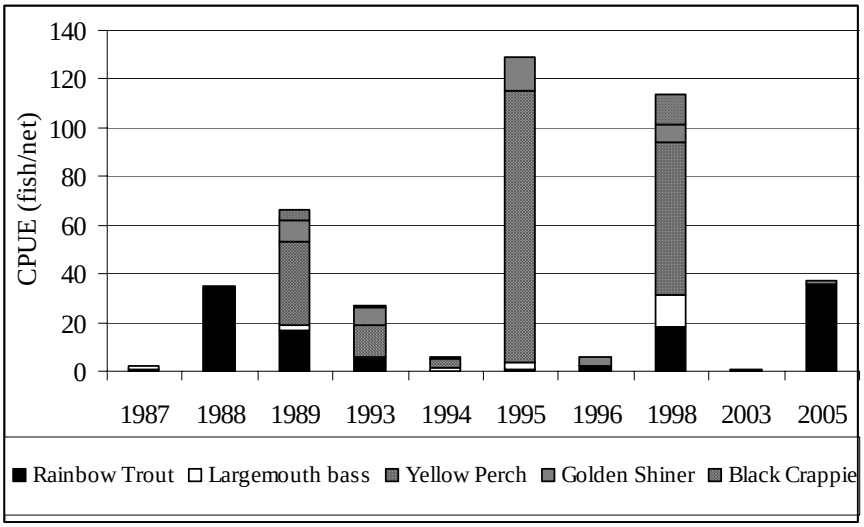
Reser Reservoir

Reser reservoir is located in northwestern Blaine County. This reservoir has been managed as a fishery since 1981 and over the years has been stocked with fathead minnows, lake chub, northern redbelly dace, western silvery/plains minnows, golden shiners, largemouth bass, black crappie, bluegill sunfish, and rainbow trout. This reservoir had frequent winterkills occur in the early 1990s and as a result two windmill aeration systems were installed. Since the installation of the aeration systems only one fish kill has occurred and this was suspected to have occurred as a result of chemical runoff from surrounding fields.

Since the late 1990s, this reservoir has been managed primarily as a rainbow trout fishery. In 2003, 20,000 rainbow trout were stocked and since then 3,000 four to five inch rainbow trout are stocked. These trout are exhibiting good survival and growth. In 2005, the catch rate of rainbow trout was 36 fish/net (2.4 fish/net hour). The average size of rainbow trout was 10.71 inches (TL=7.6 to 15.1 in.) and 0.6 pounds (weight = 0.16 to 1.08 lbs.). There has been low fishing pressure at Reser reservoir. Anglers who did fill out creel cards did not report any catches. Fishing has been poor in recent years due to the

die off; pressure should increase as the reservoir continues to recover and anglers become aware of the fishery.

Figure 6. - Relative abundance of rainbow trout, largemouth bass, yellow perch, golden shiner, and black crappie from summer gill netting surveys in Reser Reservoir, 1987 to 2005.

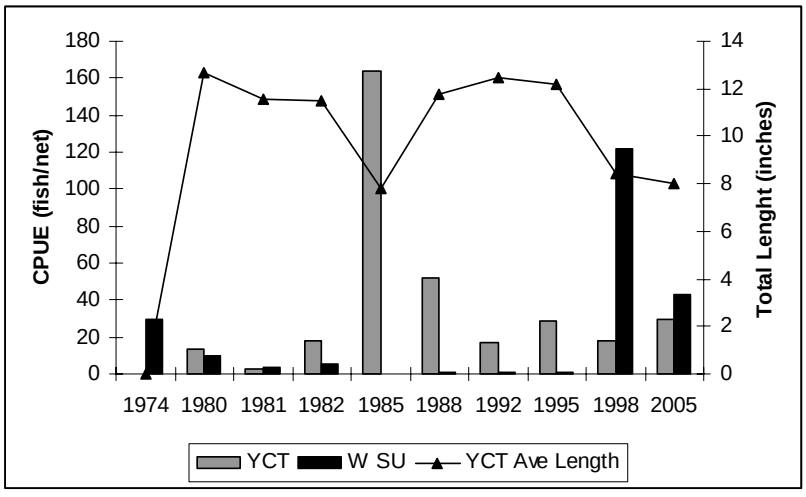


Ross Reservoir

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. 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 7), 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 7) and will have to be dealt with. This reservoir is either going to have to be re-treated with rotenone or a predator such as tiger muskie will have to be introduced to help control the white sucker population. In addition, the public needs to be educated on the harmful effects that using and dumping live bait in these ponds has on these fisheries.

Figure 7. - Comparisons of catch rates (CPUE) of Yellowstone cutthroat trout (YCT), white suckers (W SU) and average length of Yellowstone cutthroat trout (YCT), (1974 to 2005).



Phillips County Ponds

Ponds throughout Phillips County were sampled to determine fish abundance using 125-foot experimental multifilament sinking gillnets. All nets were set perpendicular to the dam and were fished overnight. Voluntary creel boxes were also erected at many of the ponds to determine fishing pressure, catch rates, and satisfaction. The success of voluntary creel boxes in Phillips County has been very limited due to the high amount of grazing and the destruction of many of the boxes by cows.

Batosh Reservoir

Batosh Reservoir is located on BLM land is south Phillips County and has been managed as a rainbow trout fishery since 1996. This reservoir is maintained with alternate year plants of 1,000 fingerling Arlee rainbow trout. In the spring of 2005, water levels were 5.5 feet below the spillway, however summer rains filled the reservoir. In 2005, rainbow trout within the reservoir ranged in size from 11.7 to 14.35 inches ($\bar{x}$ =13.12 in.) and had a relative abundance of 27 fish/net (CPUE=1.58 fish/net hour).

Current Reservoir

Current Reservoir is a 10-acre pond located on BLM land in south Phillips County. This reservoir has been popular since the 1970s because of its ability to produce quality trout. Water levels have been good with the reservoir spilling in 2004 and 2005. In addition to fishing pressure, this reservoir also receives a fair amount of grazing pressure, which has been blamed in recent years for a reduction in the aquatic vegetation and the quality of the reservoir.

This reservoir has only been monitored periodically since the 1970s, however the relative abundance and size of fish present has been consistent. In 2005, the catch rate of rainbow trout was 11 fish/net (0.55 fish/hr), with an average length of 15.81 inches (TL=14.27 to 19.6 in.). In 1999, the catch rate of rainbow trout was 58 fish/net (no set length record), and the average length of rainbow trout was 14.36 inches (TL=7.0 to 20.0 inches). In 1982, the catch rate of rainbow trout was 14 fish/net (0.61 fish/net hour) and the average length was 13.71 inches (TL=9.37 to 19.2 in.).

King Reservoir

King 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 annual plants of 3,000 fingerling Arlee rainbow trout. This fishery has a windmill aeration system and is fenced to exclude livestock. In 2005, gill netting surveys indicated a healthy population of rainbow trout, with a catch rate of 26 fish/net (1.53 fish/net hour) and an average length of 10.57 inches (TL=7.45 to 21.20 in.) and an average weight of 0.80 pounds (weight=0.16 to 3.50 lbs)

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 annual plants of 1,000 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 catch rate of rainbow trout was 0.71 fish/net hour (5 fish/net) and for brown trout it was 0.43 fish/net hour (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 catch rate of rainbow trout was 1.21 fish/net hour (17 fish/net) and for brown trout it was 0.50 fish/net hour (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.).

Rebate Reservoir

Rebate is located in a deep coulee off of Rock Creek and is surrounded by pine trees. This reservoir has been managed as a rainbow trout fishery since 1996. The fishery was maintained from 1996 to 2001 with annual plants of 1,000 fingerling rainbow trout. In 2002, one stocking of brown trout occurred and the plants of rainbow trout were reduced to occur every three years. In 2004, an additional 1,000 rainbow trout were stocked in the fall.

In the spring of 2005, water levels were 9.5 feet below the spillway, however summer rains filled the reservoir. Gill netting surveys indicated good survival and growth of stocked rainbow trout with a catch rate of 1.58 fish/net hour (27 fish/net) and an average length of 8.58 inches (TL=6.55 to 15.40 in.).

Rotator Cup Reservoir

Rotator Cup is BLM pond that has been managed as a rainbow trout fishery since 1996. Since1996, the fishery has been maintained with alternate year plants of 1,000 fingerling rainbow trout. Water levels have been maintained by summer rains, and have remained good for the past five years. In 2005, the catch rate for rainbow trout was 0.56 fish/net hour (9 fish/net) and the average length was 11.89 inches (TL=8.5 to 13.0 in.).

Shallow Reservoir

Shallow reservoir is located on BLM land and has been managed as a rainbow trout fishery since 1994. This reservoir 5.5 feet below the spillway in 2005 but was filled by summer rains. The fishery is currently maintained with alternate year plants 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 catch rate for rainbow trout was 0.38 fish/net hour (3 fish/net) and the average length was 10.27 inches (TL=7.0 to 15.5 in.).

Thundercloud Reservoir

Thundercloud is located on BLM land and contains largemouth bass and rainbow trout. Largemouth bass were introduced through 1985 and rainbow trout have been stocked since 2003. The rainbow trout fishery is maintained with annual plants of 800 fingerling rainbow trout. Water levels have been good in recent years and a windmill aeration system was installed in 2001. A partial winterkill consisting of rainbow trout and largemouth bass was reported in the spring of 2004. In 2005, gill netting surveys revealed good survival of stocked rainbow trout and no largemouth bass were collected. In 2005, the catch rate for rainbow trout was 1.16 fish/net hour (21 fish/net) and the average length was 10.48 inches (TL=6.58 to 16.50 in.). The status of the largemouth bass fishery is unknown.

Wrangler Reservoir

Wrangler reservoir is located on BLM land and has been managed as a rainbow trout fishery since 1980 and for channel catfish since 2001. The fishery is currently maintained with annual plants of 1,500 fingerling rainbow trout and alternate year plants of 500 four-inch channel catfish. Water levels have been good in recent years and a windmill aeration system was installed in 2000 in an effort to increase overwinter survival. In 2004, several dead rainbow trout were reported along the shore after ice-off. In 2005, gill netting surveys resulted in a catch rate of rainbow trout of 0.5 fish/net hour (11 fish/net) and an average length of rainbow trout of 12.05 inches (TL=10.20 to 13.10). No channel catfish were collected in the nets, additionally angler catch of channel catfish is also unknown.

RECOMMENDATIONS

Beaver Creek Reservoir: Continue annual stocking of 70,000 catchable size Eagle Lake, Erwin and Arlee rainbow trout. Adjustments may need to be made if the northern pike population fluctuates significantly. Continue to monitor fishery annually with the use of seining and gillnetting at fixed stations. Continue with three fish/day fishing limits.

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

Grasshopper Reservoir: Continue with annual plants of 2,500 Arlee fingerlings and alternate year plants of 3, 00 fingerling Eagle Lake rainbow trout. Continue to monitor fishery annually with the use of fall gillnetting and established two fixed monitoring stations.

Faber Reservoir: Continue with annual plants of 10,000 fingerling Arlee rainbow trout. Established two fixed sampling stations within the reservoir and continue to monitor fishery annually.

H.C. Kuhr Reservoir: Continue with annual plants of 3,000 fingerling Arlee rainbow trout. Continue to monitor the survival and growth of rainbow trout annually at the fixed site established in 2005.

Blaine County Ponds: Continue with stocking rates as described above. Monitor ponds every two years to assess survival and growth of stocked fish. Stock tiger musky at low densities in Ross reservoir to assess their success at controlling the white sucker population. Also, start a more aggressive public education program alerting the public to the problems associated with the use of live bait.

Phillips County Ponds: Continue with stocking rates as described above. Monitor ponds every two years to assess survival and growth of stocked fish. Re-stock Gullwing reservoir with black crappie or largemouth bass. If these stockings are not successful, remove the windmill aeration system. Also, attempt to establish fencing along some of the ponds to prevent over grazing of shoreline vegetation to improve the fisheries.

Waters Codes:

15-4770	Beaver Creek Reservoir	15-6605	Petrie Pond
15-4560	Bearpaw Lake	15-8860	Reser Reservoir
15-3880	Grasshopper Reservoir	15-9160	Ross Reservoir
15-5140	Faber Reservoir	16-4405	Batosh Reservoir
15-8880	(H.C.) Kuhr Reservoir	16-4870	Current Reservoir
15-4515	Anderson Reservoir	16-7880	King Reservoir
15-7400	Burns Reservoir / BR 045	16-7662	Plutz Reservoir
15-4729	Bus Reservoir	16-7750	Rebate Reservoir
15-6740	Floyd Flynn / BR06	16-7979	Rotator Cup Reservoir
16-5155	FR Reservoir	16-8255	Shallow Reservoir
15-5780	Jensen Pond	16-8490	Thundercloud Reservoir
15-6535	North Faber Reservoir	16-8990	Wrangler Reservoir

Key Words or Fish Species:

Arlee; Eagle Lake; Erwin; rainbow trout, Yellowstone cutthroat trout; white sucker; white sucker control; smallmouth bass; walleye; northern pike; largemouth bass; yellow perch;

Prepared by: Laura L. Leslie
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