

**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, 2004 THROUGH JUNE 30, 2005

**ABSTRACT**

Trout gill net catch-per-unit effort (CPUE) has increased to a level higher than the 10-fish/net target in Beaver Creek Reservoir. Trout gill net CPUE is good in Bear Paw Lake and growth is improving. Fishing pressure is increasing with the more acceptable size of fish. Trapping has removed 125,179 white suckers since 1989. The sucker population has been greatly reduced and consists mostly of older fish. 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 re-introduction in 2003. Management recommendations for all 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: twenty 310 projects were reviewed and thirty 124 projects were reviewed with state and local agencies; advised Rocky Boy Reservation on habitat enhancement projects at Bonneau Reservoir and Box Elder Creek; supplied comments to Bureau of Land Management (BLM) relative to development of new fishing Reservoirs; twelve meetings were attended with schools related to the "Hooked on Fishing" program.

## METHODS

Lakes were sampled with floating and/or sinking experimental gill nets. The gill nets measured 6 feet deep and 125 feet in length and consisted of 25-foot panels of 3/4-, 1-, 1 1/4-, 1 1/2-, and 2-inch square mesh. All fish were measured for total length (TL) 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. 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. In 2003, Beaver Creek Reservoir ranked number five in the region for fishing pressure.

Over its stocking history, Eagle Lake rainbow trout, De Smet rainbow trout, brown trout, and McBride Yellowstone cutthroat trout have been planted and evaluated. None of these strains have shown a propensity to out-perform domestic Arlee and Erwin rainbow trout for growth or catchability, therefore domestic Arlee rainbow have been the preferred strain with occasional plants of Eagle Lake rainbow which have exhibited greater longevity and upstream spawning capabilities. In 2004, a total of 92,850 Arlee and Erwin rainbow trout (27,147 four-inch and 65,703 six-inch) were stocked into Beaver Creek Reservoir.

Gill-net surveys have been conducted annually since 1980 to monitor growth and survival of hatchery trout and to determine relative abundance of other fishes. Results of the netting efforts are summarized in Table 1. The gill net catch-per-unit-effort (CPUE) of trout has risen above the target CPUE of 10/net (Figure 1). This is due a combination of increased stocking and a relatively low pike population. Condition of trout is fair to good. Poor trout condition has been associated with high sucker numbers. Though the white sucker population remains low, due to predation, a huge perch population has developed and is currently the greatest competitor with smaller trout for available zooplankton.

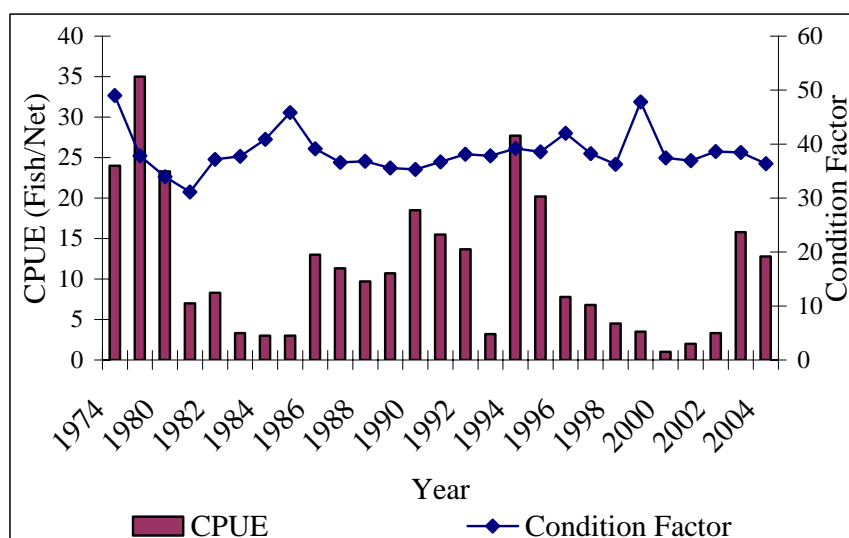
The use of live minnows for bait was allowed beginning in March of 2000. The regulation is intended to increase harvest of northern pike and perhaps open up a winter fishery for walleye. Though fishermen use live minnows regularly, a winter fishery for walleye has not developed. The trout daily limit was reduced from 5/day to 3/day in March of 2002 due to increasing fishing pressure.

Table 1. Summary of gill net catches and relative abundance of fishes in Beaver Creek Reservoir, 1974-2004.

Year	Rainbow Trout			Northern Pike			Walleye			Yellow Perch			Sucker
	CPUE <sup>1</sup>	Average length (in.)	Average Weight (lbs.)	CPUE <sup>1</sup>	Average length (in.)	Average Weight (lbs.)	CPUE <sup>1</sup>	Average length (in.)	Average Weight (lbs.)	CPUE <sup>1</sup>	Average length (in.)	Average Weight (lbs.)	
1974	24.0	10.7	0.6	---	---	---	---	---	---	---	---	---	89.7
1977	35.0	10.1	0.4	---	---	---	---	---	---	---	---	---	115.7
1980	23.3	10.1	0.4	---	---	---	---	---	---	---	---	---	83.3
1981	7.0	10.4	0.4	---	---	---	---	---	---	---	---	---	171.7
1982	8.3	11.2	0.6	2.3	15.8	0.99	---	---	---	---	---	---	112.3
1983	3.3	11.8	0.6	3.7	25.1	4.78	---	---	---	---	---	---	99.7
1984	3.0	11.3	0.6	3.7	26.6	5.49	---	---	---	---	---	---	58.7
1985	3.0	11.9	0.8	4.3	26	5.72	---	---	---	---	---	---	68.3
1986	13.0	11.9	0.7	4.2	16.7	2.13	---	---	---	---	---	---	42
1987	11.3	13.6	0.9	5.2	22	2.81	---	---	---	0.3	6.3	0.12	18
1988	9.7	14.7	1.2	3.0	27.6	7.3	0.7	10.6	0.36	8.2	5.9	0.1	18
1989	10.7	13.1	0.8	1.2	30.3	8.31	0.0	---	---	9.2	7.6	0.21	16.8
1990	18.5	12.0	0.6	0.7	21	2.9	1.8	13.2	0.86	13.0	8.5	0.32	9.8
1991	15.5	12.8	0.8	2.3	16.6	1.2	5.7	14	0.97	12.0	7.4	0.26	11
1992	13.7	13.7	1.0	3.3	25.6	5.32	2.3	17.8	2.15	6.0	6.4	0.13	7.7
1993	3.2	16.4	1.7	2.0	27.5	6.37	3.3	16.8	1.73	12.3	7.2	0.21	8.5
1994	27.7	11.7	0.7	2.8	25.5	6.77	1.7	17.4	2.68	23.8	7.7	0.25	7
1995	20.2	13.5	0.9	3.5	21.7	2.89	2.5	18	2.62	20.0	7.7	0.28	12.8
1996	7.8	12.6	0.8	2.8	24.9	4.28	3.3	16.7	2.16	38.0	7.6	0.25	12.5
1997	6.8	13.0	0.8	4.2	21.7	2.72	2.2	17.7	2.42	60.7	7.6	0.24	6.2
1998	4.5	15.5	1.4	4.8	23.6	3.61	4.3	18	2.66	47.3	7.6	0.21	10
1999	3.5	12.3	0.9	1.8	24.2	4.09	3.7	15.2	1.52	44.3	8.5	0.31	0.2
2000	1.0	15.1	1.3	2.5	25.3	4.17	4.7	16.7	2.6	26.8	7.5	0.23	4.2
2001	2.0	13.1	0.8	1.0	27.7	5.12	4.5	13.9	1.41	30.7	7.3	0.2	8.8
2002	3.3	11.9	0.7	1.2	2	25.7	4.2	7.7	14.8	1.8	11.7	8.1	0.28
2003	15.8	11.6	0.6	2.0	13.9	1.27	3.6	14.7	1.48	10.2	8.5	0.28	2.6
2004	12.8	11.6	0.6	0.7	23.9	9.91	2.5	15.32	1.07	16.2	8.44	0.3	5.3

<sup>1</sup>Number of fish per gill net

Figure 1. Relative abundance and condition of rainbow trout in Beaver Creek Reservoir, 1974-2004.



### Bearpaw Lake

Bearpaw Lake is a 45 surface-acre reservoir located on Beaver Creek in the Bearpaw Mountains. Bearpaw Lake is a popular fishing water and summer fishing pressure has exceeded 150 angler-days per surface acre in some years. Fishing pressure becomes excessive when acceptable-size fish are readily available. Due to the increase in fishing pressure, the trout daily limit was reduced from 5/day to 3/day in the spring of 2002. In 2003, Bearpaw Lake ranked number four in the region for fishing pressure on the statewide angling pressure survey. Respondents to an angler survey (2001) indicated a desire to catch larger fish, even at the expense of catching fewer fish.

Since the 1960s, the lake has been maintained with annual plants of McBride strain cutthroat and Arlee rainbow trout. Monitoring of the trout population using fall gillnetting surveys was initiated in 1984 and has continued on an annual basis. In addition, a 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.

The trout gill-net catch has remained satisfactory and average size and condition of rainbows has improved over the last decade (Figure 2; Table 2); presumably to an increased effort to control adult and YOY white sucker populations. Yellowstone cutthroat trout were absent from the catch for the first time in 2003. Decreased stocking rates and heavy angling pressure have depleted the population to less than desired levels. Eagle Lake strain rainbow trout had been utilized experimentally since 1986, but were replaced in 1991 with spring planted Arlee rainbow. Fall stocking of Arlee rainbow began in 1992 to facilitate hatchery demands. In 2004, approximately 5,100 4-inch rainbow trout, 75,000 3-inch cutthroat trout, and 4,300 6-inch cutthroat trout were stocked into Bearpaw Lake.

As illustrated in Table 2 and Figure 2, the population of white suckers has been significantly reduced since the initiation of a sucker control program in May of 1989 and the introduction of smallmouth bass and walleye in 1992 and 1995, respectively. Since 1989, 125,179 suckers with a total biomass of 50,254 pounds have been manually removed (Table 3). While chemical restoration has been attempted in the past, the current method of controlling the white sucker population consists of manual removal of adult white sucker populations using frame traps to capture adult fish during spawning season and relying on smallmouth bass to control YOY numbers.

Figure 2. Comparison of white sucker numbers, after chemical rehabilitation in 1983, with average length of trout in Bear Paw Lake.

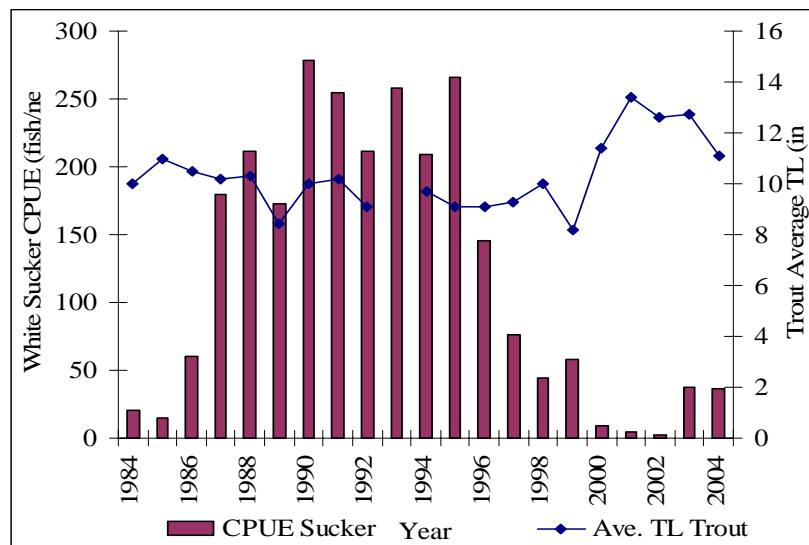


Table 2. Relative abundance of white sucker, cutthroat trout, and rainbow trout as indicated by gill-netting following white sucker removal efforts in Bear Paw Lake (1988-2004).

Year	White Sucker		Cutthroat Trout			Rainbow Trout		
	<10 in. CPUE	>10 in. CPUE	CPUE	Avg. TL	CF	CPUE	Avg. TL	CF
1998	122	89	8.7	7.9	36.5	9	10.3	41.2
1989	152	21	19	8.1	30.11	15.3	8.4	33.7
1990	253	25	22.3	8.7	34.68	9	10	32.0
1991	198	57	15	9.1	34.5	4	10.2	34.9
1992	127	84	58.6	9.6	24.87	17	9.1	45.1
1993	200	58	6	9.1	33.18	0		
1994	157	52	13.7	9.1	31.85	5.7	9.7	38.3
1995	125	141	60	7.8	33.72	14.7	9.1	35.8
1996	5	141	60	7.8	33.72	14.7	9.1	40.9
1997	1	75	26	8.5	32.57	24.7	9.3	34.8
1998	0	44	3.7	8.8	29.35	10	10	34.8
1999	0	58	19.7	8.4	33.74	43.3	8.2	39.9
2000	0	9	11.7	10	32	30.7	11.4	37.8
2001	2	2	10	10.9	39.38	7.3	13.4	39.5
2002	0	2	4.3	12.3	29.56	13.7	12.6	38.5
2003	6	32	0			16.3	12.7	38.1
2004	4	106	0			13.3	11.1	

$$\text{Condition factor (CF)} = \frac{W \times 10^5}{L^3}$$

Table 3. Number and pounds of white suckers removed from Bear Paw Lake using trap and gill-nets, 1989 to 2004.

Year	Number	Pounds
1989	12,545	8,986
1990	44,622	10,206
1991	18,140	4,733
1992	4,133	828
1993	5,239	1,050
1994	6,995	810
1995	5,653	2,100
1996	1,991	670
1997	13,485	8,091
1998	6,708	5,206
1999	8,239	7,459
2000	2,225	2,559
2001	331	543
2002	17	16
2003	1,564	2,203
2004	332	422
Totals	125,179	50,254

### Grasshopper Reservoir

Grasshopper Reservoir is a 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 in this reservoir. A recent winterkill occurred in 2002-2003, due to marginal over winter water levels in recent years due to 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. Anglers also report catches of an occasional five-pound rainbow trout and numerous 18 to 19 inch fish.

### 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. Faber reservoir ranked 16 in the region for fish pressure in 2003. It has been a consistent producer of quality rainbow trout for three decades. The reservoir was rehabilitated in 2000 due to the illegal introduction of largemouth bass and white sucker. Fingerling Arlee rainbow trout were re-stocked in the spring of 2001 and annually since. No white suckers or largemouth bass have been captured since the rehabilitation. No netting was conducted in 2004; however we continue to receive reports of high catch rates with many 13 to 15 inch rainbow trout and the occasional four-pound rainbow trout being caught. Water levels within the reservoir remain stable and 20,000 three-inch rainbow trout were stocked into the reservoir this year.

### H.C. Kuhr Reservoir

H.C. Kuhr was re-opened to public fish this year following the restoration, filling, and restocking of the reservoir with fingerling trout in 2003. In the fall of 2003, a gill net survey captured 19 trout ranging from 6.8 to 10.6 inches. The fish were in excellent shape and no white suckers or yellow perch were netted in 2003 indicating a successful rehabilitation. In 2004, an additional 3,000 fingerling rainbow trout were stocked. No netting was conducted, however fisherman report catches of three- to four- pound rainbow trout.

## RECOMMENDATIONS

Beaver Creek Reservoir: Continue stocking of Eagle Lake, Erwin and Arlee rainbow catchable-size trout. Evaluate the Erwin domestic strain as a possible replacement for Arlee due to the projected future shortfalls of Arlee rainbow in the hatchery system. Increase stocking rate as northern pike population declines.

Bearpaw Lake: Continue McBride strain cutthroat stocking at reduced rates. Increase Arlee rainbow catchable stocking. Remove adult suckers by trapping and electrofishing in the spring. Monitor smallmouth bass populations and adult walleye populations to determine if there are sufficient numbers within the reservoir to control the white sucker population.

Grasshopper Reservoir: Continue with annual plants of Arlee fingerlings and alternate year plants of Eagle Lake rainbow. Monitor with annual gill net survey.

Faber Reservoir: Continue to monitor trout numbers and condition. Adjust stocking rate as needed.

H.C. Kuhr Reservoir: Monitor survival and growth of stocked rainbows annually.

Waters referred to:

15-4570-03	Beaver Creek Reservoir
15-4560-05	Bear Paw Lake
15-5380-07	Grasshopper Reservoir
15-0320-01	Beaver Creek
15-5140-01	Faber Reservoir
15-5880-01	H.C. Kuhr Reservoir

Key Words or Fish Species:

Arlee, Eagle Lake rainbow trout, cutthroat trout, white sucker removal, population estimates, smallmouth bass, walleye.

Prepared by: Laura L. Leslie

Date: January 12, 2005