MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS

FISHERIES DIVISION
JOB PROGRESS REPORT

STATE: MONTANA PROJECT TITLE: STATEWIDE FISHERIES INVESTIGATIONS

PROJECT NO: F-46-R-5 STUDY TITLE: SURVEY AND INVENTORY OF COLDWATER AND WARMWATER ECOSYSTEMS

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

PROJECT PERIOD: JULY 1, 1991 THROUGH JUNE 30, 1992

ABSTRACT

An "opening day" creel census was conducted for the fourth consecutive year at Beaver Creek with poor results. Population estimates in two sections of Beaver Creek confirmed that trout populations are still at low levels, but the incidence of "black-spot disease" appears to have lessened. Smallmouth bass planted the previous summer were found in Section 01 in good condition. Beaver Creek Reservoir was gill netted. Catch-per-unit-effort (CPUE) for trout remained high, as well as average size and condition. The northern pike population remains low. A creel census was conducted at Beaver Creek Reservoir from April through September. Fishing pressure for this period was estimated at 9,610 angler-days. The overall summer catch rate for trout was 0.23 fish per hour (f/h). Catch rates and harvest figures for all species are presented. Since rehabilitation of Bear Paw Lake in 1983, sucker gill net catches have increased from 9 per gill net in 1985 to 278 per gill net in 1990. The sucker removal effort initiated in 1989 was continued. Trapping in 1991 removed 18,140 suckers with a total biomass of 4,733 pounds. To date, a total of 75,307 suckers with a total weight of 23,925 pounds have been removed. A creel census was conducted at Bear Paw Lake. An estimated 5,578 fishermen expended 15,443 hours on the reservoir. Overall catch rates for trout were good at 0.47 f/h. This resulted in a harvest of 4,545 trout which averaged 10.5 inches total length (TL). A creel census at Faber Reservoir indicated 3,064 angler-days were expended to harvest 1,844 trout. Catch rates were low (0.25 f/h), but trout averaged 15.5 inches and 1.84 pounds. Grasshopper Reservoir was trapped for sucker removal and gill-netted to determine trout survival and growth. A decision to chemically rehabilitate the reservoir was made and carried out. Management recommendations are presented for all waters.

OBJECTIVES AND DEGREE OF ATTAINMENT

Streams

1. To ensure within hydrologic constraints that stream flows supporting trout fisheries do not fall below 1975-85 averages. Objective accomplished utilizing state funding.

2. To maintain all of the region's streambanks and channels in their present or improved condition. Objective accomplished utilizing state funding.

3. To maintain water quality at or above 1975-85 average levels. Objective accomplished; monitored compliance with water quality standards and adjusted streamflows in Beaver Creek for temperature moderation.

4. To maintain fish populations and habitat in streams at present levels. Objective accomplished and data presented.

5. To maintain at least 6,000 angler days per year and a trout catch of 0.5 fish per hour. Objective accomplished and data presented.

6. To develop fishing access site acquisition and development for the region. Objective accomplished utilizing state funds.

7. To establish cooperative watershed management plans with federal agencies. Objective accomplished utilizing state funds.

8. To obtain greater public involvement by attending approximately 20 public/sportsmen's club meetings and initiating 2 news releases per year. Objective accomplished utilizing state funding.

Lakes

1. To maintain 70,000 angler days per year and provide catch rates of 0.5 fish per hour or greater. Objective accomplished and data presented.

2. To maintain acceptable trout fishing in waters with nongame and/or predator species. Objective accomplished and data presented.

3. To increase the number and distribution of public fishing waters by acquiring 2 reservoirs every 5 years. Objective accomplished.

4. To obtain public input for management decisions by attending 20 sportsmen's club meetings and providing 3 news releases per year. Objective accomplished utilizing state funding.

5. To develop fishing access site acquisition and development plan for the region. Objective accomplished utilizing state funding.

PROCEDURES

A creel survey of the "roving clerk" type was used to estimate fishing effort, harvest rate, catch rate, and total harvest at Beaver Creek Reservoir. Weekends and weekdays were treated as separate strata because they received markedly different fishing pressures. Sampling effort assigned to these strata were proportional to the anticipated amount of fishing pressure. Census days were chosen randomly and at least one weekend day and one weekday were surveyed each week throughout the study period. Fishing pressure was estimated from instanta-

neous fishermen counts made hourly throughout each creel day. Catch rates, expressed as fish per hour (f/h) were derived by dividing total catch by total hours expended.

A creel census was conducted on two popular trout reservoirs, Faber Reservoir and Bear Paw Lake, to evaluate the need for special regulations. Data was collected using car counters and direct interviews. Counts of fishermen per vehicle were made on creel days and used with the car-counter readings to estimate total pressure. During all three censuses, interview cards were given to fishermen to deposit in a drop box during periods when the creel clerk was not on site. All fish observed were measured for total length and weighed to nearest 0.01 pound. Data was compiled and analyzed monthly.

Streams were sampled with a direct current (DC) backpack electrofishing unit. 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. Beach seining to determine abundance of young-of-the-year (YOY) sport and forage fishes were conducted in late summer utilizing a 100- x 9-foot seine of 1/4-inch square mesh.

RESULTS AND DISCUSSION

Beaver Creek

An "opening day" creel census was initiated in 1988 to gather trend information on trout harvest from Beaver Creek. Because the third Saturday in May is the general trout stream opening day, with a large number of anglers usually present, this day was chosen as a yearly indicator of use and harvest. The study area is described in detail in a previous report (Gilge, 1988). The creel census was conducted again in 1991 with poor results. Only 5 fishermen were interviewed; 4 fished Section 03, 1 fished Section 02 and none had fished Section 01. The data gathered the last two years is of limited use in determining long-term harvest trends. The poor showing of fishermen has been due to reduced fish stocks, inclement weather and high flows.

Trout population estimates were made for Sections 02 and 03 of Beaver Creek. Table 1 illustrates the affect recent droughts have had on Beaver Creek trout populations. Recovery has been slower than expected, but is proceeding. The incidence of "black-spot disease" was noticeably less than that observed in 1990. Numbers of rainbow trout in Section 02 remain below average levels found in the 1980's. The brook trout and rainbow populations in Section 03 have increased slightly from the two previous years, but remain well below expected numbers.

Five thousand smallmouth bass averaging 1.5 inches were stocked below Beaver Creek Reservoir in July of 1991. When placed in the water, the fish immediately began feeding on YOY white suckers. Approximately 1,500 feet of Section 01 was electrofished in the fall to observe relative abundance of fishes and determine survival and growth of recently introduced smallmouth bass. Electrofishing captured 22 smallmouth bass ranging in length from 2.2-5.0 inches. No smallmouth bass from the first introduction made in 1989 were observed.

Five brown trout between two and five pounds were observed and/or netted. No YOY brown trout were observed and natural reproduction has not been documented to date.

Adult and YOY rainbow trout were common throughout Section 01. White suckers were extremely abundant. This lower section is comprised almost entirely of large beaver dams which inhibited sampling.

Table 1. Fall estimates of Age I and older trout from two sections of Beaver Creek. Estimates are presented as number of trout per 1,000 feet of stream.

	1980	1981	1982	1983	1988	1989	1990	1991
Section 02								
rainbow trout	51	68	36	11	90	36	28	33
Section 03								
rainbow trout	47	40	12	58	80	10	10	14
brook trout	172	186	149	188	169	40	36	62

Beaver Creek Reservoir

This 200 surface-acre reservoir contains a variety of cold, cool, and warmwater species including rainbow trout, northern pike, walleye, yellow perch, and largemouth bass. Since its initial filling in 1974, it has been managed primarily for trout.

Stocking of Eagle Lake and DeSmet rainbow trout commenced in 1985 to provide a longer-lived trout capable of utilizing Beaver Creek for natural reproduction. The domestic Arlee rainbow, stocked previously, had failed to provide significant natural reproduction and was short-lived. Previous studies at Beaver Creek Reservoir indicated both the Eagle Lake and DeSmet rainbow had increased longevity over Arlee rainbow and that the Eagle Lake was easier to catch than the DeSmet (Needham and Gilge, 1987). Though Eagle Lake rainbow continue to utilize portions of Beaver Creek for spawning, recruitment to the lake fishery is minimal due to predation. The stocking of DeSmet ceased in 1988 and the reservoir was planted exclusively with Eagle Lake rainbow until 1990 when 4,885 marked Arlee rainbows were again added to the reservoir. Arlee rainbow were stocked again in 1991 along with Eagle Lake rainbow trout.

Gill net surveys were conducted in 1974, 1977, and annually since 1980. These surveys were conducted to monitor growth and survival of hatchery trout and to determine relative abundance of other fishes. Results of these netting efforts are summarized in Table 2. The gill net CPUE of trout remained high and average size and condition improved slightly. Trout condition is believed to be associated with white sucker numbers which have declined considerably, and remain low, due to northern pike predation. Arlee rainbow exhibited a much higher condition factor than Eagle Lake rainbow for the second consecutive year. The last time Arlee rainbow were present in the reservoir, the sucker population presented significant competition. Sucker numbers have since declined to the lowest levels since the reservoir was first filled. Arlee rainbow were reintroduced to determine if they could achieve better growth than Eagle Lake rainbow under less competitive circumstances.

Northern pike numbers peaked in 1987, but are low at present due to several years of poor reproduction and heavy fishing pressure. Large year-classes were produced in 1990 and 1991 however. The depressed adult pike population is at least partially responsible for the recent increase in trout numbers. The bulk of the northern pike population is comprised of juvenile fish which are not capable at this time of causing significant predation on catchable trout. Pike predation is expected to increase in the next few years when the recently produced strong year-classes reach maturity.

Walleye were introduced in 1987 due to local demand and are not considered at this time to be major predators on hatchery trout though the population is increasing in size.

Yellow perch abundance was similar to that found in 1990. White suckers continue to exist at relatively low levels despite the depressed pike population.

Creel Census

A creel census was conducted from April 1 through September 30. A total of 2,325 fishermen were interviewed during the study period. Total fishing pressure for the summer was estimated to be 9,610 angler days. Boat anglers accounted for 18% of the total pressure. A similar creel census was conducted in 1987 encompassing the same time period. Total summer pressure in 1987 was determined to be 6,210 angler days. Fishermen at the reservoir were questioned as to the primary species for which they were angling. Of 1,876 respondents, 49% sought trout, followed by northern pike (42%), yellow perch (7%), and walleye (2%).

Catch rates for rainbow trout were highest in April. The catch rates steadily declined throughout the summer, then increased in September (Table 3). Catch rates varied from a low of 0.16 f/h in August to a high of 0.40 f/h in April. The overall catch rate for the summer averaged 0.23 f/h. This is considerably higher than the mean trout catch rate of 0.09 f/h experienced during the 1987 creel census.

Table 2. Summary of gill net catches and relative abundance of fishes in Beaver Creek Reservoir, 1974-91.

	Rainbow Trout				Northern Pike			Walleye			Yellow Perch			
Year	CPUE[1]	Ave. Lgth. (in.)	Ave. Wt. (lbs.)	C[2]	CPUE	Ave. Lgth. (in.)	Ave. Wt. (lbs.)	CPUE	Ave. Lgth. (in.)	Ave. Wt. (lbs.)	CPUE	Ave. Lgth. (in.)	Ave. Wt. (lbs.)	Sucker Sp. CPUE
1974	24.0	10.7	0.60	48.98	---	----	----	---	----	----	----	---	----	89.7
1977	35.0	10.1	0.39	37.85	---	----	----	---	----	----	----	---	----	115.7
1980	23.3	10.1	0.35	33.97	---	----	----	---	----	----	----	---	----	83.3
1981	7.0	10.4	0.35	31.11	---	----	----	---	----	----	----	---	----	171.7
1982	8.3	11.2	0.55	37.15	2.3	15.8	0.99	---	----	----	----	---	----	112.3
1983	3.3	11.8	0.62	37.74	3.7	25.1	4.78	---	----	----	----	---	----	99.7
1984	3.0	11.3	0.59	40.89	3.7	26.6	5.49	---	----	----	----	---	----	58.7
1985	3.0	11.9	0.77	45.82	4.3	26.0	5.72	---	----	----	----	---	----	68.3
1986	13.0	11.9	0.66	39.16	4.2	16.7	2.13	---	----	----	----	---	----	42.0
1987	11.3	13.6	0.92	36.57	5.2	22.0	2.81	---	----	----	0.3	6.3	0.12	18.0
1988	9.7	14.7	1.17	36.83	3.0	27.6	7.30	0.7	10.6	0.36	8.2	5.9	0.10	18.0
1989	10.7	13.1	0.80	35.59	1.2	30.3	8.31	0.0	----	----	9.2	7.6	0.21	16.8
1990	18.5	12.0	0.61	35.30	0.7	21.0	2.90	1.8	13.2	0.86	13.0	8.5	0.32	9.8
1991	15.5	12.8	0.77	36.72	2.3	16.6	1.20	5.7	14.0	0.97	12.0	7.4	0.26	11.0

[1]Number of fish caught per gill net.

[2]Condition factor = $\frac{W \times 10^5}{L^3}$

Table 3. Fishing pressure (angler-days) and catch rates (fish/hour) for sport fish angled from Beaver Creek Reservoir, April-September, 1991.

Month	Angler-days		Rainbow Trout		Northern Pike		Walleye		Yellow Perch	
	Boat	Shore	Catch Rate	Total Harvest	Catch Rate	Total Harvest	Catch Rate	Total Harvest	Catch Rate	Total Harvest
April	116	1,357	0.40	1,599	*[1]	6	*	6	0.07	224
May	121	1,377	0.31	1,011	0.01	7	0.03	89	0.23	476
June	386	1,890	0.19	847	0.04	69	0.04	112	0.31	1,534
July	377	1,305	0.16	866	0.02	31	0.02	55	0.25	1,080
August	366	907	0.14	485	0.06	133	0.01	196	0.33	1,320
September	516	1,009	0.23	957	0.02	55	0.02	53	0.32	1,367
Totals	1,724	7,886	0.23	5,766	0.03	300	0.02	361	0.25	6,001

[1]Less than 0.01 f/h

Rainbow trout averaged 12.9 inches and 0.74 pounds (Table 4). The average size trout taken in 1991 was similar to the average size taken in 1987, however, a total of 5,766 trout were harvested in 1981 compared with 1,623 for the same period in 1987. Northern pike were the second most sought after fish despite catch rates that never exceeded 0.06 f/h in any month. The mean catch rate for summer was only 0.03 f/h and the estimated total harvest was only 300 fish. This is indicative of the depressed population at present. In contrast, a total of 2,314 pike were harvested in 1987. Though yellow perch were considered a nuisance by many trout fishermen, a considerable number of fishermen were pleased to catch them. The average size perch creeled was 9.0 inches and 0.37 pounds and more than 6,000 were taken home by fishermen. Walleye are relatively new to the reservoir and of small size. Fishermen, primarily in boats, worked hard to locate them. Though the average walleye taken measured only 13.8 inches and 0.84 pounds, a total of 361 were harvested which exceeded the northern pike harvest.

Stomach contents were examined from 20 walleye over 12 inches creeled during the study. Eight of these fish were empty, 7 had ingested crayfish, 4 held unidentifiable small fish remains (non-trout), and 1 contained several YOY perch. The youngest walleye year class (1989) in the reservoir appears to be the largest and should provide improved catch rates for walleye in years to come.

Bear Paw Lake

Bear Paw Lake is a 45 surface-acre reservoir on Beaver Creek in the Bear Paw Mountains. It is maintained with annual plants of McBride strain cutthroat and Arlee rainbow trout. In recent years, summer fishing pressure has exceeded 140 angler days per surface acre. Fishing pressure becomes excessive when acceptable-size fish are readily available. A creel reduction from 10 to 5 fish was imposed in 1987 to distribute the catch under such conditions. Suckers overpopulate periodically and the reservoir was chemically rehabilitated in 1983. Post-rehabilitation trout growth in 1984 and 1985 was excellent. However, sucker gill net catches have increased from a catch per net of 9 in 1985 to 278 per net in 1990 (Figure 1). Competition with large numbers of suckers has reduced growth rates of trout significantly. Fishing pressure has declined dramatically since 1988 due to the small size and poor condition of trout. Respondents to an angler survey indicated a desire to catch larger fish even at the expense of catching fewer fish.

Drawdown and chemical rehabilitation is not a preferred option for sucker control in this reservoir. This is primarily due to the heavy recreational use received, detoxification time, invertebrate loss, bank sloughing, and subsequent trout mortality.

A sucker control program was initiated in May of 1989. Frame traps were utilized to capture suckers in the spring as they frequented shorelines and the mouth of Beaver Creek prior to spawning. A total of 12,545 suckers weighing 8,986 pounds were removed in 1989. Trapping and removal was conducted again in May of 1990. In this effort, 27,224 suckers weighing 5,089 pounds were removed. An additional 17,398 fish (5,117 pounds) were removed in October of 1990. In 1991, 18,140 suckers with a total weight of 4,733 pounds were removed.

Table 4. Average lengths and weights of sport fish harvested by fishermen at Beaver Creek Reservoir, April-September, 1991.

Month	Rainbow Trout			Northern Pike			Walleye			Yellow Perch		
	Mean Length	Mean Weight	C[1]	Mean Length	Mean Weight	C[1]	Mean Length	Mean Weight	C[1]	Mean Length	Mean Weight	C[1]
April	13.5	0.81	32.70	30.2	8.00	29.00	17.2	1.44	28.00	9.4	0.39	46.65
May	13.1	0.73	31.75	16.8	1.03	22.00	14.5	0.94	29.63	9.3	0.36	43.49
June	12.9	0.72	33.27	15.0	0.72	19.00	13.9	0.86	29.77	8.6	0.32	48.32
July	12.1	0.67	38.12	23.3	3.46	24.40	12.7	0.66	29.36	8.8	0.34	50.26
August	12.5	0.70	35.04	21.0	3.07	21.92	12.8	0.64	28.83	9.3	0.43	51.61
September	12.9	0.74	35.44	13.8	0.52	17.00	15.9	1.32	30.17	9.5	0.45	51.31
Total All Months	12.9	0.74	33.93	20.0	2.63	21.74	13.8	0.84	29.50	9.0	0.37	49.17

[1]Condition factor - $\frac{W \times 10^5}{L^3}$

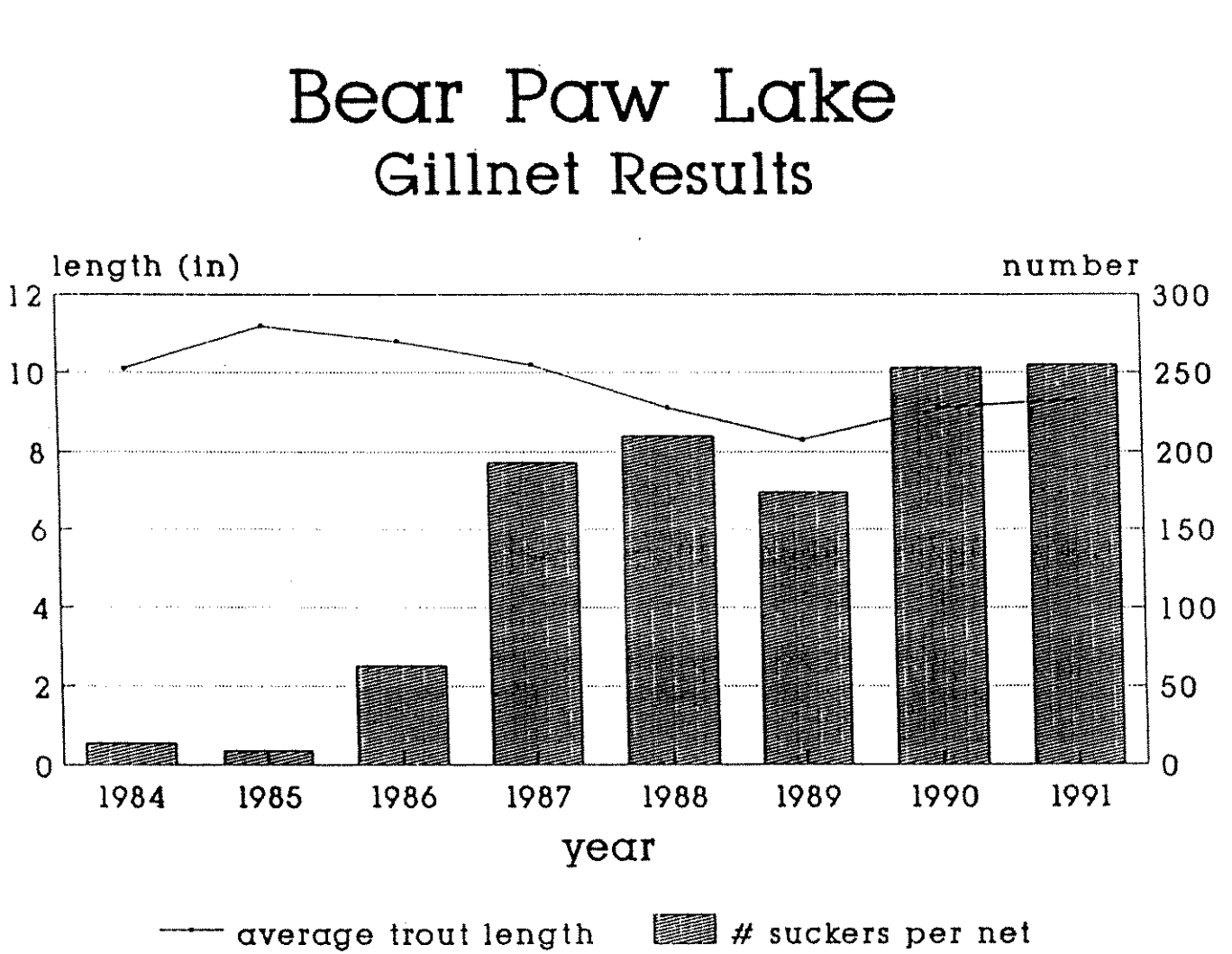

Figure 1. Comparison of white sucker increases, after chemical rehabilitation in 1983, with trout growth in Bear Paw Lake.

Gill netting has been conducted for a number of years in September. Utilizing 1988 as a base year, ratios of mature (>10 inches) and juvenile (<10 inches) suckers as they appeared in the catch were compared with trout CPUE and condition (Table 5). Fall gill netting indicated that the effort has reduced the number of mature suckers greater than 10 inches significantly. However, by 1990, juvenile sucker numbers had increased 107% (Figure 2).

Table 5. Relative abundance of suckers and trout as indicated by fall gill netting following sucker removal efforts in Bear Paw Lake 1988-91.

	Suckers				Cutthroat Trout			Rainbow Trout		
Date	No. <10" Per Net	% Chg[1]	No. >10" Per Net	% Chg	No. Per Net	Avg. Lgth.	C[2]	No. Per Net	Avg. Lgth.	C[2]
Fall 1988	122	----	89	---	8.7	7.9	36.50	9.0	10.3	41.18
Fall 1989	152	+25	21	-76	19.0	8.1	30.11	15.3	8.4	33.74
Fall 1990	253	+107	25	-72	22.3	8.7	34.68	9.0	10.0	32.00
Fall 1991	198	+62	57	-36	15.0	9.1	34.50	4.0	10.2	34.87

[1]1988 used as base year determining percent change in relative abundance.
[2]Condition factor - $\frac{W \times 10^5}{L^3}$

Trout numbers were higher in both 1989 and 1990 despite reduced stocking rates. This is probably due to reduced fishing pressure. The decreased gill net catch of trout in 1991 is believed to be due to reduced stocking rates and increased fishing pressure. Current condition of trout is still below presucker removal levels. Increased numbers of small resident trout has increased intraspecific competition for food, exacerbating the problem. As seen in previous years, fishing pressure decreased as the average size of trout declined and increased as trout growth increased.

Juvenile suckers are not as susceptible to capture as they do not congregate in the creek to spawn. The topography of the reservoir with its steep sides and submerged woody vegetation does not facilitate frame trapping. Though trapping is very labor intensive, it is still a preferred option over draining and rehabilitation with fish toxicant. Several years of trapping may be required before significant growth of trout is achieved. Crayfish have become extremely abundant in recent years and may have an effect on food availability for trout. A study from Newcastle Reservoir in Utah by Hepworth and Duffield concluded that crayfish changed the reservoir ecosystem by altering their food web, thereby reducing energy transfer to rainbow trout.

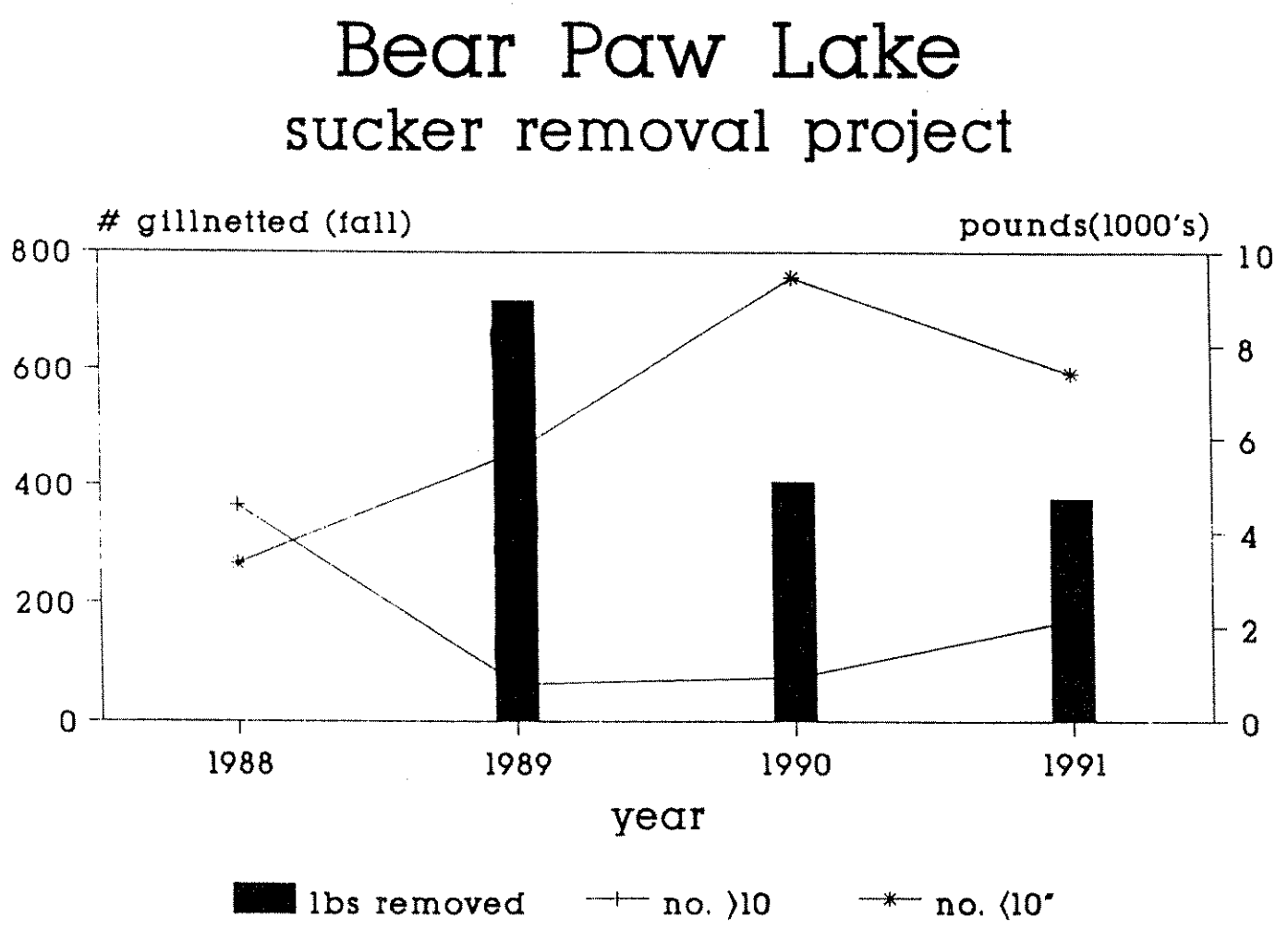

Figure 2. Comparison of adult and juvenile sucker numbers taken with three gill nets in the fall following sucker removal the previous spring in Bear Paw Lake, 1988-91.

If trapping efforts are unsuccessful in reducing competition with trout, an alternative sport fish capable of utilizing juvenile suckers for food should be introduced. Smallmouth and largemouth bass have both demonstrated an affinity for YOY suckers and crayfish in both Beaver Creek and nearby Beaver Creek Reservoir. Neither predatory species would be expected to cause significant losses to catchable-size trout which are stocked annually.

Creel Census

A total of 417 fishermen were interviewed during the April-September creel period. It was estimated that 5,578 fishermen expended 15,443 hours on the reservoir during the creel period. Pressure in May, June, and July was similar and the highest recorded. Catch rates were fair to good in all months, but August (Table 6). Approximately 4,545 trout were harvested at an overall catch rate of 0.47 f/h. These trout averaged 10.5 inches TL and provided a yield of 38.4 pounds/acre (lbs/ac) which was considerably more than in either previous years in which harvest was determined (13.8 lbs/ac, 1986) (28.5 lbs/ac, 1987).

The catch rate improved significantly in 1991 and approached the target level of 0.5 f/h. Although fishing pressure decreased 16% from 1987 and 33% from 1986, it is still considered to be excessive at 125 angler days per surface acre.

Faber Reservoir

A creel census was conducted during the April through September fishing period. An estimated 3,064 fishermen utilized the reservoir which amounted to 88 angler-days per acre. Fishing pressure in June, July, and August was often estimated due to car counter malfunction. Fishing pressure peaked in July and was lowest in April and September. The average size trout creeled in 1991 was 15.5 inches and weighed 1.84 pounds. Though the overall catch rate for the summer was only 0.25 f/h, the average fish was much larger than those found in previous creel censuses (Table 7). Catch rates were highest in April (1.24 f/h) and lowest in August (0.05 f/h).

Pressure increased to the highest level since 1986, but is not considered to be excessive at this time. The increase in pressure is believed to be due to the large size of the fish and what appears to be a reduced incidence of black-spot disease, which has plagued the reservoir since 1988. Conversations with fishermen indicate a growing acceptance and utilization of the infested fish.

Fishermen reported three largemouth bass caught. They ranged from 11.7-12.3 inches in length. These fish are from an illegal introduction first discovered in 1990. No YOY bass were captured in the summer of 1991 by beach seining, indicating natural reproduction has probably not occurred.

Grasshopper Reservoir

The most recent stocking strategy for this reservoir includes alternate year plants of Arlee and Eagle Lake rainbow trout. This is done to utilize the longevity of Eagle Lake rainbow, along with the growth and catchability characteristics of the Arlee.

Table 6. Catch rates and harvest of rainbow and cutthroat trout in Bear Paw Lake, April-September, 1991.

Date	Trout Catch Rate (f/h)	Trout Harvest Rate (f/h)	Rainbow Trout N	Rainbow Trout Ave. Lgth.	Rainbow Trout Ave. Wt.	Cutthroat Trout N	Cutthroat Trout Lgth.	Cutthroat Trout Wt.	Total Trout Harvest
April	.87	.56	216	11.3	0.45	530	9.9	0.30	746
May	.54	.18	149	11.2	0.44	473	10.1	0.31	622
June	.54	.34	750	11.1	0.43	882	9.5	0.30	1,632
July	.37	.29	782	11.8	0.51	385	9.8	0.30	1,167
August	.07	.03	40	11.1	0.44	10	12.5	0.68	50
September	.39	.28	134	10.4	0.46	194	10.0	0.32	328
	.47[1]	.28[1]	2,071	11.3[1]	0.47[1]	2,474	9.8[1]	0.31[1]	4,545

[1]Weighted means.

Poor trout growth in the past has been associated with high numbers of white suckers in the reservoir. Spring trapping and removal of suckers has been conducted since 1988. Though the sucker catch rate, expressed as pounds per trap day (lbs/TD), decreased from 128 lbs/TD in 1988 to 11 lbs/TD in 1990, juvenile sucker numbers were increasing at an alarming rate (Table 8). Gill netting in the fall of 1990 revealed a low trout population accompanied by very low water levels. A decision was made to chemically rehabilitate the reservoir with rotenone. The reservoir and the immediate upstream drainage were successfully treated and the reservoir was fallowed over winter. Catchable-size rainbow trout are scheduled for planting in the spring of 1992.

Table 7. Summer fishermen pressure and rainbow trout harvest at Faber Reservoir, 1986-91.

Year	Pressure (angler-days)	Catch Rate (f/h)	Ave. Lgth. (in.)	Ave. Wt. (lbs.)	Total Harvest
1986	2,085	0.34	12.2	0.80	2,727
1987	3,028	0.48	13.2	1.08	5,626
1989	2,552[1]	----	----	----	-----
1990	2,242[1]	----	----	----	-----
1991	3,064	0.25	15.5	1.84	1,844

[1]No creel census conducted.

Table 8. Results of gill net sampling in Grasshopper Reservoir, 1988-91.

	Trout				Suckers		
					No./Net		
Year	No./ Net	Mean Lgth. (in.)	Wt. (lbs.)	C Factor	<10 in.	>10 in.	Lbs./ Trap-Day
1988	75	9.4	0.29	34.92	0	42	128
1989	27	11.9	0.60	35.60	0	7	64
1990	41	10.1	0.31	30.09	27	4	11
1991	5	12.7	0.84	41.01	8	75	14

RECOMMENDATIONS

Beaver Creek: Discontinue opening day creel census. Continue to monitor trout populations in all sections. Stock brown trout periodically.

Beaver Creek Reservoir: Continue stocking of Eagle Lake and Arlee rainbow catchable-size trout. Increase stocking rate as northern pike population increases.

Bear Paw Lake: It is questionable whether sucker removal efforts are reducing competition for food. Biomass of suckers appears to have been transferred, rather than reduced, to juvenile fish due to removal of adult suckers. Population estimates of suckers and crayfish should be made to monitor effects of possible bass introduction. Continue stocking schedule with cutthroat trout and Arlee rainbow.

Faber Reservoir: Increase stocking rates of fingerling Arlee rainbow trout. Assess reproductive success of illegally introduced largemouth bass.

Grasshopper Reservoir: Adjust stocking rates to maintain a trout gill net catch between 25-35 fish per net.

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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
15-5140-05	Faber Reservoir

Key Words or Fish Species:

creel census, Eagle Lake rainbow trout, sucker removal, crayfish

Prepared by: Kent W. Gilge

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