MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
FISHERIES DIVISION
JOB PROGRESS REPORT

STATE: Montana PROJECT NO. F-46-R-6
PROJECT TITLE: Statewide Fisheries Investigations JOB NO. II-e
JOB TITLE: Northcentral Montana Coldwater Lakes Investigations

PERIOD COVERED: July 1, 1992 through June 30, 1993

ABSTRACT

Several rainbow trout strains continue to be evaluated in four waters in the Choteau/Augusta area. Arlee rainbow show good survival in Bean Lake, fair survival in Nilan Reservoir, and poor survival in Eureka and Willow Creek Reservoirs. Fair to good survival of AXE was documented in three waters. DeSmet rainbow were stocked in Eureka Reservoir, with fair survival and good growth. Arlee growth is better than AXE but AXE generally catch up by the second year. Longevity of all strains is generally only two years. Water levels of these four lakes have all been affected by drought conditions. Partial winterkill was documented in Bean Lake. Efforts are being made to establish a salmonid fishery in Piskun Reservoir but some predation by northern pike was documented. Lake trout were tagged in Tiber Reservoir. Lake Levale was found to be void of fish. Good survival was found among Eagle Lake planted in Bair Reservoir. Big Casino Creek Reservoir continued to have good survival of Arlee rainbow trout from both 1991 and 1992 plants; white sucker numbers caught increased from 1991 levels. Brown trout in East Fork Spring Creek Reservoir displayed excellent longevity. The 1991 plant of rainbow trout in Martinsdale Reservoir continued to show good survival. Gill net catches of wild rainbow trout was higher than for Yellowstone cutthroat trout in Newlan Creek Reservoir. Yellow Water Reservoir may have winterkilled during the reporting period.

OBJECTIVES AND DEGREE OF ATTAINMENT

1. To recommend acceptable water levels in irrigation reservoirs, within hydrologic constraints, for maintaining fishery values of last 10 years. **(State funded).**

2. To establish a self-sustaining trout fishery in Smith River Reservoir that will support 5,000 angler days annually with a catch rate of 0.4 fish per hour.

3. To provide longer-lived, larger trout with adequate growth rates in Willow Creek, Bair, Ackley, East Fork Dam and Newlan Creek Reservoirs for 50,000 angler days annually.

4. To provide 10,000 angler days fishing in Bean Lake for 1-3 pound rainbow trout.

5. To provide 28,000 angler days per year for 11-20 inch trout in Martinsdale and Eureka Reservoirs and Fitzpatrick Lake.

6. To reduce rough fish populations for maintenance of 11-20 inch trout in 5 lakes and ponds. **(State funded).**

7. To maintain (within hydrologic constraints) viable trout fisheries in 60 ponds and small reservoirs. **(Partly State funded).**

8. To improve the kokanee fishery in Pishkun Reservoir to satisfy 5,000 angler days annually.

9. To provide 1,000 angler days of fishing for mature salmon in the Helena Valley Regulating Reservoir.

10. To maintain current level of fishing opportunity on Bean, Ackley and Fitzpatrick Lakes and Newlan Creek Reservoir. **(State funded).**

Progress was made on all federally funded objectives and data are included in this report. Data for some state objectives are included to provide current information for regional waters.

PROCEDURES

Fish populations were sampled using standard 125 x 6 foot monofilament experimental gill nets with 25 foot sections of 0.75, 1.0, 1.25, 1.5 and 2.0 inch square mesh and 300 x 8 foot gill nets with 100 foot sections of 1.5, 2.0 and 2.25 inch square mesh. Nets were either fished sinking or floating. Limited data was also collected through periodic creel census. Fish were measured to the nearest tenth of an inch and weighed to the nearest hundredth of a pound. Various rainbow trout strains were marked with tetracycline and/or fin clips.

FINDINGS

Rainbow Trout Strain Evaluation

The following strains of rainbow trout are being evaluated in Region Four waters: Arlee in Bean and Ackley Lakes, Eureka, Willow Creek, and Nilan Reservoirs, AXE in Bean Lake, Eureka and Willow

Creek Reservoirs, DeSmet in Eureka Reservoir, and the Eagle Lake strain is being planted in Ackley Lake. A previous report (Hill and Liknes 1992) presented the history of these strains in each respective water. Each water will be discussed separately.

Bean Lake- Arlee rainbow and AXE rainbow are stocked in equal numbers with the latter marked with tetracycline. Two gill nets in September collected 43 trout representing both strains from plants made in 1991 and 1992 (Table 1). This is the fifth year of strain comparisons in this water and for the first time, Arlee showed better first-year survival than AXE. However, AXE outnumbered Arlee 15 to 1 for fish representing the 1991 plant. No fish of either strain were taken in gill nets from 1990 or earlier plants. Several fish from a fishing derby held on January 23, 1993, were observed for tetracycline marks. The fish ranged from 15-19 inches and all were analyzed as AXE rainbow, representing fish planted in 1990 and 1991.

Bean Lake is a natural lake with a maximum depth of approximately 32 feet, but has a considerable amount of shallow water extending out from shoreline areas. Maximum depth observed during the September netting was 19 feet. The lake has a small drainage area and has received little to no supplemental water for several years due to drought conditions. Dead and stressed trout were observed by anglers during the winter fish derby. Water samples analyzed on February 22, 1993, revealed marginal dissolved oxygen levels at two locations in the lake. However, anglers continued to catch fish through the ice fishing season. Partial winterkill was attributed to reduced water levels, decay and decomposition of abundant vegetation, and heavy snow cover on the ice that prevailed throughout most of the winter. After ice out, 42 rainbow trout were taken in two gill nets fished on April 7, 1993, indicating good numbers of rainbow survived. Sufficient oxygen levels must have prevailed in some areas of the lake.

Eureka Reservoir- October netting results indicate continued poor survival of Arlee rainbow while survival of the 1992 plant of AXE is rated as good (Table 1). Fair to good numbers of the 1991 AXE plant were also taken and they provided a good fishery during the summer. In addition to Arlee and AXE, 37,000 DeSmet rainbow were stocked in 1992. This strain showed better growth than either Arlee or AXE. Strains are differentiated using an adipose clip for Arlee, tetracycline for AXE and no mark for DeSmet. Water levels reached low pool in late summer due to irrigation demand but increased gradually during the winter.

Willow Creek Reservoir- This reservoir receives equal plants of Arlee and AXE rainbow with the latter marked with tetracycline. The September gill netting survey produced good numbers of AXE from the 1992 plant and exceptional carry-over numbers of the 1991 plant. No Arlee from 1992 and only one each from 1990 and 1991 were taken.

Table 1. Overnight gill netting results in coldwater lakes and reservoirs in the wester portion of Region Four during 1992.

WATER (date surveyed)	Surface acres	No. of Nets[1/]	Mean hours fished/net	Species, strain/year[2/]	No.of Fish	Length (in) Range	Length (in) (Mean)	Weight (lbs) Range	Weight (lbs) (Mean)
Bean Lake (9-30-92)	180	2S	19.0	Rb-A-1992	19	10.8-12.3	(11.7)	0.56-0.78	(0.67)
				Rb-A-1991	1	-	(15.7)	-	(1.70)
				Rb-AXE-1992	8	7.8- 9.2	(8.7)	0.20-0.32	(0.24)
				Rb-AXE-1991	15	13.5-16.5	(15.2)	1.18-1.64	(1.38)
Eureka Res. (10-1-92)	50	2F	19.0	Rb-A-1992	1	-	(9.8)	-	(0.38)
				Rb-AXE-1992	15	7.1-10.3	(9.2)	0.12-0.43	(0.26)
				Rb-AXE-1991	11	13.8-16.4	(14.9)	0.81-1.65	(1.21)
				Rb-D-1992	6	10.1-12.0	(11.1)	0.41-0.69	(0.56)
Nilan Res. (9-29-92)	300	2F	20.0	Rb-A-1992	9	10.7-12.5	(11.8)	0.48-0.78	(0.65)
				Rb-A-1990	1	-	(19.8)	-	(3.82)
Pishkun Reservoir (9-28-92)	1450	4S	19.0	Rb-I-1992	1	-	(7.2)	-	(0.12)
		3F		Rb-A-1992	1	-	(13.4)	-	(1.06)
				KOK	1	-	(7.1)	-	(0.09)
					5	9.9-12.2	(10.6)	0.28-0.56	(0.34)
					6	13.4-16.5	(14.3)	0.78-1.21	(0.92)
				NP	3	16.0-18.6	(17.4)	0.91-1.26	(1.14)
					7	24.0-34.0	(27.5)	4.30-9.80	
				WSu	5	8.3-12.4	(10.8)	0.24-0.99	(0.63)
					38	13.6-19.6	(17.4)	1.27-3.52	(2.64)
Tiber Res. (10/27-30/92)	14,100	S[3/]	1.0[3/]	Lt	37	22.1-30.6	(25.8)		
WillowCr. Reservoir (9-29-92)	1,300	2F 1F(300')	19.0	Rb-A-1992	0				
				Rb-A-1991	1		(13.9)		(1.00)
				Rb-A-1990	1		(16.1)		(1.40)
				Rb-AXE-1992	10	8.4-10.0	(9.1)	0.22-0.38	(0.29)
file:3421a.93				Rb-AXE-1991	54	12.8-14.4	(13.6)	0.74-1.06	(0.90)

1/ Standard 125 foot experimental gill nets (Nylon) unless otherwise noted: F=Floating, S=Sinking.

2/ Species Abbreviations: Rb-rainbow trout; KOK-kokanee salmon; NP-northern pike; WSu-white sucker; Lt-lake trout.

3/ 3-4 sinking gill nets - approximately one hour sets, to minimize mortality.

Ackley Lake - Equal numbers (approximately 20,000 of each strain) of Arlee and Eagle Lake strain rainbow trout fingerlings have been planted in Ackley Lake since 1986 (Figure 1). An additional plant of approximately 1,000 catchable Arlee Rainbow was made in 1986.

Results from fall 1992 gill netting showed fair survival for the Eagle Lake strain from plants made in 1990, 1991, and 1992 (Table 2). In contrast to the Eagle Lake strain, gill net catches of Arlee rainbow trout in 1992 for all years were lower and survival was considered poor (Table 2). The two Arlee captured from the 1992 plant averaged 1.1 in longer than the Eagle Lake sample and there was no overlap in lengths between strains. The Arlee plant averaged 4.0 in while the Eagle Lake fish planted averaged 3.7 in when planted. Planting dates were similar since both strains were planted in the last half of May during 1992; the Eagle Lake strain was planted ten days after the Arlee.

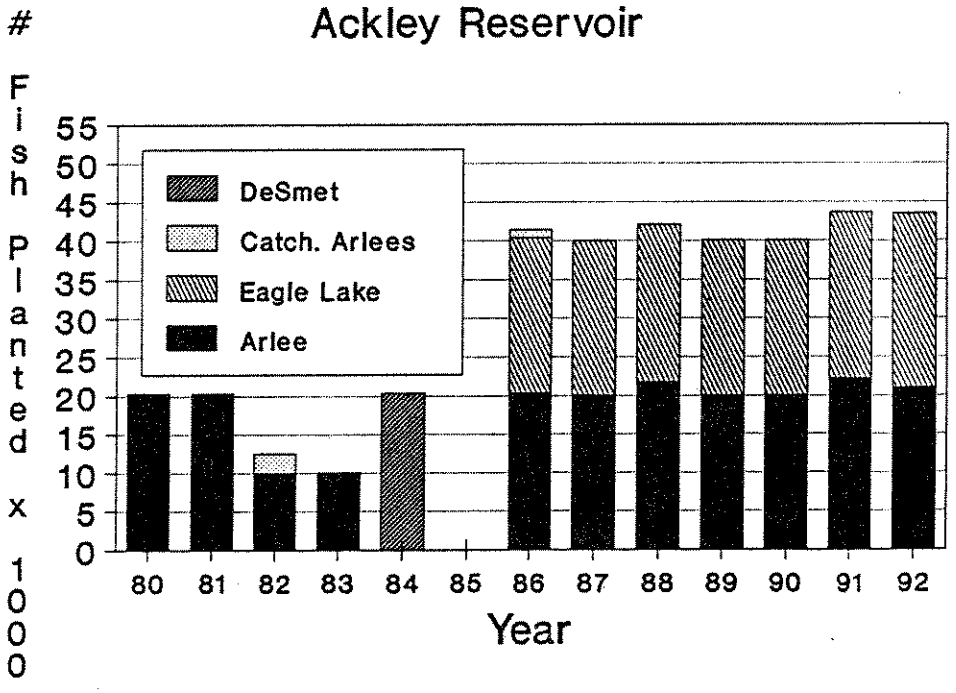


Figure 1. Eagle Lake and Arlee strain rainbow trout plants in Ackley Reservoir from 1980-1992.

Table 2. Overnight gill netting results in coldwater lakes and reservoirs in the eastern portion of Region Four during 1992.

Water name (Date surveyed)	Surface acres	No. of[1] nets	Mean hours fished/net	Species, strain[2] & year planted	No. of fish	Length(in) Range	Length(in) Mean	Weight(pounds) Range	Weight(pounds) Mean	Condition Factor Range	Condition Factor Mean
Ackley Res. (10/27/92)	240	1F,1S	19.30	Rb-I-1992	9	11.3-12.3	(11.7)	0.61-0.79	(0.69)	38.7-46.7	(42.8)
				Rb-I-1991	14	14.0-16.8	(15.5)	0.97-1.89	(1.41)	33.5-44.1	(37.6)
				Rb-I-1990	9	17.0-18.6	(18.0)	1.78-2.44	(2.18)	34.5-39.4	(37.1)
				Rb-A-1992	2	12.7-12.8	(12.8)	0.89-0.89	(0.89)	42.4-43.4	(42.9)
				Rb-A-1991	6	14.0-16.1	(15.4)	1.12-1.78	(1.55)	39.5-43.9	(41.9)
				Rb-A-1990	1	-	(18.1)	-	(2.32)	-	(39.1)
				MW	3	15.5-16.1	(15.8)	1.59-2.30	(1.86)	40.3-61.8	(47.7)
				LnSu	13	12.2-17.1	(15.5)	0.73-2.32	(1.69)	36.5-52.9	(44.5)
				LL	1	-	(27.0)	-		-	
				WSu	68	10.7-17.6	(15.0)	0.49-2.55	(1.61)	39.1-55.8	(45.6)
Bair Reservoir (11/5/92)	272	1F,1S	19.1	Rb-I-1992	33	8.1- 9.3	(8.8)	0.21-0.28	(0.24)	30.2-45.6	(36.1)
				Rb-I-1991	45	10.6-12.7	(11.5)	0.36-0.60	(0.47)	26.9-37.5	(31.1)
				BT	7	8.0-14.2	(11.3)	0.17-1.06	(0.51)	24.3-37.0	(31.1)
				LnSu	4	6.9-10.1	(8.0)	0.13-0.37	(0.20)	35.6-39.6	(36.8)
				WSu	55	6.5-12.9	(9.9)	0.11-0.75	(0.41)	32.0-43.7	(37.8)
Big Casino Creek Reservoir (10/27/92)	17.5	1F,1S	16.5	Rb-A-1992	53	7.5- 9.5	(8.7)	0.17-0.27	(0.22)	29.2-40.3	(34.1)
				RB-A-1991	16	11.4-13.8	(12.5)	0.48-0.96	(0.64)	25.7-36.5	(32.6)
				WSu	202	6.6-15.5	(8.4)	0.10-1.61	(0.29)	29.5-45.0	(35.5)
East Fk Spring Creek Res. (10/27/92)	100	1F,1S	15.0	LL-1992	2	9.2- 9.6	(9.4)	0.32-0.34	(0.33)	38.4-41.1	(39.8)
				LL-1991	4	11.0-13.6	(12.6)	0.47-1.08	(0.78)	35.3-44.9	(37.8)
				LL-1990	3	15.5-16.7	(15.9)	1.40-1.64	(1.50)	35.2-38.7	(37.2)
				LL-1988	1	-	(21.6)	-	(4.03)	-	(40.0)
				YP	3	5.8- 8.8	(7.6)	0.08-0.30	(0.20)	41.0-44.0	(42.1)
				WSu	20	8.0-11.7	(10.1)	0.19-0.62	(0.39)	34.2-38.9	(36.9)
Smith River Res. (11/4/92)	327	1F,1S	16.0	Rb-A-1992	6	9.9-11.0	(10.5)	0.43-0.55	(0.50)	38.3-49.0	(43.5)
				Rb-A-1991	2	11.9-12.9	(12.4)	0.69-0.77	(0.73)	35.9-40.9	(38.4)
				Rb-A-1990	1	-	(16.0)	-	(1.37)	-	(33.4)
				Rb-A-1989	1	-	(18.4)	-	(1.54)	-	(24.7)
				Rb-D-1990	1	-	(16.0)	-	(1.24)	-	(30.3)
				LnSu	60	6.2-17.8	(14.3)	0.11-2.23	(1.27)	32.7-46.2	(39.5)
				WSu	6	6.4-16.0	(10.8)	0.13-1.92	(0.75)	43.3-49.6	(45.3)
				Burbot	10	13.2-23.6	(18.6)	0.43-2.44	(1.35)	13.2-23.6	(19.0)
Holter Reservoir	Not netted										
Martinsdale Res. (11/5/92)	1000	1F,1S	17.0	Rb-A-1992	11	9.7-11.7	(10.9)	0.45-0.65	(0.59)	39.3-49.3	(44.8)
				Rb-A-1991	16	13.2-16.0	(14.4)	0.95-1.57	(1.21)	36.7-45.1	(40.8)
				LL	1	-	(18.8)	-	(2.14)	-	(32.2)
				MW	1	-	(12.8)	-	(0.83)	-	(39.6)
				WSu	28	6.4-16.4	(14.0)	0.13-2.14	(1.34)	40.8-52.2	(45.9)

1-Standard experimental gill nets (nylon and monofilament); F=Floating; S=Sinking

2-Species abbreviations: Rb=Rainbow trout; LL=Brown trout; YCt=Yellowstone cutthroat trout; BT= Brook trout; MW=Mountain whitefish; YP=Yellow perch; WSu=White sucker; LuSu=Longnose sucker
Strain abbreviations: A=Arlee; D=DeSmet; I=Eagle Lake

Table 2 (continued).

Water name (Date surveyed)	Surface acres	No. of[1] nets	Mean hours fished/net	Species, strain[2] & year planted	No. of fish	Length(in) Range	Length(in) Mean	Weight(pounds) Range	Weight(pounds) Mean	Condition Factor Range	Condition Factor Mean
Newlan Creek Res. (11/4/92)	280	1F,1S	17.0	YCt	2	10.5-12.9	(11.7)	0.41-0.64	(0.53)	29.8-35.4	(32.6)
				BT	1	-	(11.4)	-	(0.49)	-	(33.1)
				Rb	20	9.5-14.5	(12.2)	0.31-0.97	(0.65)	23.6-40.9	(35.1)
				LnSu	109	7.3-16.0	(12.3)	0.16-1.36	(0.69)	28.4-41.1	(34.7)
				Ling	2	19.6-21.2	(20.4)	1.57-1.73	(1.65)	18.2-20.9	(19.5)
Yellow Water Reservoir (11/9/92)	193	1F,1S	15.0	Rb-A-1992	3	13.7-16.0	(14.6)	1.45-2.54	(1.99)	56.4-69.2	(62.5)

1-Standard experimental gill nets (nylon and monofilament); F=Floating; S=Sinking
2-Species abbreviations: Rb=Rainbow trout; LL=Brown trout; YCt=Yellowstone cutthroat trout; BT= Brook trout; YP=Yellow perch; WSu=White sucker; LuSu=Longnose sucker
Strain abbreviations: A=Arlee; D=DeSmet; I=Eagle Lake

Mixed results in survival through the first summer have been observed in Ackley Lake since the strain evaluation began in 1986. However, the Eagle Lake strain displayed greater survival through the first growing season than the Arlee strain in 1987, 1990, and 1992 (Figure 2). Similar survival was observed in 1989 between the two strains and Arlee survival was greater than for Eagle Lake in 1988. The low survival of Arlee rainbow in 1987 corresponds to the earliest planting date since 1980. However, we have not observed any clear, consistent association between the planting date and the survival through the first season for either strain of rainbow in Ackley Lake. Also, no relationship was observed between the size of a fish plant and the resulting survival in the first, second, or third year of growth for either species (Figure 3).

Other Waters-

Nilan Reservoir- Only Arlee rainbow are stocked in this water. The 1992 survival of Arlee is rated as fair and follows two years of poor survival. Growth is considered good. This reservoir experienced fairly low water levels by the end of the summer due to irrigation withdrawal.

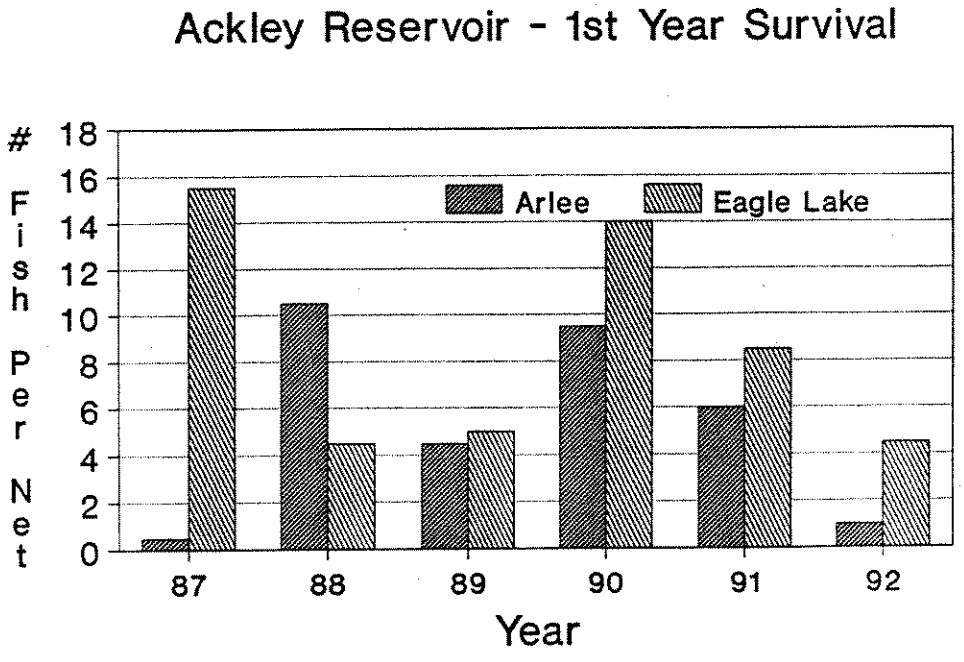
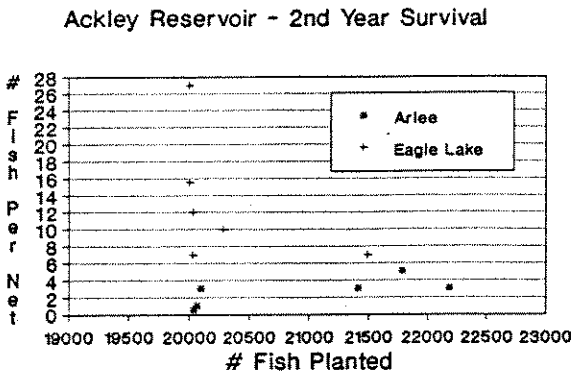


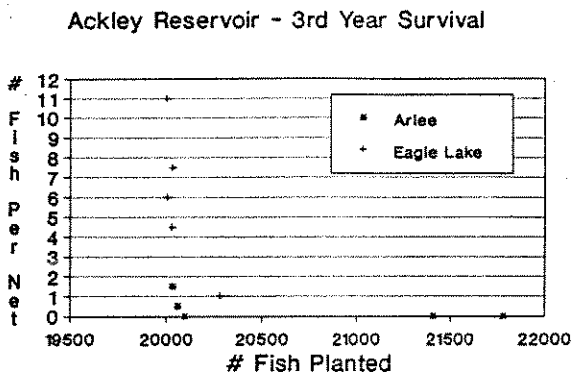
Figure 2. First summer survival of Eagle Lake and Arlee strain rainbow trout plants in Ackley Reservoir from 1987-1992.

Pishkun Reservoir- As recommended in Hill and Liknes (1992), a five-year experiment was initiated in attempts at producing a salmonid fishery. Five and eight-inch Arlee and four-inch Eagle Lake rainbow were stocked in 1992. Nine-inch Eagle Lake were also proposed but won't be stocked until 1993. In order to measure predation by northern pike, gill nets were fished immediately following release of the trout. Periodic creel census was also conducted. A total of 78 gill net hours produced only one northern pike. This fish had ingested three recently planted rainbow trout. Stomach analysis of ten northern pike observed during creel checks revealed planted rainbow in one stomach. Four additional stomachs contained unidentified fish remains which possibly could have been planted rainbow.

The gill net survey in late September produced only two planted rainbow trout: one Eagle Lake (stocked as a four-inch fish) and one Arlee (stocked as an eight-inch fish). Five northern pike stomachs were analyzed and one contained a planted trout. It is interesting to note that the Eagle Lake rainbow caught in the net was partially ingested by a northern which in turn was also caught in the net.

The Sunny Slope Canal immediately below the dam of Pishkun Reservoir was electrofished in late March 1993. Three Arlee rainbow stocked in the reservoir as five-inch fish were taken.





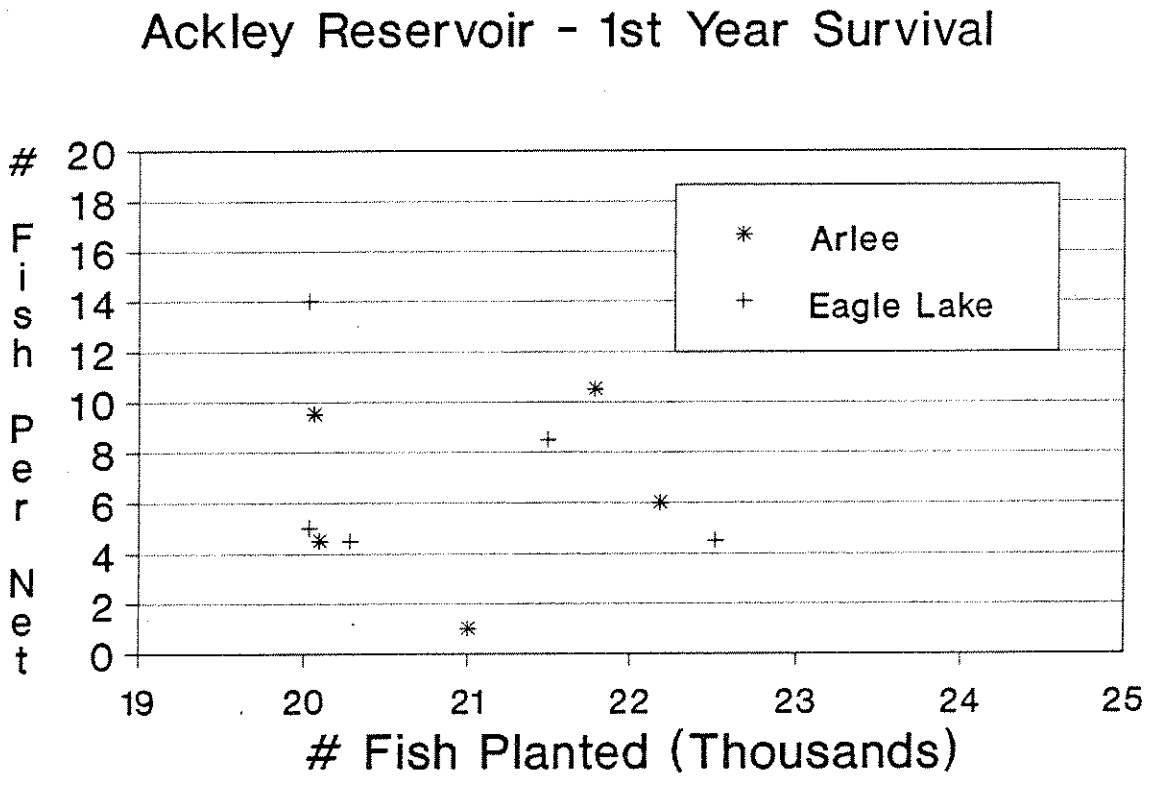


Figure 3. Gill net catches of Arlee and Eagle Lake rainbow trout following the first, second, and third growing seasons versus the number of fish originally planted in Ackley Lake, Montana.

Tiber Reservoir- In late October, lake trout were sampled on spawning areas near the Bootlegger Trail area. Gill nets were fished for one to two hour periods during daylight hours to reduce the potential of mortality. A total of 37 lake trout were taken, ranging in length from 22.1 to 30.6 inches. Twenty-eight of these were tagged and released to assist in determining harvest. Six were recaptures of fish tagged in previous years. Although lake trout have existed in Tiber Reservoir since the mid to late 1970's, few anglers actively fish for them. No tag returns have been reported although fish have been tagged occasionally since 1986.

Lake Levale- This five acre lake lies beneath the Continental Divide in the Bob Marshall Wilderness. The lake was originally stocked with cutthroat (undesignated) in 1934 and has maintained a self-sustaining population. Fish populations have steadily declined in recent years and fishermen have reported poor to no fishing. Two gill nets were fished overnight in late July and no fish were caught. Visual observations of the water surface and along the shoreline also indicate no fish present.

BAIR RESERVOIR - Gill netting results showed extremely good survival among both the 1992 and 1991 Eagle Lake rainbow trout plants (Table 2). Unlike in fall 1991, no rainbow trout were captured that represented third year survival; Eagle Lake rainbow that would be from the 1990 plant. Seven brook trout were also captured. Substantial numbers of white suckers were again captured.

BIG CASINO CREEK RESERVOIR - Survival of rainbow trout continued to be was very high in Big Casino Creek Reservoir (Table 2). The growth of the 1992 plant averaged 4.1 in, versus only 2.6 in by the Arlee catchables planted in 1991. Growth continues to be less than expected for the 1991 plant. The attempt to remove the stunted white sucker population by draining the reservoir in 1990 has met with limited success; 202 suckers were netted in 1992.

EAST FORK SPRING CREEK RESERVOIR - The brown trout gill net catch was rated as fair (Table 2). Longevity of brown trout appear to be good in East Fork; one fish from the 1988 plant was netted, which was 21.6 in in length and 4.03 pounds. All brown trout stomachs were empty. Yellow perch and white suckers were the only other fish captured in the gill nets.

Smith River Reservoir - Fall gill netting work in 1992 found relatively poor survival among both the Arlee and the DeSmet Strain of rainbow trout (Table 2). However, the Arlee strain was represented by four year of plants, from 1989-1992. We continued to find low representation of the DeSmet strain in the gill net catch. The only DeSmet strain rainbow trout netted was planted in 1990.

Martinsdale Reservoir - The gill net catch of Arlee rainbow trout in Martinsdale Reservoir was good (Table 2). The Arlee planted in 1991 represented a greater portion of the catch than did rainbows from the 1992 plant. One brown trout, one mountain whitefish, and 28 white suckers were also netted. No Yellowstone cutthroat trout, which have not been planted in 1991 or 1992, were captured.

Newlan Creek Reservoir - The number of Yellowstone cutthroat trout sampled at Newlan Creek Reservoir in two gill nets was rated as poor (Table 2). As in 1991, the number of naturally reproducing rainbow trout in the gill nets was higher than the Yellowstone cutthroat catch. The number of rainbow trout captured, which was 20, doubled from 1991. Substantial numbers of longnose suckers and two ling were also captured.

Yellow Water Reservoir - Water levels in Yellow Water Reservoir have continued to be low and winterkill may have occurred. The fall 1992 gill net catch was comprised entirely of the 1992 catchable plant; only 3 rainbow trout and no suckers were netted.

DISCUSSION AND RECOMMENDATIONS

Various rainbow trout strains have been tested in several regional waters for a number of years with varying results. Since hatchery production schedules are already set for 1993, the same strains will be stocked as was done in 1992. Based on the results of studies of recent years, it is recommended to stock the following strains in 1994 in these waters: Arlee and AXE in Bean Lake; AXE and DeSmet in Eureka Reservoir; Arlee and Eagle Lake in Nilan Reservoir (recommended in Hill and Liknes 1992); and AXE only in Willow Creek Reservoir. Arlee and AXE both have done well in Bean Lake. Arlee have had poor survival in Eureka Reservoir for the past twelve years so are not recommended for this water. AXE is showing some promise and additional time is needed to evaluate the DeSmet strain. Eagle Lake strain are recommended for Nilan Reservoir to ensure a fishery should the Arlee plant fail. It is recommended to discontinue Arlee in Willow Creek Reservoir since they have had poor survival in recent years. Both Arlee and Eagle Lake rainbow trout should be continued in Ackley Lake, Eagle Lake rainbow trout should continue to be stocked in Bair Reservoir. Differences in survival between the same strain from different hatcheries may be investigated in Ackley Lake. If sucker numbers continue to increase in Big Casino Creek Reservoir, additional plans to drain the water and treat the remaining water with rotenone should be considered. Due to the continued low survival of DeSmet rainbow trout in Smith River Reservoir, switching to a different strain such as Eagle Lake may be warranted. We recommend continued

stocking of Arlee rainbow and Yellowstone cutthroat trout in Martinsdale Reservoir. If survival of Yellowstone cutthroat trout does not increase in Newlan Creek Reservoir, adding or switching to a strain of rainbow trout should be considered. Planting of Arlee rainbow trout should be continued in Yellow Water Reservoir and maintain brown trout stocking in East Fork Spring Creek Reservoir.

Bean Lake water levels continue to deteriorate due to drought conditions experienced in recent years. The possibility of obtaining water from a nearby irrigation system to enhance this productive water should be investigated with a goal of restoring the lake to near normal pool elevations.

A five-year experiment with two strains of rainbow trout was initiated in Pishkun Reservoir. Trout survival, growth and longevity as well as predation by northern pike should be monitored, using gill nets and periodic creel census. Past studies have documented predation, but if enough trout survive to make a significant contribution to the fishery, stocking should continue.

It is recommended to continue monitoring the lake trout populations in Tiber Reservoir. Also, to inform the fishing public of the fishery available and to encourage their use.

Attempts should be made to re-establish the fishery in Lake Levale after all environmental concerns have been addressed.

Although the low survival of Arlee may be in part due to natural mortality in Ackley Lake, a substantial portion in 1990 appeared to be due to angler harvest the same season as planting occurred (Liknes et al. 1991).

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Principal Fish Species Involved: Rainbow trout, lake trout, brown trout, Yellowstone cutthroat trout.

Code Numbers of Waters Referred to in Report:

14-7320	Eureka Reservoir
14-9240	Tiber Reservoir
16-4300	Ackley Lake
16-4628	Big Casino Creek Reservoir
16-4950	East Fork Spring Creek Reservoir
17-8720	Bean Lake
17-9136	Holter Reservoir
17-9330	Newlan Creek Reservoir
17-9616	Smith River Reservoir
18-7750	Bair Reservoir
18-8380	Martinsdale Reservoir
18-9500	Yellow Water Lake
20-7650	Lake Levale
20-7900	Nilan Reservoir
20-7950	Pishkun Reservoir
20-8500	Willow Creek Reservoir