F-78-R-4 3412
Region 4

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

STATE: Montana PROJECT NO. F-78-R-4
PROJECT TITLE: Statewide Fisheries Investigations
JOB TITLE: Northcentral Montana Coldwater Lake Ecosystems

1997 ANNUAL REPORT

ABSTRACT

Twelve waters were inventoried in the Choteau Management Area. Survival of stocked trout was monitored and various rainbow trout strains were evaluated. Fair survival of the Arlee strain and wild rainbow trout and poor survival of DeSmet rainbow trout were observed in gill net catches in Smith River Reservoir. Wild rainbow trout comprised a larger portion of the catch than either planted strain. Survival of Yellowstone cutthroat was rated as fair and was very similar to catches in 1997, while Eagle Lake rainbow trout survival was rated as good and the catch of wild rainbow trout was rated as poor in Newlan Creek Reservoir. Good survival of Eagle Lake rainbow trout was observed in Hound Creek Reservoir. Nine reservoirs and ponds were surveyed in the Lewistown area. In Ackley Lake, survival of 1997 Arlee and Eagle Lake plants was rated as fair. Rainbow trout gill net catch overall was good. Bair Reservoir rainbow continue to exhibit slow growth and gill net catch declined from 1996. In Martinsdale Reservoir, gill net catch of all fish species was similar to 1996. No Yellowstone cutthroat were captured from three inch plants. In Yellow Water Reservoir, white sucker numbers caught in gill nets increased dramatically from 1996, and rainbow catch was similar in 1996 and 1997. First year growth of Eagle Lake rainbow trout was only 4.3 inches in Yellow Water Reservoir. This is more than one inch less than seen in 1995 and less than found in any Lewistown area reservoir. The 1996 draw-down of Big Casino Reservoir, appears to have reduced the white sucker population. Walleye were introduced into Big Casino Reservoir. Buffalo Wallow Reservoir and Peterson Pond winter-killed in 1996/1997.

OBJECTIVES

1. To identify and monitor the characteristics and trends of fish populations, angler harvest and preferences, and habitat conditions in Northcentral Montana coldwater lake/reservoir/pond ecosystems.

2. Use survey and inventory information to identify management problems and opportunities, then develop and implement management actions to maintain fish populations at levels consistent with habitat conditions or other limiting factors.

3. Review projects proposed by state, federal, and local agencies and private parties which have the potential to affect fisheries resources and aquatic habitats. Provide technical advice or decisions to reduce

or mitigate resource damage.

4. Provide landowners and other private parties with technical advice and information to sustain and enhance fisheries resources and aquatic habitat.

5. Enhance public understanding and awareness of fishery and aquatic habitat resources and issues in Northcentral Montana through oral and written communication.

6. Maintain and enhance public access to fishery resources in Northcentral Montana.

PROCEDURES

Fish populations were sampled using standard 125 x 6 ft experimental multifilament nylon gill nets with 25 ft sections of 0.75, 1.0, 1.25, 1.5 and 2.0 inch square mesh; 3 x 4 ft frame trap nets (0.25 inch square mesh); 4 x 6 ft frame trap nets (1.00 inch square mesh); and periodic creel surveys. Gill nets were fished either sinking or floating. Fish were measured to the nearest tenth of an inch and weighed to the nearest hundredth of a pound. Rainbow trout strains were marked with fin clips or tetracycline. Gill net survival ratings were grouped under the following categories: good ≥ 8.0 fish per net, fair = 4.0-7.9 fish per net and poor = 0.0-3.9 fish per net. Year classes of trout were based on size structure.

RESULTS

Choteau Management Area

Trout populations in five coldwater lakes and reservoirs were inventoried with overnight gill nets in late September. The results are summarized in Table 1. Renshaw Lake, Ostle Reservoir, Lake Shel-oole, Dickens Lake and Swazee Lake were sampled with trap nets, gill nets or by hook and line. Sampling results of these waters are on file in the Choteau Field Office. Two new waters were added to the fish management program: Christian Reservoir in Toole County and Parsell Pond in Liberty County.

Table 1. Overnight gill netting results in coldwater lake and reservoirs in the Choteau area of Region 4, 1997.

Water name (Date surveyed)	Surface acres	# of nets 1/	Mean hours fished/net	Species strain 2/	Total # of fish	Length (in) Range (Mean)	Weight (lbs) Range (Mean)
Bean Lake	200	2 S	19.5	Rb	65	6.9-11.1 (8.8)	0.14-0.61 (0.30)
(9/23/97)					11	15.0-16.6 (15.6)	1.28-1.72 (1.57)
				LCh	1	(6.3)	(0.11)
Eureka Reservoir	300	2 F	17.0	Rb-D	4	8.2-12.3 (10.7)	0.18-0.70 (0.46)
(9/24/97)					4	13.7-15.3 (14.6)	0.88-1.20 (1.03)

Water name (Date surveyed)	Surface acres	# of nets 1/	Mean hours fished/net	Species strain 2/	Total # of fish	Length (in) Range (Mean)	Weight (lbs) Range (Mean)
				Rb-AXE	1	(8.2)	(0.19)
					1	(14.2)	(1.03)
Nilan Reservoir	400	2 F	20.5	Rb-A	5	8.0-12.0 (10.5)	0.20-0.70 (0.51)
(9/24/97)				Rb-I	2	8.7-9.3 (9.0)	0.28-0.34 (0.31)
					4	14.6-15.1 (14.9)	1.24-1.29 (1.25)
Pishkun Reservoir	1200	3 F	19.0	Rb-I	1	(19.4)	(3.18)
(9/25/97)		2 S		KOK	2	18.4-19.1 (18.8)	2.15-2.34 (2.24)
				YP	15	4.8-8.8 (6.9)	0.07-0.36 (0.17)
					16	9.0-10.7 (9.9)	0.38-0.72 (0.55)
				NP	2	11.6-11.8 (11.7)	0.35-0.36 (0.36)
					1	(19.0)	(1.52)
					2	20.2-21.6 (20.9)	2.00-2.84 (2.42)
Willow Creek Reservoir	1500	2 F	19.3	Rb-AXE	7	7.7-8.9 (8.3)	0.20-0.27 (0.23)
(9/23/97)					5	14.2-17.2 (15.5)	1.04-1.85 (1.35)

1/ Standard 125 foot experimental nylon gill nets: F = floating; S = sinking.
2/ Species abbreviations: Rb = rainbow trout; LCh = lake chub; KOK = kokanee salmon; YP = yellow perch; NP = northern pike. Strain abbreviations: D = DeSmet; AXE = Arlee-Eagle Lake Cross; A = Arlee; I = Eagle Lake.

Great Falls Management Area

Smith River Reservoir - During fall 1997 gill netting, we found fair survival of Arlee strain and wild rainbow trout while DeSmet rainbow trout produced poor catches (Table 2). The Arlee strain of rainbow trout captured represented two years of plants, 1997 and 1996, while only the 1996 plant of DeSmet rainbow were sampled in the gill nets. Mean lengths of both strains from 1996 plants were identical and weights were similar (Table 2). Wild rainbow trout comprised a larger portion of the catch than either planted strain. Condition factors were the highest for the Arlee strain of rainbow trout, followed by wild rainbow trout and then DeSmet rainbow. All rainbow trout stomachs were empty.

We also captured several other species of interest during the annual gill netting at Smith River Reservoir. They included brook trout, mountain whitefish, longnose sucker, and white sucker, which averaged 0.5, 1.5, 30.5, and 29.5 per net, respectively. Sucker catches were more than twice those observed in 1996

(Tews et al. 1997).

Newlan Creek Reservoir - During netting activities in 1997, Yellowstone cutthroat trout averaged 6.7 fish per net set (Table 2), which would be rated as fair survival. This is very similar to catches in 1997 (Tews et al. 1997) but was still about 2 fish per net higher than 1995 (Tews et al. 1996). The Yellowstone cutthroat trout captured were from the 1997 plant and averaged only 9.9 inches in length and 0.31 pounds. The rainbow trout catch included three years(1995-1997) of the Eagle Lake strain plants as well as wild fish. All Eagle Lake rainbow trout combined produced a catch of 12.7 fish per net or good survival. The catch of wild rainbow trout was rated as poor. As in previous years, the rainbow trout caught had a relatively short mean length. We also captured longnose suckers, which averaged 16.3 fish per net.

Cascade Area Ponds - We found an average of 38.5 Eagle Lake rainbow trout per net in Hound Creek Reservoir during sampling in October 1997 (Table 3), which would be rated as good. This catch was more than 26 fish per net higher than sampling of Arlee rainbow trout in August 1994 (Tews et al. 1995). Comparisons of growth between the strains shows that for gill netting in 1994 and 1997, the growth was similar for both species for the first season following planting; however, after two seasons of growth, the Arlee strain sampled in 1994 showed a 2.0 inch longer mean length than the Eagle Lake strain. The catch of white suckers per net remained high at 106. Approximately 3,000 Eagle Lake rainbow trout 4 inches long have been planted in Hound Creek Reservoir each year since 1995.

Table 2. Overnight gill netting results in coldwater reservoirs near White Sulphur Springs in the eastern portion of Region Four during 1997.

Water name (Date surveyed)	Surface acres	# of nets 1/	Mean hours fished/net	Species, strain & year planted 2/	Total # of fish	Length (in) Range (Mean)	Weight (lbs) Range (Mean)	Condition Factor Range (Mean)
Smith River Reservoir	327	1F,1S	19.6	Rb-A-1997	6	9.3-9.6 (9.5)	0.28-0.39 (0.35)	34.8-44.1 (41.4)
(9/18/97)				Rb-A-1996	5	13.8-14.7 (14.2)	0.90-1.20 (1.04)	32.8-38.6 (36.3)
				Rb-Wild	14	7.2-16.0 (13.9)	0.15-1.32 (0.97)	27.6-41.5 (35.1)
				Rb-D-1996	4	13.5-14.7 (14.2)	0.82-1.15 (1.00)	33.3-36.2 (34.9)
				EB	1	(10.9)	(0.45)	(34.8)
				MW	3	15.3-16.4 (15.7)	1.37-1.86 (1.58)	38.3-42.2 (40.5)
				LnSu	61	6.7-19.1 (15.3)	0.11-2.86 (1.46)	23.8-63.2 (37.7)
				WSu	59	7.0-17.8 (14.2)	0.12-2.25 (1.26)	32.4-51.3 (42.3)

Newlan Creek Reservoir	280	2F,1S	13.2	YCt-1997	20	9.2-10.5 (9.9)	0.24-0.37 (0.31)	27.6-36.1 (31.0)
(9/18/97)				Rb-I-1997	32	6.9-8.7 (7.8)	0.13-0.29 (0.17)	31.2-45.6 (36.3)
				Rb-I-1996	5	10.2-13.8 (12.0)	0.31-0.75 (0.53)	28.5-33.3 (29.8)
				Rb-I-1995	1	(12.7)	(0.57)	(27.8)
				Rb-Wild	8	7.0-14.1 (9.0)	0.11-1.05 (0.33)	29.9-43.0 (36.5)
				LnSu	49	6.6-14.7 (12.5)	0.12-1.02 (0.62)	24.6-41.7 (31.7)

1/ Standard experimental gill nets (nylon and monofilament); F = Floating; S = Sinking
2/ Species abbreviations: Rb = Rainbow trout; YCt = Yellowstone cutthroat trout; EB = Brook trout; MW = Mountain Whitefish; WSu = White sucker; LnSu = Longnose sucker. Strain abbreviations: A = Arlee; D = DeSmet; I = Eagle Lake.

Table 3. Overnight gill netting results in Hound Creek Reservoir near Cascade, Montana during 1997.

Water name (Date surveyed)	Surface acres	# of nets 1/	Mean hours fished/net	Species, strain & year planted 2/	Total # of fish	Length (in) Range (Mean)	Weight (lbs) Range (Mean)	Condition Factor Range (Mean)
Hound Creek Reservoir	20.0	1F,1S	19.4	Rb-I-1997	54	7.3-9.7 (8.7)	0.13-0.32 (0.22)	27.0-41.1 (33.6)
(10/22/97)				Rb-I-1996	23	10.7-12.8 (11.5)	0.39-0.60 (0.47)	25.3-34.7 (31.1)
				WSu	212	6.7-17.3 (10.8)	0.08-2.03 (0.56)	24.4-42.8 (35.0)

1/ Standard experimental gill nets (nylon and monofilament); F = Floating; S = Sinking
2/ Species abbreviations: Rb = Rainbow trout; WSu = White sucker. Strain abbreviations: I = Eagle Lake

Lewistown Management Area

Ackley Lake - Rainbow trout gill net catch increased from 11.2 per net in 1996 to 17.5 per net in 1997 (Figure 1). This was the third lowest rainbow catch since Ackley Lake was rehabilitated in 1985 (Tews et al. 1997). White sucker numbers increased slightly from 1996, while longnose suckers decreased about 50% (Table 4, Tews et al. 1997). Mountain whitefish and brown trout were also captured. Based on fall gill netting, one and two year old Eagle Lake continue to outperform Arlee (Table 4 and Tews et al. 1997). Strain analysis was not done for 1997 plants.

Bair Reservoir - Gill net catch of rainbow trout and white suckers declined from 1996 (Figure 2, Tews et al. 1997). Average size of Age 1 rainbow trout declined about one inch. Yellowstone cutthroat trout stocked in 1997 were captured at a rate of 3.5 per net.

Martinsdale Reservoir - Gill net catch was similar to 1996 (Figure 3, Tews et al. 1997). All Yellowstone cutthroat captured had a single or double tetracycline mark, which indicated they were from six inch plants. Gill netting has not captured any Yellowstone cutthroat from three inch plants stocked in 1994 or 1996.

Yellow Water Reservoir - Gill net catch of all species increased from 1996 (Figure 4). White sucker numbers increased dramatically from 13 per net in 1996 to 49 per net in 1997 (Table 4, Tews et al. 1997). Rainbow numbers increased from 13.5 to 16.5 per net. Maximum size of gill netted rainbow trout was larger in 1997 than in 1996. The very slow growth of Age 0 Eagle Lake rainbow trout is of concern. These fish only grew an average of 4.3 inches during 1997. In contrast, Arlee rainbow trout averaged 5.5 inches growth (MFWP hatchery stocking records and Table 4). The growth for Eagle Lake in Yellow Water was even less than the 5 inch growth seen for 1997 plants from Bair Reservoir. Average first year growth in Bair Reservoir from 1991-1995 was at least 20% less than other large Region 4 reservoirs (Tews et al. 1997). First year growth of 1996 plants was not evaluated since no Age 0 plants were captured in 1996. In 1995, Eagle Lake rainbow trout grew an average of 5.6 inches (N=5), while Arlee rainbow trout averaged 5.5 inches (Lewistown data files, FINS 1996). None of the 10,000 six inch Yellowstone cutthroat trout stocked in 1997 were gill netted.

Table 4. Overnight gill netting results in large lakes and reservoirs in Lewistown area of northcentral Montana during 1997.

Water name (Date surveyed)	Surface acres	# of nets 1/	Mean hours fished/net	Species strain & year planted 2/	Total # of fish	Length (in) Range (Mean)	Weight (lbs) Range (Mean)	Condition Factor Range (Mean)
Ackley Lake	240	2 F, 2 S	21.5	Rb-A/I-97	27	6.7-10.2 (9.2)	0.10-0.45 (0.29)	28.3-45.0 (37.4)
(9/22/97)				Rb-I-96	22	14.1-16.3 (15.2)	1.09-1.49 (1.28)	32.3-43.0 (36.2)
				Rb-A-96	8	12.3-16.2 (14.8)	0.69-1.60 (1.21)	33.7-42.5 (36.4)
				Rb-I-95+	12	17.2-19.6 (18.2)	1.72-2.53 (2.21)	32.9-43.1 (36.4)
				Rb-A-95+	1	(18.7)	(2.56)	(39.1)
				MW	3	15.2-16.2 (15.6)	13.6-2.20 (1.81)	38.7-51.7 (47.0)
				LL	1	(15.1)	(1.13)	(32.8)
				WSu	142	5.7-19.5 (13.1)	0.10-3.26 (1.37)	26.6-75.1 (45.4)
				LnSu	43	6.8-19.0 (16.4)	0.13-2.69 (1.82)	32.9-42.8 (37.6)
Bair Reservoir	272	1 F. 1 S	23.4	Rb-I-97	10	7.1-8.9 (8.1)	0.11-0.29 (0.17)	24.1-45.0 (32.0)
(9/17/97)				Rb-I-96+	53	9.0-12.4 (10.5)	0.20-0.50 (0.36)	21.2-44.4 (31.2)

				YCt-97	7	8.7-9.9 (9.2)	0.15-0.31 (0.24)	22.8-35.0 (30.0)
				WSu	225	6.4-15.1 (10.7)	0.05-1.21 (0.47)	14.6-56.3 (34.9)
Martinsdale Reservoir (9/17/97)	1000	1 F, 1 S	20.2	Rb-A-97	12	10.0-11.4 (10.8)	0.41-0.65 (0.54)	36.6-50.0 (42.8)
				Rb-A-96	15	14.2-16.8 (15.3)	1.12-1.89 (1.50)	36.1-49.8 (41.4)
				Rb-A-95+	3	17.0-18.3 (17.6)	1.34-2.54 (1.96)	27.3-41.4 (35.6)
				YCt	5	11.0-15.6 (12.3)	0.45-1.20 (0.66)	31.6-37.8 (33.8)
				LL	4	19.1-21.7 (20.1)	2.07-3.52 (2.85)	29.7-40.0 (34.8)
				WSu	97	7.1-18.5 (14.2)	0.10-2.43 (1.23)	25.3-51.5 (39.7)
				LnSu	7	7.6-16.3 (12.1)	0.10-1.77 (0.80)	22.8-40.9 (36.1)
Yellow Water Reservoir (9/8/97)	193	1 F, 1 S	24.2	Rb-I-97	6	6.4-8.4 (7.4)	0.09-0.21 (0.14)	27.9-41.0 (34.1)
				Rb-I-96+	11	14.7-21.3 (17.7)	1.38-4.87 (2.56)	36.9-50.4 (42.9)
				Rb-A-97	9	8.3-9.8 (9.2)	0.19-0.42 (0.33)	33.2-50.1 (41.6)
				Rb-A/I-96+	7	15.5-21.8 (19.2)	1.50-5.37 (3.16)	34.3-56.4 (43.5)
				WSu	98	6.2-16.4 (12.7)	0.09-1.69 (0.88)	16.3-48.1 (38.8)
				Carp	6	4.3-17.1 (14.7)	0.10-3.20 (2.64)	62.0-125 (77.0)

1/ Standard experimental gill nets (nylon and monofilament) F=Floating;S=Sinking
2/ Species abbreviations: Rb=Rainbow trout; YCt=Yellowstone cutthroat trout; MW=Mountain Whitefish;WSu=White sucker; LnSu=Longnose sucker; Strain abbreviations: A=Arlee; D=DeSmet; I=Eagle Lake.

Small Lewistown Area Reservoirs

Five small trout ponds in the Lewistown Area were gill netted during 1997. Buffalo Wallow and Peterson Pond appear to have winter-killed during the winter of 1996/1997. No rainbow trout from plants prior to 1997 were captured during gill netting (Table 5) and anglers have not been catching older fish. Peterson Pond oxygen levels did not get low enough to kill the illegally stocked lake chub. Trout captured in Upper and Lower Carter Ponds were primarily from the 1996 plant (Table 5). Mauland Reservoir was stocked for the first time in 1997.

Big Casino Reservoir - The reservoir draining done in 1996 appears to have had an impact on the white sucker population. During September gill netting, white suckers decreased from the 403 per net found in 1996 (Tews et al. 1997) to 55 per net in 1997 (Table 5). Average size increased from 7.9 to 10.2 inches. White sucker numbers were also very low in May (Table 5). Nearly 6000 rainbow trout were stocked in 1997. More than 3000 rainbow trout were stocked at 6 - 10 inches and the rest were about three inches long. Rainbow gill net catch was rated as good, but average total length in September was only 8.0 inches. This is more than two inches less than found in May (Table 5). As a predator control measure, 500 three inch walleye and 2000 1.6 inch walleye were stocked in 1997.

Table 5. Overnight gill netting results in small reservoirs in Lewistown area of northcentral Montana during 1997.

Water name (Date surveyed)	# of nets 1/	Mean hours fished/net	Species strain & year planted 2/	Total # of fish	Length (in) Range (Mean)	Weight (lbs) Range (Mean)	Condition Factor Range (Mean)
Big Casino Creek Reservoir	1 S	21.1	Rb-97	17	8.4-11.7 (10.2)	0.20-0.51 (0.36)	22.0-46.7 (33.5)
(5/13/97)			WSu	38	6.6-13.5 (9.1)	0.12-1.00 (0.32)	32.2-48.2 (38.4)
Big Casino Creek Reservoir	1 S	18.7	Rb-97	9	6.8-9.6(8.0)	0.10-0.22 (0.17)	24.9-38.2 (32.8)
(9/24/97)			WSu	55	7.0-13.5 (10.2)	0.11-0.91 (0.43)	24.6-53.6 (38.1)
Buffalo Wallow Reservoir	1 S	22.0	Rb-I-97	21	5.7-8.1 (6.6)	0.04-0.30 (0.11)	19.5-56.5 (36.4)
(7/7/97)							
Carter Pond - Lower	1 S	18.5	Rb-A-96	7	12.2-15.0 (13.3)	0.80-1.47 (1.03)	38.3-47.2 (43.6)
(5/12/97)							
Carter Pond - Upper	1 S	18.5	Rb-A-96	2	12.0-12.7 (12.3)	0.78-0.95 (0.86)	45.1-46.5 (45.8)
(5/12/97)							
Peterson Pond (Missile)	1 S	18.2	Rb-97	6	5.6-7.3(6.1)	0.09-0.19 (0.11)	42.0-56.9 (49.8)
(6/23/97)			LCh	24	5.6-7.1 (6.6)	0.09-0.15 (0.11)	33.5-59.4 (39.2)

1/ S = sinking net

DISCUSSION

It is recommended to continue stocking similar strains and numbers of rainbow trout in Bean Lake, Eureka Reservoir, Nilan Reservoir and Willow Creek Reservoir. Trout populations in these waters will be monitored in the future for any changes in growth rates. In 1996, a change in regulations was implemented in which the daily limit was reduced from ten fish to five. No noticeable change has been detected during this report period.

The DeSmet and Arlee plants should be continued in Smith River Reservoir. We should consider adding another strain of rainbow trout in Smith River Reservoir. The Eagle Lake rainbow plants in Newlan Creek Reservoir should be continued for another year. Eagle Lake rainbow trout plants in Hound Creek Reservoir should be continued for another year.

Fall plants of three inch Yellowstone cutthroat trout apparently did not survive in Martinsdale Reservoir. These fish will no longer be stocked. The three inch plants should be replaced with annual six inch plants. The extremely slow growth of Eagle Lake rainbow trout in Yellow water Reservoir is a concern and may be the result of escalating sucker numbers. If slow growth continues for another year and if growth declines for older fish, predator control should be considered. Based on results in Bear Paw Lake (Kent Gilge, MFWP, personal communications) smallmouth bass may be a good option for Yellow Water Reservoir.

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REFERENCES

FINS computer program. 1996. Montana Department of Fish, Wildlife and Parks, Bozeman, Montana.

Gilge, Kent. 1997. Fisheries biologist, Montana Department of Fish, Wildlife and Parks, Havre, MT.

Tews, A.E., G.A. Liknes, and W.J. Hill. 1997. Northcentral Montana coldwater lake ecosystems. Montana Department of Fish, Wildlife and Parks. Job Progress Report F-78-R-3, Helena. 19pp.

Tews, A.E., G.A. Liknes, and W.J. Hill. 1996. Northcentral Montana coldwater lake ecosystems. Montana Department of Fish, Wildlife and Parks. Job Progress Report F-78-R-2, Helena. 22pp.

Tews, A.E., G.A. Liknes, and W.J. Hill. 1995. Northcentral Montana coldwater lake ecosystems. Montana Department of Fish, Wildlife and Parks. Job Progress Report F-78-R-1, Helena. 26pp.

Principal Fish Species Involved: Rainbow trout, Yellowstone cutthroat trout, brown trout, kokanee salmon, white sucker, longnose sucker.

Code Numbers of Waters Referred to in Report:

14-7320	Eureka Reservoir
14-8420	Ostle Reservoir
14-8935	Lake Shel-oole
15-4738	Christian Reservoir
15-6578	Parsell Pond
16-4300	Ackley Lake
16-4260	Upper Carter Pond
16-4261	Lower Carter Pond
16-4628	Big Casino Reservoir
16-6850	Mauland Reservoir
16-7642	Peterson Pond
17-8720	Bean Lake
17-9140	Hound Creek Reservoir
17-9330	Newlan Creek Reservoir
17-9616	Smith River Reservoir
18-7340	Buffalo Wallow Reservoir
18-7750	Bair Reservoir
18-8380	Martinsdale Reservoir
18-9500	Yellow water Lake.
20-7130	Dickens Lake
20-7900	Nilan Reservoir
20-7950	Pishkun Reservoir
20-8000	Renshaw Lake
20-8300	Swazee Lake
20-8500	Willow Creek Reservoir

Prepared by: Anne Tews, Emily C. Zollweg, William J. Hill, and George A. Liknes

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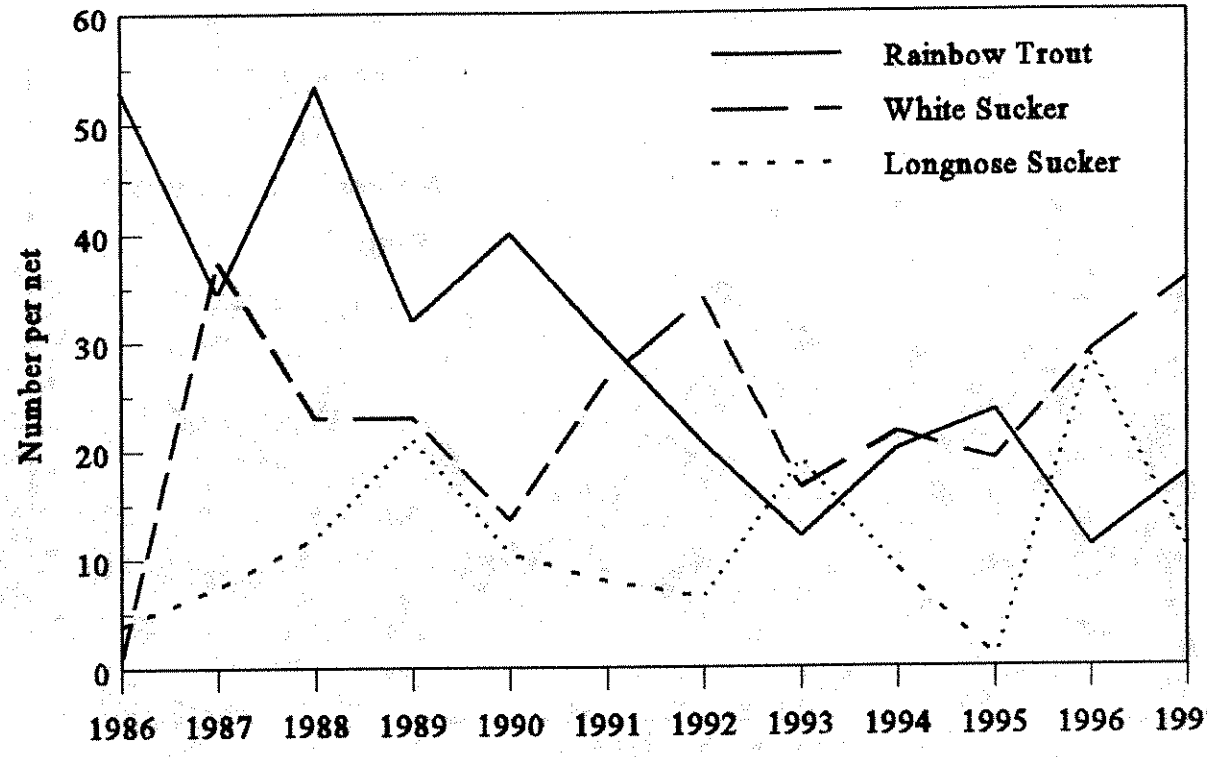

Figure 1. Fall catch per net of common species from floating and sinking gill nets in Ackley Lake.

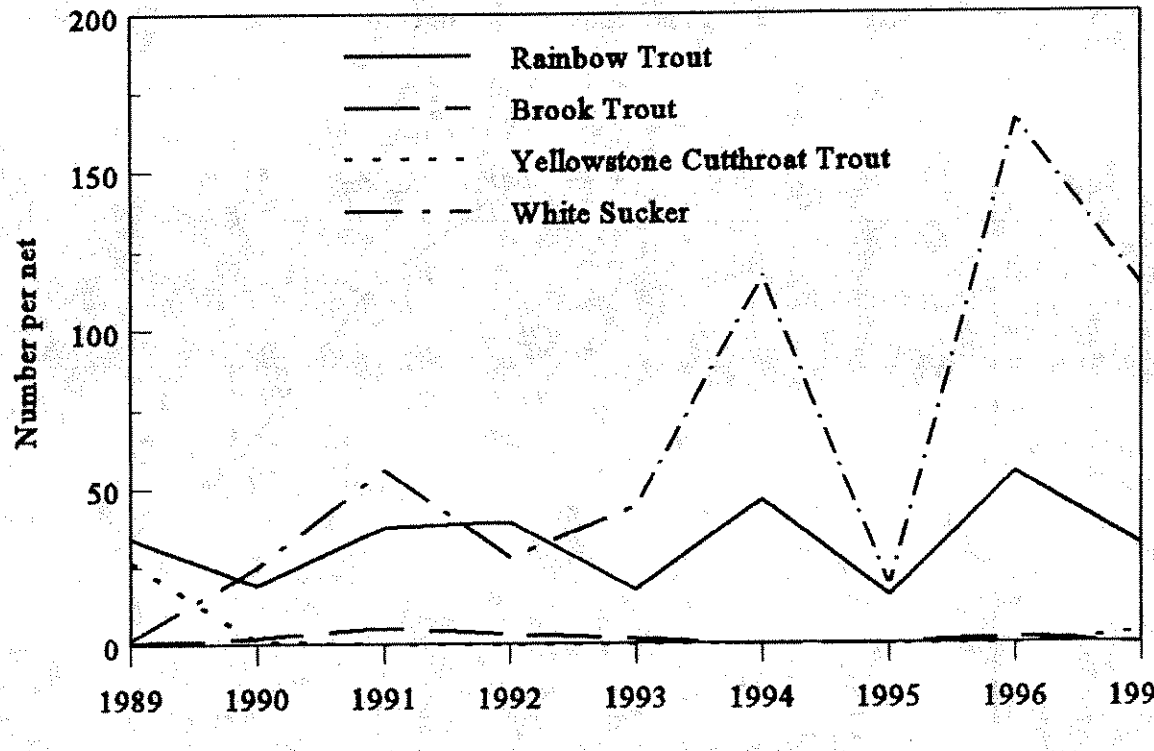

Figure 2. Bair Reservoir gill net catch per net of common species since draining in 1988. Floating and sinking gill nets used except in 1996 when only sinking gill nets were used.

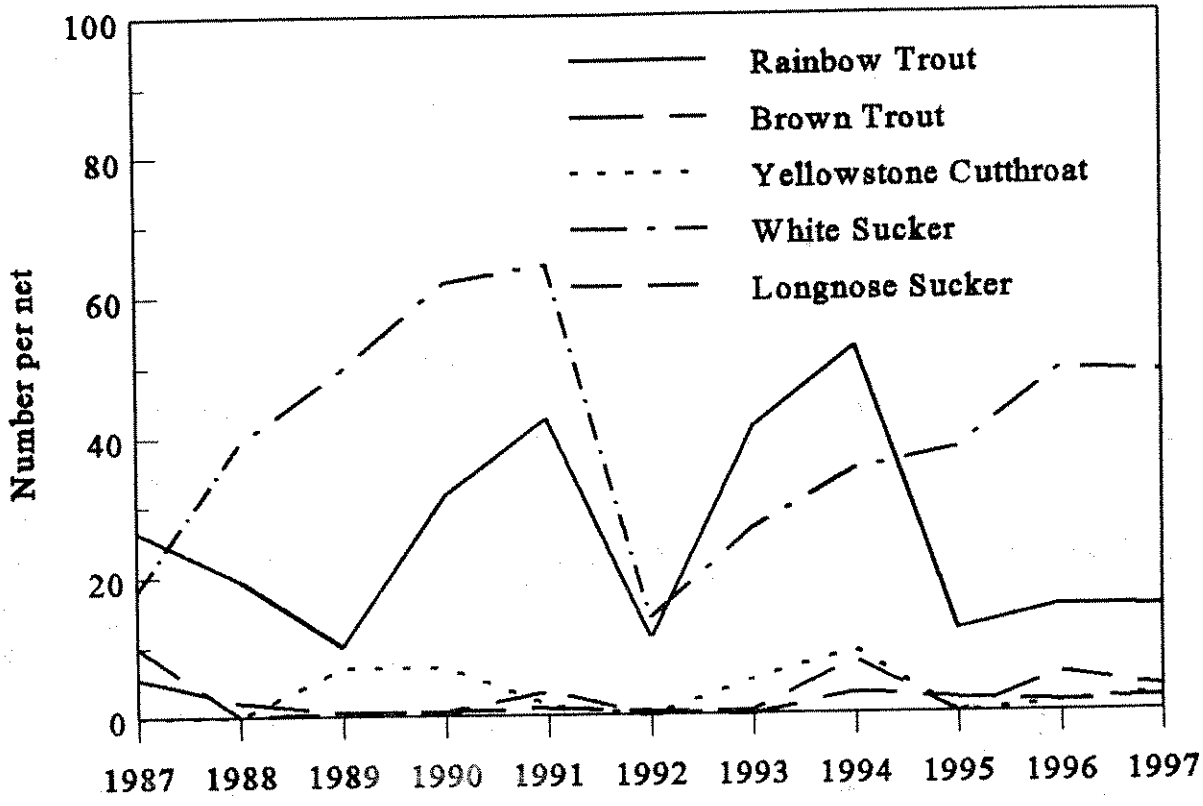

Figure 3. Martinsdale Reservoir fall gill net catch per net of common species.

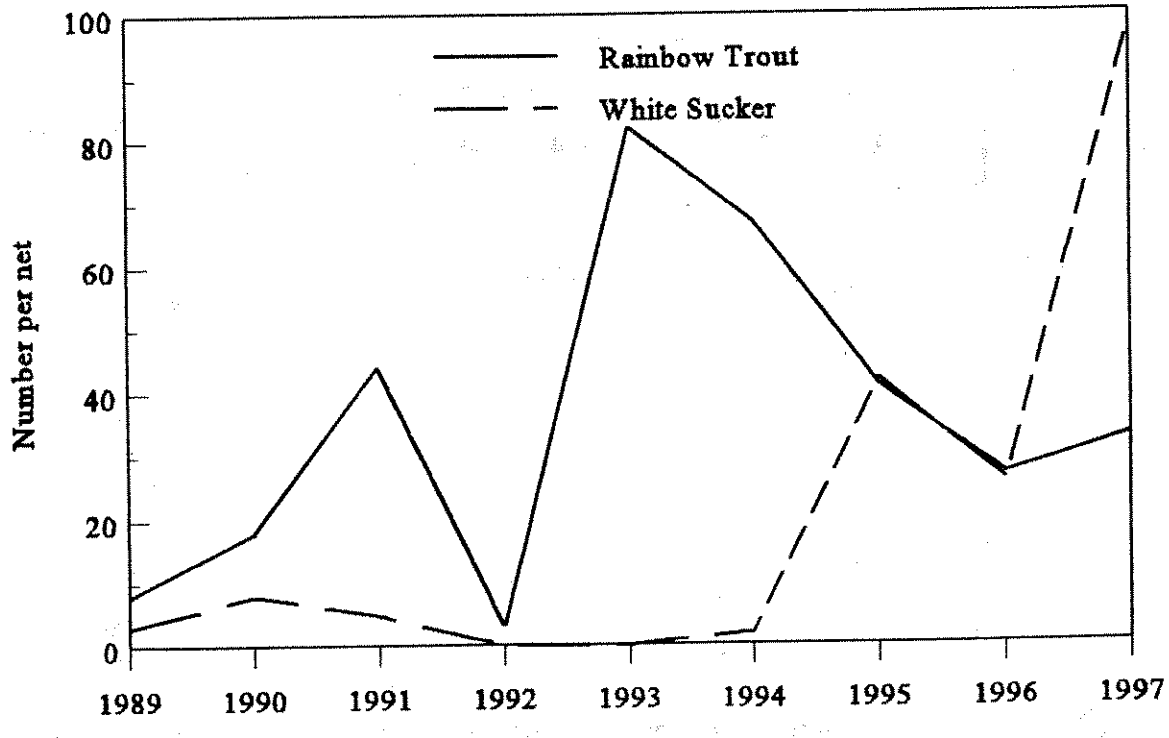

Figure 4. Yellow Water Reservoir gill net catch per net of common species since 1988 drawdown.