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 Stream Ecosystems

1997 Annual Report

ABSTRACT

A total of 10 streams were inventoried in the Choteau area during the report period. Electrophoresis of fish collected from Gates Creek indicate them to be 99 percent pure westslope cutthroat. Westslope cutthroat trout are proposed to be introduced into a fishless reach of the South Fork Dupuyer Creek. Overall harvest of rainbow and cutthroat trout tagged in the forks of the Sun River since 1990 is less that 3 percent. In the Lewistown area, population estimates were obtained on the Burleigh, Brewery Flats and Tresch Sections of Big Spring Creek and on one reach of Warm Spring Creek during 1997. We believe natural reproduction occurs in Warm Springs Creek. Electrofishing was also done on Lost Creek, the South Fork of the Judith River and on the South Fork of Flatwillow Creek. Westslope cutthroat habitat on Lost Creek was extended approximately 0.5 miles. PCB's were found in sediment samples taken from Big Spring Creek. We obtained population and biomass estimates on the Smith and Missouri rivers; results will be presented in a future report. Approximately 163 projects were reviewed under the Natural Streambed and Land Preservation Act while another 30 projects were reviewed under the Stream Preservation Act during the 1998 fiscal year.

OBJECTIVES

1. To identify and monitor the characteristics and trends of fish populations, angler harvest and preferences, and habitat conditions in northcentral Montana coldwater stream 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.

7. To enhance trout populations and trout fishing opportunity in Marias River immediately downstream from Tiber Dam.

PROCEDURES

Choteau Area

Fish populations at the confluence of the forks of the Sun River were sampled using an aluminum jet boat with fixed booms. Rainbow and cutthroat trout greater than eight inches were tagged with Floy T-tags. The forks of the Sun River above Gibson Reservoir were sampled by hook and line with rainbow and cutthroat trout greater than eight inches also tagged with Floy T-tags. The Peterson mark-recapture method (Ricker 1975) was used to estimate the trout population after snorkel observations tallied tagged to untagged fish. Other streams were sampled with a backpack shocker. Measurements of all fish sampled include total lengths to the nearest tenth of an inch and weights to the nearest hundredth of a pound. Several streams were cooperatively surveyed with Lewis & Clark Forest personnel. Cutthroat trout were collected for testing for genetic purity by Dr. Robb Leary at the University of Montana. Disease testing of cutthroat trout was conducted at the U. S. Fish and Wildlife Service Bozeman Fish Health Lab.

Lewistown Area

Trout populations on Big Spring Creek were surveyed using a fiberglass drift boat equipped with a mobile electrode and Coeffelt VVP-15 to rectify AC to straight DC. Power was obtained from a 240 volt generator. Big Spring Creek mark-recapture estimates were analyzed with the MDFWP MR-4 program utilizing log-likelihood statistics (MDFWP 1994). Rainbow trout were collected, frozen and sent to the Washington Animal Disease Diagnostic Laboratory for testing for whirling disease. Fish populations in small streams in the Lewistown area were sampled with a Smith Root Model 12-A battery powered backpack electrofishing unit on the H-3 setting, using a 12Ah, 24 volt battery.

Great Falls Area

Trout populations on the Smith River were surveyed using a fiberglass drift boat equipped with a mobile electrode and a Coeffelt VVP-15 or Mark XXII-M to rectify AC to straight DC.

Power was obtained from a 240 volt generator. The Missouri River was electrofished at night using two aluminum jet boats. Both boats were equipped with headlights and fixed booms with stainless steel droppers suspended in front of the bow. Electricity from 240 volt portable generators was converted to pulsed or straight DC using Coffelt rectifying units. The only pulsed setting used was the Complex Pulse System (CPS). Rainbow and brown trout populations from the Smith and the Missouri rivers were estimated using the log-likelihood method which generates recapture efficiency curves for estimate production (MDFWP 1994). We analyzed mark-recapture and age data with a MFWP computer program on an IBM-PC compatible microcomputer.

Habitat Protection

Recommendations and alternatives for projects involving stream banks and channels were made through participation in the Stream Protection Act (SPA) and Natural Streambed and Land Preservation Act (SB310).

RESULTS

Choteau Area

Westslope Cutthroat Trout

Cutthroat trout were collected from the Middle Fork of Dupuyer Creek for analysis of genetic purity. Cutthroat trout were also collected from the Middle Fork and South Fork of Dupuyer Creek for disease testing purposes. Results indicate no disease problems in either stream and confirmation of pure westslope cutthroat in the Middle Fork. Preliminary results for fish collected from Gates Creek in 1996 indicate genetic purity of 99 percent westslope cutthroat.

An Environmental Analysis (Hill 1998) was prepared proposing to introduce westslope cutthroat trout into a fishless reach of the South Fork of Dupuyer Creek within the National Forest. The document was distributed between various individuals and agencies with no adverse comments received. Plans are to transfer westslope cutthroat during 1998, using fish from the Middle Fork of Dupuyer Creek.

Sun River (Gibson Reservoir)

A total of 200 rainbow and cutthroat trout captured by electrofishing at the head of Gibson Reservoir were tagged and released on June 23-24, 1997. These fish averaged 11.1 inches (range 8.2-15.7) and 0.46 pounds (range 0.20-1.30). During 1997, anglers caught five of these tagged fish, keeping three for a harvest of 1.5 percent. Since 1994, 911 trout

have been tagged at the confluence. Fishermen report catching 62 of these, keeping 27 for a cumulative harvest of 3.0 percent. Approximately two-thirds of this harvest was at the confluence and within Gibson Reservoir.

Monitoring of trends in rainbow and cutthroat trout populations in the North and South Fork Sun River continued. A total of 94 trout in the North Fork and 100 trout in the South Fork were tagged and released on July 27-29, 1997. On these dates, survey crews reported catch rates of 3.6 fish/hour for the North Fork and 1.9 fish/hour for the South Fork. During 1997, few tagged fish were reported caught by fishermen. In the North Fork, fishermen caught two fish from the 1996 tagging year (one of which was kept) and three fish from the 1997 tagging year (one kept). In the South Fork, anglers caught a total of 14 tagged fish: one from 1995; six from 1996; and seven from 1997. Only one fish from the 1996 tagging year was harvested. Since tagging studies commenced in 1990, the cumulative harvest is approximately 3.1 percent for the North Fork and 2.5 percent for the South Fork.

As reported in earlier documents (Hill et al. 1997), little movement has been detected from either fork. Since 1990, 83 percent of the North Fork recaptures have been reported in the North Fork. Likewise, in the South Fork, 86 percent of the recaptures are from the South Fork.

Examination of Figure 1 shows that trout populations declined in both forks in 1997 but are still represented by adequate numbers of fish. The 1997 estimate for fish larger than eight inches in the North Fork is 508 trout/mile while the South Fork is 454 trout/mile. Figure 1 also shows that the North Fork has smaller average fish (10.6 inches) than the South Fork (11.6 inches).

Scales from rainbow and cutthroat trout were collected and analyzed from the confluence of the forks at Gibson Reservoir and from within the study sections of both forks. The majority of the trout aged at the confluence was two to four years old while three and four year olds predominated in both forks. Age data is similar to past years and the current information appears in Appendix Tables 1, 2 and 3.

Miscellaneous Streams

Several streams were inventoried to determine species composition and update files. These streams include: Willow Creek, Elk Creek, Box Canyon of Teton River and Cut Rock Creek. The data are on file in the Choteau field office. In addition, brown trout were introduced into Willow Creek near Choteau and grayling was transferred from the Sunny Slope Canal near Fairfield to Tunnel Lake.

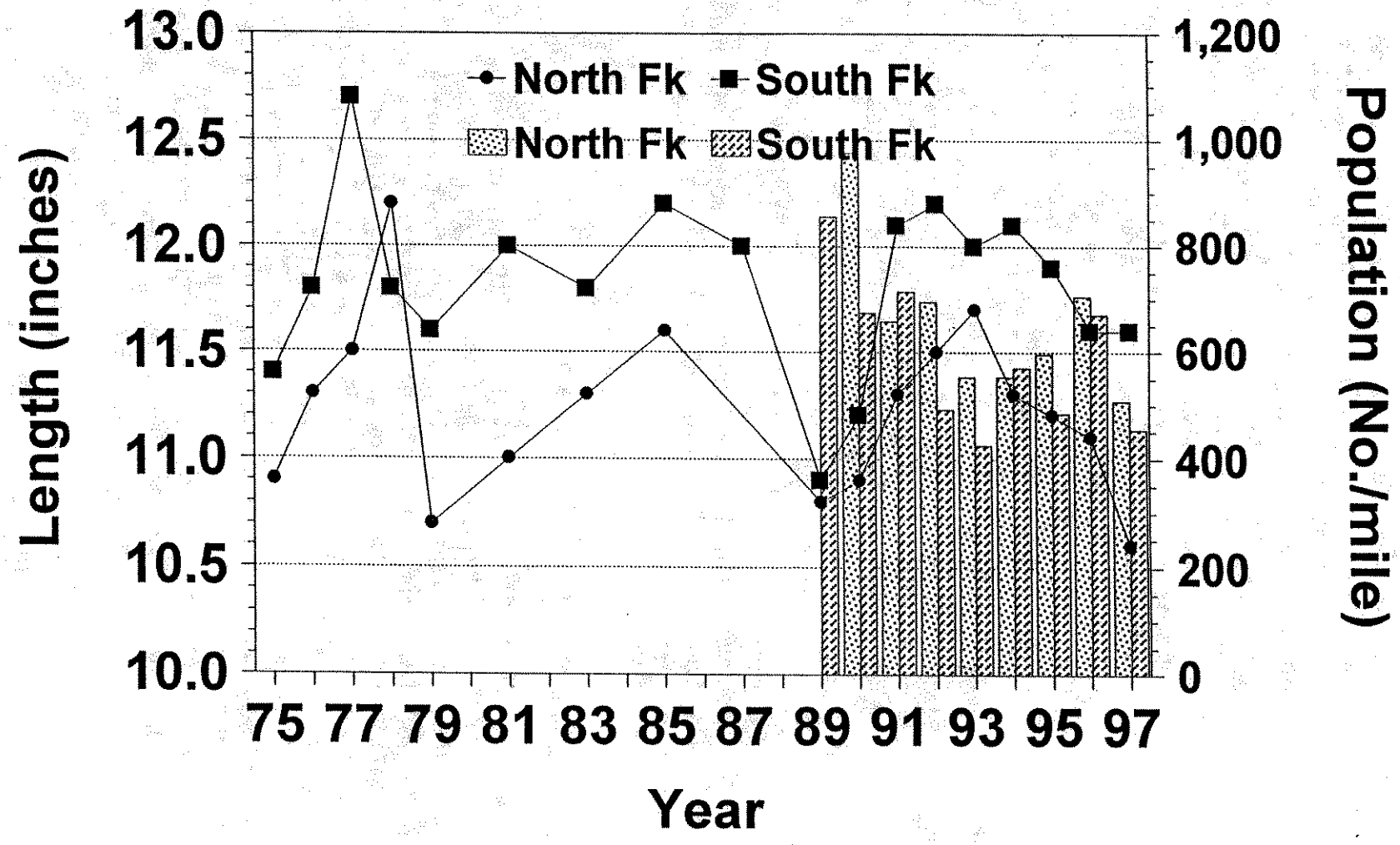

Figure 1. Population estimates and average lengths of trout in the forks of the Sun River. (Line = lengths; bars = population estimate)

Lewistown Area

During the 1997 calendar year electrofishing and mark-recapture population estimates were done on the Burleigh, Brewery Flats and Tresch Sections of Big Spring Creek and on one reach of Warm Springs Creek. Evidence of natural reproduction was found on Warm Springs Creek. Sediment cores in spawning areas were taken on Big Spring Creek. Electrofishing was also done on Lost Creek, the South Fork of the Judith River and on the South Fork of Flatwillow Creek. In conjunction with USFS personnel, westslope cutthroat habitat on Lost Creek (tributary to Otter Creek) was extended by about 0.5 miles. PCB's were found in sediment samples taken from Big Spring Creek. Results from 1997 sampling done in the Lewistown area will be described and evaluated in a future report.

Great Falls Area

Smith River

We obtained population estimates during fall 1997 for both rainbow and brown trout from the Eagle Creek and the Deep Creek sections. Data will be presented in the a future report.

Missouri River

We also obtained population estimates for brown trout during spring 1997 and for both rainbow and brown trout during fall 1997 in the Craig and Cascade sections. Data will be presented in a future report.

Habitat Protection

Providing input and recommendations about alterations of streambeds or banks by private individuals or government entities are handled through a permit process. The 1975 Natural Streambed and Land Preservation Act (310) involves the private sector while the Stream Protection Act of 1963 (SPA) covers government agencies. In the Choteau area, a total of 17 projects were reviewed and processed under the 1975 Natural Streambed and Land Preservation Act (310) while an additional 6 projects were handled under the 1963 Stream Preservation Act (SPA). In the Lewistown management area 25 Natural Streambed and Land Preservation Act "310" permits and 9 Stream Preservation Act (124) permits were processed during the last fiscal year. Also, an additional 121 "310's" and 15 "124" permits were processed through the Great Falls office over the entire 1998 fiscal year . This resulted in a total of 163 "310's" and 30 "124" permits. Site inspections were made on most of the projects. No significant water discharge permit applications or renewals were received and no significant pollution complaints were received during the report period.

DISCUSSION AND RECOMMENDATIONS

Cooperative projects with the Forest Service involving westslope cutthroat trout were conducted during the report and should continue in the future. It has been determined that Gates Creek has westslope cutthroat trout with 99 percent purity. Plans for 1998 include transferring westslope cutthroat from the Middle Fork of Dupuyer Creek into a fishless reach of the South Fork of Dupuyer Creek above a natural barrier.

Trout populations in the forks of the Sun River and at their confluence at Gibson Reservoir have been monitored for several years. This data shows that populations fluctuate through the years but generally occur in sufficient numbers to provide good fisheries. Few fish are reported by anglers as being harvested from these waters. Since 1990, cumulative harvest for 866 trout tagged in the North Fork is 3.1 percent. In the South Fork, 771 trout have been tagged since 1990 with a cumulative harvest of 2.5 percent. The cumulative harvest for 911 trout tagged at the confluence since 1994 is 3.0 percent.

Monitoring of the Eagle and Deep Creek sections on the Smith River will continue. We will also continue to electrofish two sections on the Missouri River to obtain population estimates. Additional monitoring on the Missouri River and it tributaries, especially Little Prickley Pear Creek, will be continued to document any impacts from the presence of *Myxobolus cerebralis.*

Stream protection/preservation activities will continue to be processed as projects occur.

ACKNOWLEDGMENTS

The authors wish to acknowledge the assistance of several individuals in completing work on this project. Paul Hamlin, Kelly Smith, Jim Forrest, Dave Yerk, George Anderson, Rick Bryant, Troy Humphrey, Ray Paige, Kenny Staigmiller, Tom & Carolyn Salansky, Mike Enk, Dave Whittekiend, Dan Downing, Jason Moeckel, and Jim McGee assisted in gathering or analyzing information for this project. Dr. Robb Leary from the University of Montana Genetics Lab conducted the laboratory testing to determine the genetic purity of westslope cutthroat trout.

REFERENCES CITED

Hill, W. J., G. A. Liknes, and A. E. Tews. 1997. Statewide fisheries investigation. Northcentral Montana coldwater streams. Project F-78-R-3. Job Progress Report. Montana Department of Fish, Wildlife & Parks. Fisheries Division. Helena, Montana.

Hill, W. J. 1998. Environmental assessment of westslope cutthroat trout introduction into South Fork Dupuyer Creek, Pondera County, Montana. Montana Department of Fish, Wildlife & Parks. Fisheries Division. Helena, Montana.

Montana Department of Fish, Wildlife and Parks. 1994. MarkRecapture version 4.0. A software package for fishery population estimates. Montana Department of Fish, Wildlife and Parks. Helena, Montana.

Ricker, W. E. 1975. Computation and interpretation of biological statistics of fish populations. Fisheries Research Board of Canada Bulletin 191.

Prepared by: William J. Hill, George A. Liknes, and Anne E. Tews

Date: November, 1998

Principal Fish Species Involved: Rainbow trout, cutthroat trout, westslope cutthroat trout, brown trout, brook trout, Arctic grayling, and mountain whitefish.

Code numbers of Waters Referred to in Report:

14-3480 M. Fk. Dupuyer Creek
14-5480 So. Fk. Dupuyer Creek
14-6000 Teton River
14-6040 Teton River
14-6720 Willow Creek
16-0310 Big Spring Creek, Sec 2
16-3520 South Fork Judith
16-3920 Warm Springs Creek
17-4374 Lost Creek
17-4896 Missouri River Section 09
17-6832 Smith River Section 02
18-5610 South Fork Flatwillow Creek
20-1500 Cut Rock Creek
20-2000 Elk Creek
20-2350 Gates Creek
20-4400 No. Fk. Sun River
20-5600 So. Fk. Sun River
20-6110 Sun River Slope Canal
20-7350 Gibson Reservoir
20-8400 Tunnel Lake

Appendix Table 1. Age composition of rainbow and cutthroat trout at the confluence of North and South Forks of Sun River, 1997.

Length group (inches)	No. fish per length group	Number of fish/age group 1	2	3	4	5	6
6	1	-	1				
7	3	1	2				
8	8	-	7	1			
9	11	-	4	7			
10	12	-	7	3	2		
11	13	-	-	7	5	1	
12	11	-	-	2	8	1	
13	11	-	-	2	6	3	
14	1	-	-	-	-	1	
15	2	-	-	-	-	-	2
16	1	-	-	-	-	1	
Totals	74	1	21	22	21	7	2

Appendix Table 2. Age composition of rainbow and cutthroat trout, South Fork Sun River, 1997.

Length group (inches)	No. fish per length group	No. fish per age group 2	3	4	5	6
8	2	2				
9	6	2	4			
10	12	1	9	2		
11	24	1	11	9	3	
12	14		7	6	1	
13	12		1	7	4	
14	5			4	1	
Totals	75	6	32	28	9	

Appendix Table 3. Age composition of rainbow and cutthroat trout, North Fork Sun River, 1997.

Length group (inches)	No. fish per length group	No. fish per age group				
		2	3	4	5	6
7	2	2				
8	7	5	2			
9	17	1	15	1		
10	21	1	11	8	1	
11	25		6	14	4	1
12	8		2	5	1	
13	5		1	2	2	
Totals	85	9	37	30	8	1