

JOB COMPLETION REPORT  
INVESTIGATIONS PROJECTS

State of Montana

Project No. F-9-R-5

Job No. 1

Name Southwest Montana Fishery Study

Title Inventory of Waters of the Project  
Area

Period Covered: May 1, 195<sup>6</sup> to April 30, 195<sup>7</sup>

Abstract:

The survey information compiled on this project consisted primarily of cataloging physical and biological characteristics of some of the more important fishing waters of Southwestern Montana. Three lakes were partially surveyed for biological characteristics. Ten-hour opening day creel checks were conducted on Dailey and Harrison Lakes. These lakes represent two of the most utilized lakes of this area. Limited access lakes were surveyed in the Tobacco Root Mountains near Sheridan, Montana.

Population studies of the smaller streams were conducted by the electric census method. Baker Creek in Gallatin County was inventoried in the areas of heaviest fishing pressure. From this inventory it was impossible to detect any significant difference in the standing populations in areas open to regular fishing as compared to areas closed to fishing. Needs are pointed out and recommendations are made to promote better management of the fishing resource in this area.

Objectives:

The purpose of this project was to determine the physical, chemical, and biological characteristics of the waters with the highest importance to the total recreational fisheries picture of the project area, and where practicable to obtain estimates of existing or potential fisherman use.

Techniques Used:

The general fishing history of the area was obtained by interviews conducted with Fish & Game Department Enforcement Officers, State Fish Hatchery Personnel, Forest Officers, and Sportsmen's Clubs of the area. Creel Census information and Fisherman's Log survey returns were used to evaluate the fishing success in areas of heaviest fishermen use.

Management records of the hatcheries were used to compile a record of fish stockings in the project area. Opening day

airplane counts of fishermen's cars were made on the Yellowstone and Missouri drainages. Car counts throughout the year incidental to travel on the highway between Bozeman and Ennis were made and recorded.

Fish populations in lakes were sampled by angling or gill nets and spawning facilities were observed and recorded. Populations in streams were sampled by limited use of the electric census method and angling.

Stream lengths, widths, depths and volumes were measured and recorded on standard survey forms. Limited water analysis and fish food samplings were made and recorded on the more important waters, or where fish mortalities were observed.

#### Findings:

Aerial observation, maps, creel reports and interviews comprised the source material for the estimate that approximately 90% of the sport fish harvested in Southwest Montana come from its productive trout streams. This area comprising the headwaters of the Missouri and Yellowstone River drainages contains some of the most productive trout streams in the state. Accessible lake fisheries in this area are limited and consequently are much in demand during the spring runoff period. The major portion of the lakes in this area are high mountain lakes with difficult access, and limited production. In an effort to make better utilization of the inaccessible lakes, survey information, consisting of physical and biological characteristics were taken and recorded.

In addition to general survey information, opening day creel checks were conducted on Dailey Lake and Harrison Lake. These ten-hour opening day checks reflect the tremendous popularity of the lakes during this period. The findings are summarized in Table 1:

Table 1 - Summary 10-Hour Opening Day Creel Checks.

Name of Lake	Surface Acres	No. Interviewed	No. Fishermen	Estimated
	Fished	Incl. Non-Fishermen		Lbs. of Sport Fish Harvested
Dailey Lake	107	1,296	658	1,192
Harrison Lake	400	1,910	908	1,786

A breakdown of the species in the creel is summarized in Table 2.

Table 2 - Species Represented In Creels 10-Hour Opening Day Check.

	Rainbow Trout			Brown Trout			Eastern Brook			Kokanee		
	%	Avg.	Avg.	%	Avg.	Avg.	%	Avg.	Avg.	%	Avg.	Avg.
	Creel	L	Wt.Lbs.	Creel	L	Wt.Lbs.	Creel	L	Wt.Lbs.	Creel	L	Wt.Lbs.
Dailey Lake	64	15.9"	1.27	0	0	0	0	0	0	36	14.9"	1.25
Harrison Lake	61	16.1"	1.56	28	16.3"	1.38	11	13.1"	0.94	0	0	0

In conducting these opening day checks considerable conflict was observed between boat fishermen and bank fishermen; however, the major conflict was observed to be between the boat fishermen and the speed boat, water skiing enthusiasts.

The Completion Report for F-9-R-4 contained a detailed report including age analysis of the sport fish present in these two lakes. Gill net catches during the year 1956, indicate an increase of brown trout, salmo trutta fario, in Harrison Lake. Dailey Lake net catches reveal a build-up of the warm water species present in the lake. It is not known what part the warm water species, primarily yellow perch, perca flavescens, large mouth bass, micropterus salmoides, black crappie, promoxis nigro-maculatus, will play in the future management of these lakes, but indications are that they will constitute a serious problem in the not-too-distant future.

Cliff and Wade Lakes, near West Yellowstone, Montana were partially surveyed. These lakes are located in the Beaverhead National Forest and represent two of the more popular accessible lakes in this resort area. The estimated acreage of Cliff Lake is 650 surface acres. Wade Lake is estimated to be 200 surface acres. These lakes are separated by a narrow strip of land approximately 600 yards wide. Historic records indicate that these lakes are famous for their production of record sized rainbow and brown trout.

Gill netting on Cliff Lake revealed that the Utah chub, gila atraria, recently introduced by illegal minnow fishing, is now well established in this lake. The first records of this species in this lake were reported in 1952. There was no difficulty experienced in capturing both adults and young of the year of this species.

Creel checks on these lakes indicated that the catch per hour for Cliff Lake was 1.2 fish per hour, with the predominant species in the creel being rainbow trout. Wade Lake had a

catch per hour of 0.7 fish per hour with the predominant species being brown trout. There was a total of 84 creels checked on Cliff Lake and 52 creel checks on Wade. In making these creel checks it was observed that there is a definite shortage of camp ground facilities available to the public.

Several mountain lakes in the vicinity of Sheridan, Montana were surveyed. The lakes in this area are accessible by jeeps and four-wheel drive vehicles. Of the seven lakes surveyed, only one was recommended for fish planting. The major conflict in developing lake fishing in this area is the development of irrigation structures on the natural lakes. Some of the drawdowns are so severe that it is next to impossible to manage them.

Stream censusing by the electric census method was limited due to the lack of proper equipment. This shortage was brought about by the priority of project F-21-R-1; however, several streams of the area were electric censused and written up on standard survey forms.

Baker Creek in Gallatin County near Bozeman, Montana was censused to evaluate the effectiveness of closed areas on fish populations. This stream, averaging 14 feet in width and 2 feet in depth, is reported by enforcement personnel to be one of the most popular fishing streams of the area. The population figures are summarized in Table 3.

Table 3 - Fish Captured Per 300' Sample Baker Creek 1955.

Species	No. of Fish Captured	% of Population by Weight	Average Length in Inches	Average Weight in Lbs.	Length Range in Inches
Rainbow	31	18	10.8	0.57	8.3 to 17.4
Brown	81	45	10.2	0.55	3.7 to 20.7
Suckers	39	39	11.7	0.99	6.5 to 17.8

It was impossible to do extensive random shockings throughout the area due to access, time and stream flows. From an evaluation of the data collected, it was impossible to note any significant difference in the populations measured in areas closed to fishing, as compared with areas open to the regular fishing season.

This report covers a brief outline of the work accomplished in the project area, under the statewide water inventory work. It does not include all the data collected. The data compiled

on this job are filed on special file cards in the district office and the Helena office to be used in future management and restoration work.

Recommendations:

The survey information collected thus far, reflects the problems facing the future of fish management in this area. It is recommended that this type of study be continued, in order to formulate the future management plans of the area. These management plans should be based on facts and geared to provide a maximum benefit to the sport fishing public. It is further recommended that policies and cooperative agreements be established with the United States Forest Service so that the mountain lake resource can be wisely used and safeguarded for future generations.

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