#71511

JOB COMPLETION REPORT

INVESTIGATIONS PROJECTS

State of Montana

Project No. F-5-R-1 Work Plan No. VII Job No. VII-A

Title of Job: Population Surveys of Streams Within the Project Area.

Objectives:

In order to effect or sustain proper management of waters from a fishery standpoint it is desirable to have information regarding the existing fish populations. The objective of this study was to gather data from several streams in the area in an effort to obtain information needed in management.

Techniques Used:

Sampling was done with an electric shocking device and each 300 foot section was blocked off with 1/2-inch, square mesh nets. All fish were weighed and measured and scale samples were taken from a high percentage of each species.

In order to expedite the job and work as many streams as possible the sampling sections were chosen by merely driving to the streams at the lower, middle and upper ends and shocking a section in each of these locations.

Findings:

Big Elk Creek.
The origin of Big Elk creek is in the Crazy Mountains. It flows east and north approximately 25 miles and empties into the Musselshell river near the town of Two Dot. The late August stream temperatures varied from 43°F in the canyon to 50°F. at the Bill Fox ranch. From a fishery viewpoint the stream varies from near barren water in the canyon to one supporting a sizeable population of fish farther downstream.

Hatchery plants of Eastern Brook trout have established a population of this species below the canyon. Farther downstream the population of game fish grades into one of predominantly Brown trout. Apparently this species moved in from the Musselshell river and finding suitable habitat have established themselves, reproduced and can now be found in considerable numbers. At the Bill Fox ranch the Brown trout make up nearly the entire population of game fish (see Table 1). Farther upstream in the vicinity of the Campbell ranch the game fish population grades from a predominance of Browns to Eastern Brook trout. Several miles farther up in the vicinity of the Jack Arthur ranch the game fish were found to be exclusively Eastern Brook trout with the greatest portion of the population being of less than legal size. The difference in populations is shown in Figure 1.

Table 1. Trout Populations found in Big Elk Creek, Wheatland County, Montana on Aug. 27 & 28, 1951.

Section*	Brown trout In Section		Approx.legals	Eastern Brook trout In Section		Approx.legals	Rainbow Trout In Section		Approx.legals
	Sublegal	Legals	per mile	Sublegal	Legals	per mile	Sublegal	Legals	per mile
Fox Ranch Lower Big Elk	57	49	980	4	1	20	0	1	20
Campbell Ranch Middle Big Elk	22	20	400	32	23	460	5	4	80
Arthur Ranch Middle Big Elk	0	0	0	40	4	80	0	0	0
Canyon Crossing Upper Big Elk	0	0	0	5	0	0	0	0	0
	Also one sublegal cutthroat in this section.								
Forks in Canyon Upper Big Elk	Two sublegal cutthroats in two sections. Practically no fish.								

* Sections sampled were three hundred feet in length.

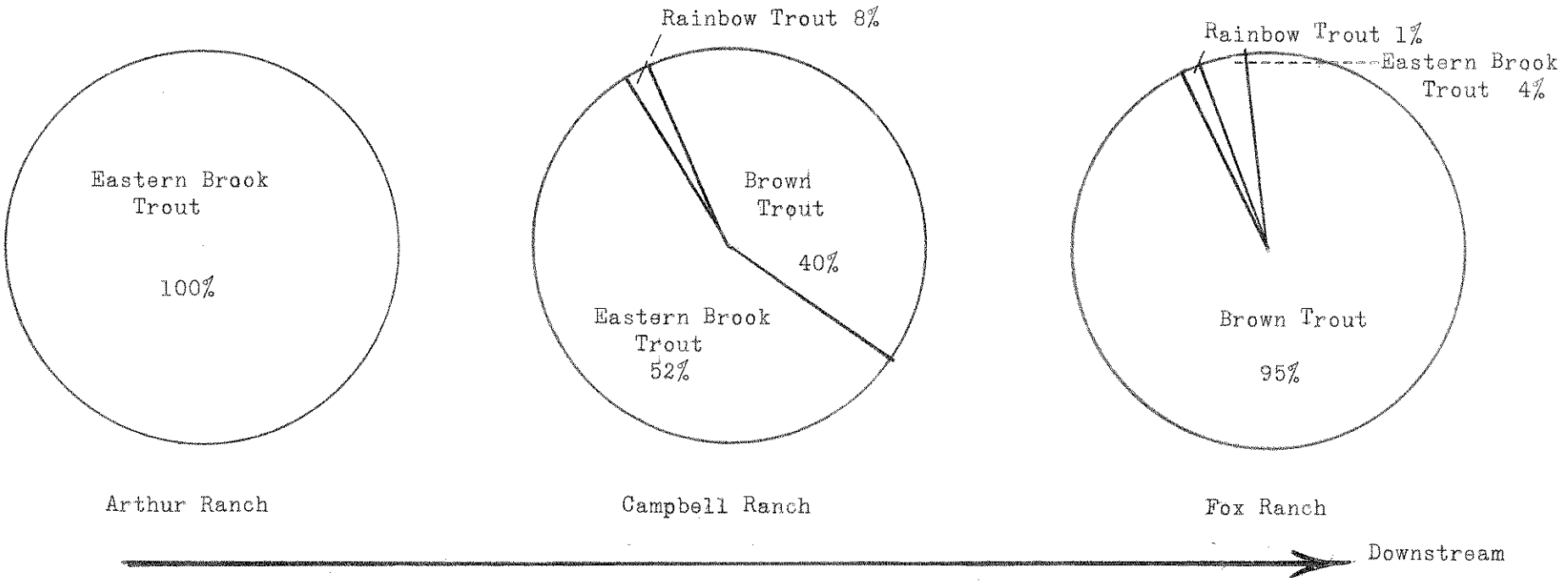

Figure 1. Percent of each species of all game fish recovered from sampled sections of Big Elk Creek, Wheatland County, Montana, Autumn of 1951.

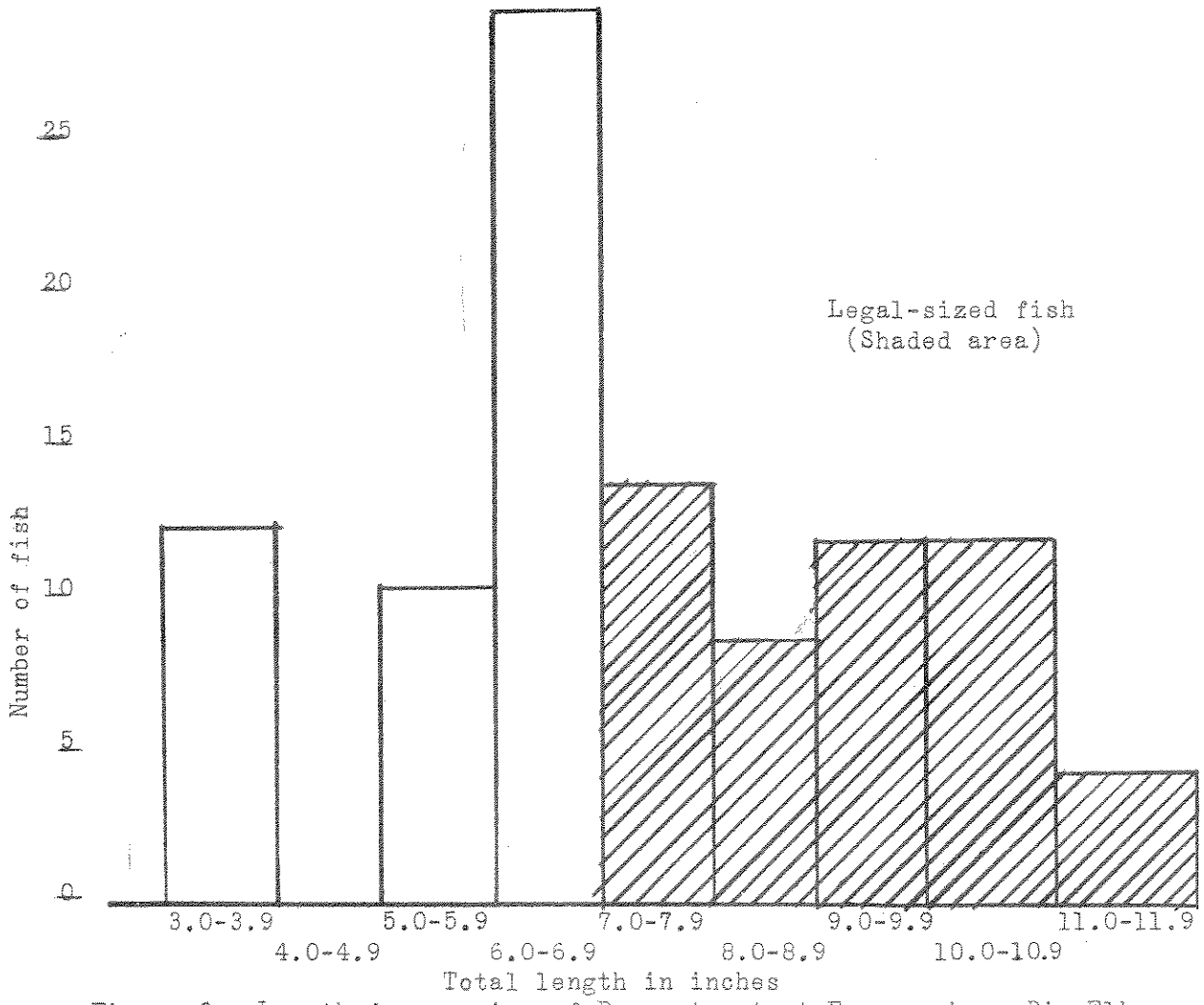

Figure 2. Length frequencies of Brown trout at Fox ranch on Big Elk Creek, Wheatland County, Montana, 1951.

Figure 3. Length frequencies of Eastern Brook trout at Arthur ranch on Big Elk creek, Wheatland County, Montana, 1951.

In this vicinity the calculated number of fish per mile was 880 with less than one-tenth of legal size. There were eighty calculated legals per mile. At the Fox ranch there were 980 calculated legal brown trout, 20 legal brooks and 20 legal rainbow trout making a total of 1,020 legal-sized fish per mile of stream.

The five year plan of fish distribution and management has called for plantings of 5,000 three-inch Eastern Brook trout per year.

Analysis and Recommendations:

Adequate populations of trout were found in all sections of Big Elk Creek below the canyon. It is therefore recommended that hatchery plants be discontinued until such a time as it is shown to be necessary.

Eastern Brook trout from 4 to 7 inches in total length make up an overwhelming portion of the population in those areas where brook trout are abundant. It is recommended that the minimum size limit be removed on Eastern Brook trout in Big Elk creek.

Summary:

Several sections of Big Elk Creek were sampled with an electric shocker in order to determine the fish populations present.

It was found that lower Big Elk Creek contains substantial numbers of both legal-sized and sublegal Brown trout. The population grades into Eastern Brook trout progressively upstream and in the upper portion below the canyon this species is found almost exclusively. Above the crossing in the canyon the stream was found to be nearly barren of fish.

Data and Reports:

The original data is with the fisheries biologist at Belt, Montana.

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Date March 18, 1952