MONTANA FISH AND GAME DEPARTMENT FISHERIES DIVISION HELENA, MONTANA

JOB COMPLETION REPORT INVESTIGATIONS PROJECTS

State of	Montana	Name_	Helicopter Mountain Lake Survey
Project No	F-32-R-4	Title	Mountain Lake Survey - District 3
Job No	IV		
Period Covered	July 1, 1967, to June 30,	1968.	

ABSTRACT:

A total of twenty-eight mountain lakes were surveyed in District Three with the aid of a helicopter in July, 1967. The area of the lakes ranged from 3.9 to 41.9 acres and had maximum depths of four to ninety-eight feet. Gamefish populations were found in sixteen of the lakes. Rainbow trout populations were found in eight lakes, combinations of rainbow trout, cutthroat trout, and rainbow-cutthroat hybrids were taken from five lakes, and grayling only were found in three lakes. Six lakes were recommended for plants of rainbow trout or cutthroat trout in the Pioneer Mountain Range in 1968. Cutthroat trout were stocked in two lakes in the Tobacco Root Mountains in 1967, following the surveys.

RECOMMENDATIONS:

High mountain lake surveys should continue in order to eventually complete the file of fishing waters in the district. Knowledge of the characteristics of each high lake is needed to provide a basis for management recommendations.

Ferguson, Foolhen, and Sand Lakes were recommended for plants of rainbow trout in 1968. Results from the survey reveal the past planting recommendations have been about optimum for these lakes.

Tendoy, Torrey, and Upper Stone Lakes were recommended for plants of two-inch cutthroat trout in 1968. Although no fish were captured from these three lakes, a fishery was reported present in them in the early 1960's.

Bell and Louise Lakes were recommended for plants of fingerling cutthroat trout in 1967. Both lakes were stocked in 1967, following the surveys.

OBJECTIVES:

The purpose of this project is to determine the physical and biological characteristics of high mountain lakes and to determine the suitability of these lakes for sport fisheries. The characteristics and past history of each lake are examined to determine if planting of hatchery fish is desirable.

TECHNIQUES:

A helicopter fitted with pontoons was employed as a "packhorse" and also served as a raft from which the equipment was handled. Water temperatures were obtained at the surface and near the bottom with an electrical resistance thermometer. Lake depths were obtained with a Bendix depth recorder. Potential spawning areas were observed and classified into three categories as follows:

- Good adequate reproduction judged likely to occur every year;
- Poor questionable whether reproduction occurs every year, reproduction might occur in favorable years;
- Nil no suitable spawning areas available.

One 125-foot experimental monofilament gill net was fished in each lake for about twenty-four hours. Scale samples were obtained from fish from most of the lakes where fish populations were found. Data obtained from each lake was recorded on lake survey cards for the District and Helena files.

FINDINGS:

PIONEER MOUNTAIN LAKES

A summary of most of the data obtained from the survey is presented in Table 1. Gamefish populations were found in fifteen of the twenty-four lakes surveyed in the Pioneer Mountain Range. Several fish were observed rising in Foolhen Lake, but none were taken in the gill net. Only rainbow trout were captured from seven lakes, grayling from three lakes, and combinations of rainbow trout, cutthroat trout, or rainbow-cutthroat trout hybrids from five lakes. Mountain suckers were the only species captured from Black Lion Lake.

Gamefish over ten inches in total length were taken from all lakes containing populations except from Lake-of-the-Woods. The largest fish captured was a rainbow trout (16.2 inches, 1.74 pounds) from Lower Stone Lake. Fish over fifteen inches in length were taken from six lakes.

Spawning areas appeared to be good on four lakes and the number of fish taken in the nets indicated adequate reproduction. Adequate reproduction apparently occurs on two other lakes (North Bobcat and Schwinegar) even though visible spawning areas were judged to be poor.

Depth was considered a limiting factor on three of the lakes. These lakes are Vera, West Bobcat, and Elbow. Four fish were caught from Vera Lake; however, these may have moved into the lake during high water. West Bobcat and Elbow Lakes did not have permanent inlets and had no outlets at all. The drainage area of all three lakes is less than a half square mile.

Three of the lakes surveyed are on a periodic planting schedule for rainbow trout. These are Ferguson, Foolhen, and Sand Lakes. As mentioned previously, no fish were caught from Foolhen Lake, but several were seen rising during the survey. The rainbow trout taken from Ferguson and Sand Lakes were of a desirable size and in good body condition.

Summary of mountain lakes surveyed in District Three (Pioneer Mountains and Tobacco Root Mountains), July, 1967. Lakes listed alphabetically. Table 1.

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Abundance Say 11M, 1 Canyon Cr. 3.7 35 8,600 Hybrid 1/2 3 10.1-15.4 Poor Bladdance Badd Lion 35, 11M, 2 1 Mise R. 3.7 35 8,600 Hr. Sudker 5.0-7.3 Nil. Beboat (Most) 25, 11M, 3 1 Mise R. 5.0 23 8,450 Nil. 9 10.0-15.4 Poor Bladk Beboat (Most) 25, 11M, 3 Mise R. 5.0 23 8,500 Nil. 9 10.0-12.2 Nil. Beboat (Most) 25, 11M, 3 Mise R. 11,9 9 8,250 Cuthkroat 8 1,210,4 6.0-12.2 Nil. Caryon 13 Mise R. 10.6 12 8,500 Mone 9 1,3-10,4 6.0-12.2 Nil. ELbow 11M, 12M, 3 Mise R. 10.6 12 8,500 Mone 9 1,3-10,4 6.0-12.2 Nil. Ferguson 11M, 17 Mise R. 10.6 12 8,500 Mone 10.7-15.6 Good Carying 45, 1	Lake	Location T. R. S.	Sub- drainage	Area (A.)	Max. Depth (ft.)	Eleva- tion (ft.)	Species	No.	Size Range S (inches)	Spawning Areas
10.00 1.00	PIONEER MOUNTAINS Abundance	1 W	T) MOWNED	۲ ۶	ر ب	α	/ L P. P. A. 1	٥	L	j j
Lion 25, 11W, 32 Wise R. 11.8 29 8,000 Nt. Sucker 5 7.0-7.3 (Nest) 25, 13W, 33 Wise R. 5.0 23 8,300 Grayling 34 6.6-12.2 (Nest) 25, 13W, 33 Wise R. 5.0 23 8,300 Grayling 34 6.6-12.2 (Nest) 35, 11W, 8 Canyon Cr. 11.9 9 8,250 Cutthroat 8 9.3-10.4 nt 18, 12W, 12 Nise R. 10.6 12 8,600 None 9.3-10.4 nt 18, 12W, 12 Nise R. 10.6 12 8,550 None 19 10.7-15.6 nt 18, 12W, 29 Aillow Cr. 17.5 48 7,100 None 19 10.7-15.6 nt 18, 12W, 29 Millow Cr. 10.6 30 9,000 None 19 10.7-15.6 nt 18, 12W, 29 Millow Cr. 10.6 30 9,000 None 19 10.7-15.6 nt 18, 12W, 14 Nise R. 10.6 30 8,300 Cutthroat 5 9,3-12.6 ct 18, 18, 18, 18 Nise R. 10.6 30 8,300 Cutthroat 3 9,1-10.1 nt 33, 13W, 17 Canyon Cr. 12.5 33 8,600 Rainbow 4 10.2-14.4 nt 18, 18, 18 Nise R. 10.6 30 8,300 Cutthroat 3 9,1-10.1 nt 18, 18 Nise R. 10.6 30 8,300 Cutthroat 3 9,1-10.1 nt 18, 18 Nise R. 10.6 30 8,300 Cutthroat 3 9,1-10.1 nt 18, 18 Nise R. 10.6 47 8,100 Rainbow 19 7.4-13.8 nt 18, 18 Nise R. 10.6 47 8,100 None 19 7.4-13.8 nt 18, 18 Nise R. 10.6 47 8,100 None 19 7.4-13.8 nt 18, 18 Nise R. 10.6 47 8,100 None 19 7.4-13.8 nt 18, 18 Nise R. 10.6 8,300 None 19 8,5-13.0 None 19 8,5-13.	Baldy	14W.	Wise R.	32.5	υ α υ π.	8.450	$\frac{ny}{2}$	η α	10.1-15.4	Poor
(Noc.) 25, 134, 33 Wise R. 5.0 23 8,300 Grayling 34 6,6-12.2 (Noet) 25, 134, 32 Wise R. 5.0 17 8,400 Once 35, 114, 32 Wise R. 10.6 11.9 8,400 Once 8.25. 114, 38 Canyon Cr. 10.6 12.2 8,600 Hybrid 17 8,2-11.2 0.0 11, 124, 24 Hybrid 17 8,2-11.2 0.0 14, 124, 114, 12 Wise R. 10.6 12 8,600 None 18 10.7-15.6 None 18 11, 124, 29 Willow Cr. 10.6 30 9,000 None 19 10.7-15.6 None 14, 114, 12 Wise R. 10.6 30 9,000 None 19 10.7-15.6 None 19 10.7-15.9 Non	Black Lion	11W,		11,8	29	8,600	Mt. Sucker) LC	7.0-73	roor Nil
(West) 25, 13W, 32 Wise R. 5.0 17 8,400 None 35, 11W, 8 Canyon Cr. 11.9 9 8,250 Cutchroat 8 9,3-10.4		13W		5.0	23	8,300	Gravling	34	6.6-12.2	Poor
35, 11W, 8 Canyon Cr. 11.9 9 8,256 Cutthroat 8 9.3-10.4 11		13W,		5.0	17	8,400	None			N:1
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1t							Hybrid	17	8,2-11.2	
35, 14W, 12 Wise R. 10.6 12 8,550 None 1N, 12W, 29 Alder Cr. 8.1 38 7,100 None (No.) 45, 11W, 9 Willow Cr. 10.6 30 9,000 None 45, 11W, 17 Canyon Cr. 12.5 33 8,600 Rainbow 7 8.6-12.1 Cutthroat 53, 13W, 8 Wise R. 10.6 30 8,300 Rainbow 3 8.7-9.0 Cutthroat 53, 13W, 17 Canyon Cr. 11.2 32 8,700 Rainbow 3 8.7-9.0 Cutthroat 5 9.1-10.1 Hybrid 1 Canyon Cr. 11.2 32 8,700 Rainbow 3 10.2-14.4 35, 11W, 17 Canyon Cr. 11.2 32 8,700 Rainbow 3 8.7-9.0 Cutthroat 5 9.1-10.1 Hybrid 4 0.1-9.6 Syar 35, 13W, 8 Wise R. 5.0 8,250 Grayling 43 7.2-10.7 Syar 35, 13W, 8 Wise R. 10.6 47 8,100 Rainbow 10 7.4-13.8 Syar 35, 11W, 21 Wise R. 10.6 47 8,100 Rainbow 10 7.4-13.8 Syar 35, 11W, 4 Willow Cr. 20.0 8,700 Rainbow 7 8.9-15.0 Hybrid 4 6.1-12.9 Froot Nountains 35, 14W, 4 S Boulder Cr. 15.8 9,000 None Syar 35, 14W, 4 S Boulder Cr. 12.5 40 8,000 None Syar 35, 14W, 4 S Boulder R. 7.1 2,2 9,000 None Syar 35, 3W, 14 S Boulder R. 7.1 2,2 9,000 None Syar 35, 4W, 14 S Boulder R. 7.1 2,2 9,000 None Syar 35, 4W, 11 S. Boulder R. 7.1 2,2 9,000 None Syar 35, 4W, 11 S. Boulder R. 7.1 2,2 9,000 None	Crescent	11W,	Canyon Cr.	30.0	22	8,600	Hybrid	4	8.5-15.6	Good
Day 1 12 M, 12 M, 31 Alder Cr. 17.5 48 7,450 Rainbow 19 10.7-15.6 (Ro.) 45,11 M, 12 M, 29 Alder Cr. 10.6 38 7,100 None Cr. 10.6 38 7,100 None Cr. 10.6 38 7,100 None Cr. 10.6 38 8,600 Rainbow 7 8.6-12.1 Canyon Cr. 12.5 33 8,600 Rainbow 7 8.6-12.1 Cuthbroads 35, 13 M, 17 Canyon Cr. 11.2 32 8,700 Rainbow 3 8.7-9,0 Cuthbroad 35, 13 M, 18 Mise R. 10.6 30 8,300 Rainbow 4 10.2-14.4 35, 13 M, 17 Canyon Cr. 11.2 32 8,700 Rainbow 4 10.2-14.4 35, 13 M, 18 Wise R. 10.6 47 8,100 Rainbow 19 7.4-13.8 8 1.6 Canyon Cr. 10.6 47 8,100 Rainbow 19 7.4-13.8 8 1.6 Canyon Cr. 10.6 47 8,100 Rainbow 19 7.4-13.8 8 1.6 Canyon Cr. 10.6 47 8,100 Rainbow 19 7.4-13.8 8 1.6 Canyon Cr. 10.6 47 8,100 Rainbow 19 7.4-13.8 8 1.6 Canyon Cr. 10.6 47 8,100 Rainbow 19 7.4-13.8 8 1.6 Canyon Cr. 10.6 47 8,100 Rainbow 19 7.4-13.8 8 1.6 Canyon Cr. 10.6 47 8,100 Rainbow 19 7.4-12.9 9 1.0 None 19 1 Millow Cr. 28.4 35 8,800 None 19 1 Millow Cr. 28.4 35 8,800 None 19 1 Millow Cr. 28.4 35 8,800 None 19 1 Millow Cr. 15.8 4 10 8,600 None 19 1 Millow Cr. 15.8 4 10 8,600 None 19 1 Millow Cr. 15.8 4 11 Millow Cr. 15.8	Elbow	14W,	Wise R.	10.6	12	8,550	None			Nil
10, 12W, 29 Alder Cr. 8.1 38 7,100 None (No.) 45, 11W, 16 Willow Cr. 16.6 30 9,000 None 35, 11W, 17 Canyon Cr. 12.5 33 8,600 Rainbow 7 8.6-12.1 Cutthroat 5 9.3-12.6 Hybrid 1 7.3-12.2 Hybrid 1 7.3-12.2 Hybrid 1 7.3-12.2 Hybrid 3 3 3 3 3 Cutthroat 3 3 3 3 S, 11W, 17 Canyon Cr. 11.2 32 8,700 Rainbow 4 10.2-14.4 35, 13W, 18 Wise R. 1.2 32 8,700 Rainbow 4 10.2-14.4 35, 13W, 36 Wise R. 5.0 30 8,125 Grayling 25 8.3-10.2 Clower 25, 13W, 6 Wise R. 15.6 30 8,125 Grayling 25 8.3-10.2 Clower 25, 13W, 6 Wise R. 15.6 30 8,100 None 45, 11W, 21 Wise R. 15.6 30 8,100 None 45, 11W, 21 Wise R. 28.4 35 8,800 None 45, 11W, 21 Wise R. 28.4 35 8,800 None 45, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 Cloper 35, 4W, 14 5 Boulder R. 12.5 40 8,900 None 35, 4W, 14 5 Boulder R. 12.5 40 8,900 None 36, 4W, 11 5 Boulder R. 12.5 40 8,900 None 36, 4W, 11 5 Boulder R. 12.5 40 8,900 None 37, 4W, 11 5 Boulder R. 12.5 40 8,900 None 38, 4W, 14 5 Boulder R. 12.5 40 8,900 None 39, 4W, 11 5 Boulder R. 12.5 40 8,900 None 30, 4W, 11 5 Boulder R. 12.5 40 8,900 None 31, 4W, 11 5 Boulder R. 12.5 40 8,900 None 32, 4W, 14 5 Boulder R. 12.5 40 8,900 None 35, 4W, 14 5 Boulder R. 12.5 40 8,900 None 36, 4W, 11 5 Boulder R. 12.5 40 8,900 None 37, 4W, 14 5 Boulder R. 12.5 40 8,900 None 38, 4W, 14 5 Boulder R. 12.5 40 8,900 None 39, 4W, 14 5 5 5 5 5 5 5 5 30, 5 5 5 5 5 5 5 5 30, 5 5 5 5 5 5 5 30, 5 5 5 5 5 5 5 30, 5 5 5 5 5 5 5 30, 5 5 5 5 5 5 30, 5 5 5 5 5 5 30, 5 5	Ferguson	12W,	Alder Cr.	17,5	48	7,450	Rainbow		.7-15.	Nil
(So.) 45, 11W, 9 Willow Cr. 10.6 30 9,000 None (So.) 45, 11W, 16 Willow Cr. 16.8 43 9,000 None 35, 11W, 17 Canyon Cr. 12.5 33 8,600 Rainbow 7 8.6-12.1 Cthe-Woods 3S, 13W, 8 Wise R. 10.6 30 8,300 Rainbow 3 8.7-9.0 Cutthroat 3S, 13W, 17 Canyon Cr. 11.2 32 8,700 Rainbow 4 10.2-14.4 3S, 11W, 17 Canyon Cr. 11.2 32 8,700 Rainbow 9 10.2-14.4 3S, 13W, 17 Wise R. 41.9 38 8,150 Grayling 43 7.2-10.7 2S, 14W, 36 Wise R. 5.0 30 8,250 Grayling 25 8.3-10.2 (Upper) 2S, 13W, 6 Wise R. 16.9 30 8,300 None 4 10.6-16.2 (Upper) 2S, 13W, 6 Wise R. 16.9 30 8,700 Rainbow 9 10.6-16.2 (Upper) 3S, 11W, 1 Wise R. 28.4 35 8,800 None 4 5,11W, 21 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 SCOT MOUNTAINS (Upper) 3S, 14W, 5 Boulder Cr. 15.8 40 8,000 None 3S, 4W, 14 S. Boulder R. 7.1 2.5 9,000 None 3S, 4W, 14 S. Boulder R. 12.5 40 None 3S, 4W, 11 S. Boulder R. 12.5 40 None	Foolhen	12W,	Alder Cr.	8.1	38	7,100	None			Nil
Sec. 45, 11W, 16 Willow Cr. 16.8 43 9,000 None	Gorge (No.)	11W,	Willow Cr.	10.6	30	000,6	None			Nil
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F-the-Woods 3S, 13W, 8 Wise R. 10.6 30 8,300 Rainbow 3 8.7-9.0 Cutthroat 3 9.1-10.1 Hybrid 17 Canyon Cr. 11.2 32 8,700 Rainbow 4 10.2-14.4 35, 13W, 17 Wise R. 5.0 35 8,750 Grayling 43 7.2-10.7 Cupper) 2S, 13W, 8 Wise R. 10.6 47 8,100 Rainbow 19 7.4-13.8 8.7 11W, 4 Willow Cr. 10.6 47 8,700 None 4 10.5-16.2 8.3-10.2 8.7 11W, 21 Wise R. 15.6 20 8,700 None 4 10.5-16.2 8.3-10.2 8.7 11W, 21 Wise R. 15.6 20 8,700 None 4 10.5-16.2 8.3-10.2 8.7 11W, 21 Wise R. 28.4 35 8,800 None 4 6.1-12.9 8.8 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 8.8 11W, 5 Boulder Cr. 15.8 4 9,000 None 8.5-13.0 None 8.5 11W, 5 Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 None 8.5 11W, 5 Boulder R. 12.5 40 None 8.5-13.0 None 8.5 11W, 5 Boulder R. 12.5 40 None 8.5-13.0							Cutthroat	വ	9,3-12,6	
F-the-Woods 35, 13W, 8 Wise R. 10.6 30 8,300 Rainbow 3 8.7-9.0 Cutthroat 3 9.1-10.1 35, 11W, 17 Canyon Cr. 11.2 32 8,700 Rainbow 4 10.2-14.4 35, 13W, 17 Wise R. 5.0 30 8,150 Grayling 43 7.2-10.7 25, 14W, 26 Wise R. 10.6 47 8,100 Rainbow 19 7.2-10.7 25, 13W, 5 Wise R. 10.6 47 8,100 Rainbow 8 10.6-16.2 (Upper) 25, 13W, 6 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 45, 11W, 21 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 35, 11W, 21 Wise R. 28.4 35 8,800 None 45, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9) ROOT MOUNTAINS : (Upper) 35, 4W, 5 Boulder Cr. 15.8 4 9,000 Rainbow 8.5-13.0 abin 35, 4W, 14 S. Boulder R. 12.5 40 8,000 None							Hybrid	11	7.3-12.2	
St. 11W, 17 Canyon Cr. 11.2 32 8,700 Rainbow 4 9.1-9.6 35, 13W, 17 Wise R. 35.6 35 8,700 Rainbow 4 10.2-14.4 35, 13W, 17 Wise R. 41.9 38 8,150 Grayling 43 7.2-10.7 25, 14W, 36 Wise R. 10.6 47 8,100 Rainbow 19 7.4-13.8 35, 13W, 8 Wise R. 10.6 47 8,100 Rainbow 19 7.4-13.8 35, 13W, 21 Wise R. 16.9 30 8,700 Rainbow 7 8.9-15.0 45, 11W, 21 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 45, 11W, 21 Wise R. 28.4 35 8,800 None 45, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 35, 3W, 32 Willow Cr. 20.0 72 8,800 None 35, 4W, 5 Boulder Cr. 15.8 4 9,000 None 35, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 35, 4W, 11 S. Boulder R. 12.5 40 8,900 None	Lake-of-the-Woods	, 13W,		0	30	, 3	Rainbow	m	8.7-9.0	Poor
35, 11W, 17 Canyon Cr. 11.2 32 8,700 Rainbow 4 9.1-9.6 8,21 35, 13W, 17 Wise R. 35.6 35 8,250 Grayling 43 7.2-10.7 25, 14W, 36 Wise R. 41.9 38 8,150 Rainbow 19 7.4-13.8 35, 13W, 2 Wise R. 10.6 47 8,100 Rainbow 19 7.4-13.8 35, 13W, 2 Wise R. 16.9 30 8,300 None 4 10.6-16.2 35, 11W, 2 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 35, 11W, 2 Wise R. 28.4 35 8,800 None 45, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 35, 13W, 5 Boulder Cr. 15.8 4 9,000 None 4 6.1-12.9 35, 4W, 5 Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 35, 4W, 14 S. Boulder R. 7.1 22 9,000 None 5 9,000 No							Cutthroat	m	9.1-10.1	
35, 11W, 17 Canyon Cr. 11.2 32 8,700 Rainbow 4 10.2-14.4 35, 13W, 17 Wise R. 35.6 35 8,250 Grayling 43 7.2-10.7 25, 14W, 36 Wise R. 5.0 30 8,125 Grayling 25 8.3-10.2 (Lower) 25, 13W, 6 Wise R. 10.6 47 8,100 Rainbow 8 10.6-16.2 35, 13W, 21 Wise R. 16.9 30 8,300 None 45, 11W, 21 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 35, 11W, 21 Wise R. 28.4 35 8,800 None 35, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 35, 14W, 5 Boulder Cr. 15.8 4 9,000 Rainbow 8 8.5-13.0 35, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0							Hybrid	4	9.1- 9.6	
35, 13W, 17 Wise R. 35.6 35 8,250 Grayling 43 7.2-10.7 25, 14W, 36 Wise R. 5.0 30 8,155 Grayling 7.4-13.8 (Lower) 25, 13W, 8 Wise R. 10.6 47 8,100 Rainbow 19 7.4-13.8 (Lower) 25, 13W, 6 Wise R. 16.9 30 8,300 None 3 5, 11W, 21 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 45, 11W, 21 Wise R. 28.4 35 8,800 None 45, 11W, 21 Wise R. 28.4 35 8,800 None 35, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 (Upper) 35, 3W, 32 Willow Cr. 20.0 72 8,800 None 35, 4W, 14 S. Boulder Cr. 15.8 4 9,000 Rainbow 8.5-13.0 35, 4W, 11 S. Boulder R. 7.1 22 9,000 Rainbow 35, 4W, 11 S. Boulder R. 12.5 40 8,900 None	Lion	11W,	Canyon Cr.	11,2	32	8,700	Rainbow	4	10,2-14,4	Poor
25, 14W, 36 Wise R. 5.0 38 8,150 Rainbow 19 7.4-13.8 (Lower) 25, 13W, 8 Wise R. 5.0 30 8,125 Grayling 25 8,3-10.2 (Lower) 25, 13W, 6 Wise R. 10.6 47 8,100 Rainbow 8 10.6-16.2 25, 13W, 6 Wise R. 16.9 30 8,300 None 45, 11W, 21 Wise R. 28.4 35 8,800 None 45, 11W, 21 Wise R. 28.4 35 8,800 None 35, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6,1-12.9 (Upper) 35, 4W, 5 Boulder Cr. 15.8 4 9,000 None 8.5-13.0 None 8.5-13.0 None 8.5-13.0 None 9,000	O'Dell	13W,		35,6	35	8,250	Grayling	43	7.2-10.7	Good
9gar 35, 13W, 8 Wise R. 5.0 30 8,125 Grayling 25 8.3-10.2 (Lower) 2S, 13W, 6 Wise R. 10.6 47 8,100 Rainbow 8 10.6-16.2 2S, 13W, 6 Wise R. 16.9 30 8,300 None 3S, 11W, 21 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 4S, 11W, 21 Wise R. 28.4 35 8,800 None 3S, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 >ROOT MOUNTAINS : (Upper) 3S, 4W, 5 Boulder Cr. 15.8 4 9,000 None 3S, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 None	Sand	14W,		41.9	38	8,150	Rainbow	19	7,4-13,8	Poor
(Lower) 25, 13W, 5 Wise R. 10.6 47 8,100 Rainbow 8 10.6-16.2 25, 13W, 6 Wise R. 16.9 30 8,300 None 35, 11W, 21 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 45, 11W, 21 Wise R. 28.4 35 8,800 None 35, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 Cheper) 35, 3W, 32 Willow Cr. 20.0 72 8,800 None 35, 4W, 5 Boulder Cr. 15.8 4 9,000 None 35, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 None 35, 4W, 11 S. Boulder R. 12.5 40 8,900 None		13M,		2.0	30	8,125	Grayling	25	8.3-10.2	Poor
(Upper) 25, 13W, 6 Wise R. 16.9 30 8,300 None 35, 11W, 21 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 45, 11W, 21 Wise R. 28.4 35 8,800 None 35, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9) ROOT MOUNTAINS 2 (Upper) 35, 4W, 14 5 Boulder Cr. 15.8 4 9,000 None 35, 4W, 11 S. Boulder R. 12.5 40 8,900 None		13W,		10,6	47	8,100	Rainbow	ω	10.6-16.2	Poor
35, 11W, 21 Wise R. 15.6 20 8,700 Rainbow 7 8.9-15.0 45, 11W, 4 Willow Cr. 30.0 98 9,100 None 45, 11W, 21 Wise R. 28.4 35 8,800 None 35, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 COOT MOUNTAINS 35, 3W, 32 Willow Cr. 20.0 72 8,800 None 35, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 35, 4W, 11 S. Boulder R. 12.5 40 8,900 None	Stone (Upper)	13W,		16,9	30	8,300	None			N_1 1
45, 11W, 4 Willow Cr. 30.0 98 9,100 None 45, 11W, 21 Wise R. 28.4 35 8,800 None 3S, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 CUPPER) 3S, 4W, 5 Boulder Cr. 15.8 4 9,000 None 3S, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 3S, 4W, 11 S. Boulder R. 12.5 40 8,900 None	Tahepia	IIM	Wise R.	15.6	20	8,700	Rainbow	7	.9-15	Poor
45, 11W, 21 Wise R. 28.4 35 8,800 None 3S, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 Common Tain 3S, 4W, 5 Boulder Cr. 15.8 4 9,000 None 3S, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 3S, 4W, 11 S. Boulder R. 12.5 40 8,900 None	Tendoy	11W,	Willow Cr.	30.0	86	9,100	None			Poor
3S, 11W, 16 Canyon Cr. 4.4 10 8,600 Hybrid 4 6.1-12.9 ROOT MOUNTAINS 3S, 3W, 32 Willow Cr. 20.0 72 8,800 None 3S, 4W, 5 Boulder Cr. 15.8 4 9,000 None abin 3S, 4W, 11 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 3S, 4W, 11 S. Boulder R. 12.5 40 8,900 None	${\tt Torrey}$	11W,		28.4	35	8,800	None			Poor
3S, 3W, 32 Willow Cr. 20.0 72 8,800 None (Upper) 3S, 4W, 5 Boulder Cr. 15.8 4 9,000 None 3S, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 3S, 4W, 11 S. Boulder R. 12.5 40 8,900 None	Vera	11W,	Canyon Cr.	•	10	8,600	Hybrid	4	.1-12.	Poor
3S, 3W, 32 Willow Cr. 20.0 72 8,800 None 3S, 4W, 5 Boulder Cr. 15.8 4 9,000 None abin 3S, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 3S, 4W, 11 S. Boulder R. 12.5 40 8,900 None	TOBACCO ROOT MOUNT	AINS								
(Upper) 3S, 4W, 5 Boulder Cr. 15.8 4 9,000 None abin 3S, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 3S, 4W, 11 S. Boulder R. 12.5 40 8,900 None	Bell	3W,	Willow Cr.	20.0	72	8,800	None			N:TN
Abin 3S, 4W, 14 S. Boulder R. 7.1 22 9,000 Rainbow 8.5-13.0 3S, 4W, 11 S. Boulder R. 12.5 40 8,900 None	Boulder (Upper)	4W,	Boulder Cr.	15,8	4	000,6	None			Nil
3S, 4W, 11 S. Boulder R. 12.5 40 8,900 None	Lost Cabin	4W,	Boulder	7.1	22	000,6	Rainbow	8,5-	13.0	Nil
		3S, 4W, 11		12,5	40	8,900	None			Nil

Scale samples were not taken from fish from Ferguson Lake. Examination of scales from Sand Lake fish revealed some natural reproduction occurs. Most of the fish taken were age II and IV, which corresponded to the years they were planted.

Scale samples were obtained from fish from several lakes for age and growth analysis. The scales were also valuable in verifying whether or not natural reproduction occurs. Nearly all fish attained a length of seven inches in their third growing season, which is about average for mountain lakes in Montana. Age and growth data is presented in Table 2.

Table 2. Age and growth of fish from lakes in the Pioneer Mountain Range. (Figure in parentheses is the number of fish in the sample).

					AGE		
Lake	Species	I	II	III	IV	V	VI
Abundance	Hybrid 1/	2.4	6.7	11.2	13.9		
		(3)	(3)	(2)	(1)		
Baldy	Rainbow	2.1	6.0	9.8	12.7	14.1	
		(6)	(6)	(6)	(2)	(1)	
Canyon	Cutthroat	3.0	6.1	8.3	8.8		
		(7)	(7)	(7)	(2)		
	Hybrid	3.0	6.2	8.4	10.5	13.6	
		(14)	(14)	(14)	(3)	(1)	
Crescent	Hybrid	2.7	6.3	10.1	14.0	14.3	
		(4)	(4)	(3)	(2)	(1)	
Grayling	Rainbow	2.3	5.0	7.6	9.4	11.1	
		(7)	(7)	(6)	(3)	(1)	
	Cutthroat	2.7	5.7	8.3	10.3		
	~	(5)	(5)	(4)	(1)		
	Hybrid	2.6	5.6	8.4	10.2		
		(10)	(10)	(7)	(1)		
Lion	Rainbow	2.8	5.2	8.2	10.9	12.6	14.3
		(4)	(4)	(4)	(3)	(2)	(1)
O'Dell	Grayling	2.7	6.3	8.1	9.6		
		(17)	(17)	(13)	(1)		
Sand	Rainbow	3.7	8.1	10.9	12.0		
		(12)	(11)	(6)	(4)		
Tahepia	Rainbow	2.0	5.8	9.8	11.9	13.8	
		(7)	(7)	(5)	(4)	(2)	
Vera	Hybrid	3.4	7.2	10.4			
		(4)	(2)	(1)			

^{1/} Hybrid (rainbow trout-cutthroat trout cross).

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Growth of grayling in O'Dell Lake is considerably slower than in other Montana lakes. Most of the O'Dell Lake grayling were in poor body condition. The size of the grayling, growth rate, and body condition are quite similar to the grayling collected from Lake Agnes in June, 1966 (Wipperman, 1967 1/). Scales were not taken from grayling from Schwinegar Lake, but the size and condition of the fish were comparable to those in O'Dell Lake. Several grayling near a foot in length and weighing up to one-half pound were caught from North Bobcat Lake. Scales were not taken from these fish, but the dominant size groups in the catch indicated faster growth than in O'Dell Lake.

Considerable effort is required to reach most lakes in the Pioneer Mountains from the ground. Trails provide access to most of the lakes, but are steep and poorly maintained. Only Schwinegar Lake can be reached with a four-wheel drive vehicle. A good trail provides access to the lakes in the Canyon Creek drainage.

TOBACCO ROOT MOUNTAIN LAKES

Survey data for the lakes in the Tobacco Root Mountains is summarized in Table 1. Only one of the four lakes surveyed supported a fish population. Rainbow trout were captured in Lost Cabin Lake, and scale samples indicated that all four fish were of the same age class. Spawning areas were classified as nil for all lakes surveyed. Depth was considered a limiting factor in only one lake, Upper Boulder. Two lakes, Bell and Louise, were planted with cutthroat trout in 1967, following the surveys. Access is limited to trails.

Prepared by Al Wipperman and Al Elser	Approved by Leage & Holton
Date January 22, 1968	

^{1/} Wipperman, A. H. 1967. Inventory of the Waters of the Project Area. Job Completion Report, Federal Aid in Fish and Wildlife Restoration Acts. Montana Project No. F-9-R-15, Job I.