

MONTANA DEPARTMENT OF FISH AND GAME  
FISHERIES DIVISION

## JOB PROGRESS REPORT

State Montana  
Project No. F-32-R-9 Title Helicopter Mountain Lake Survey  
Job No. I-c Title Helicopter Mountain Lake Survey - Region 3  
Period Covered July 1, 1972 through June 30, 1973

## ABSTRACT

Twelve mountain lakes were investigated in the Elkhorn and Absaroka Mountains. Ten lakes were found to have trout present. Fish management recommendations are presented.

## OBJECTIVES

The purpose of this survey is to investigate mountain lakes inaccessible or difficult to reach by wheeled vehicles and determine their potential for sport fisheries.

## PROCEDURES

A pontoon-equipped helicopter carried the pilot, biologist and survey equipment to and from the lakes. Lake survey information was recorded on Montana Department of Fish and Game survey forms. Temperatures were obtained with a thermister thermometer. Conductance, alkalinity and pH for some lakes were measured by personnel of the State Chemistry Laboratory, Helena, from water samples collected about two hours earlier. A Lowrance Fish Lo-K-Tor was used to obtain depths on transects across the lakes. Depths are plotted on sketch maps. Monofilament gill nets 125 ft. x 5 ft. with graduated mesh 3/4" to 2" square measure were used to sample fish populations. One gill net was set about 23 hours (set one morning and lifted next morning) in each lake in the Elkhorn Mountains except one considered through aerial and on-site observation to be barren of fish. One net was set for 23 to 24 hours in each of three Absaroka Mountain Lakes (Fire, Crystal and Pine Creek Lakes), and a net was set in each of the other four Absaroka Mountain Lakes (Charlie, White, Fawn, Fish and Knox Lakes) over a two-day period as inclement weather grounded the helicopter and prevented pickup after one day. The field work on the lakes in the Elkhorn Mountains was done on August 11 and 12, 1972 and field work on lakes in the Absaroka Mountains was done between August 2 and 6, 1972.

## FINDINGS

Lakes in Elkhorn Mountains

Glenwood Lake (estimated surface area - 10 acres)

Temperature and chemical data on Glenwood Lake are presented in Table 1.

No fish were caught in an overnight gill net set. Fifteen feet was maximum depth found; most of the lake was less than ten feet deep.

Hidden Lake (estimated surface area -  $7\frac{1}{2}$  acres)

This lake was planted with Yellowstone cutthroat trout in 1969. Tom Warren, a Department of Fish and Game employee, reported he observed a "good" population of trout when he fished the lake in 1971. Vern Craig, also a department employee, reported seeing one trout when he was at the lake in spring 1972. It is believed few or no fish were present at the time of the current survey as no fish were seen under ideal conditions for visual observations. The lake was only six or seven feet deep, the water was clear and calm, and the sun was shining. Apparently there was a severe winterkill during the winter of 1971-72.

Leslie Lake (estimated surface area - 4 acres)

Temperature and chemical data on Leslie Lake are presented in Table 1. Nine Yellowstone cutthroat trout, with an average length of 9.4 inches and an average weight of .30 pound, were taken in the overnight gill net set. These were from plants made in 1968 and/or 1970. A sportsman reported catching a 3-pound brook trout from the lake in the summer of 1972. This is plausible since in recent years this was a brook trout lake. Twenty-five feet was maximum depth found; much of the lake was 15 feet deep or deeper.

Tizer Lakes (estimated surface area: - Upper Tizer Lake -  $2\frac{1}{2}$  acres; Lower Tizer Lake - 5 acres)

These lakes were not netted. However, from the hovering helicopter many fish were seen rising in each lake about 7:00 a.m. on August 11 and 12, 1972. These "rises" were assumed to be brook trout as these lakes have been populated with this species for many years.

Table 1. Temperature and chemical data collected from lakes in Elkhorn Mountains, August 11, 1972

	<u>Glenwood Lake</u>	<u>Leslie Lake</u>
Water Temperature *		
Time	7:05 a.m.	7:40 a.m.
Surface	61°F.	56°F.
Bottom	61°F.	51°F.
Ph-th Alkalinity		
Surface	0	0
12 feet deep	-	0
Mo Alkalinity		
Surface	20 ppm	20 ppm
12 feet deep	-	15 ppm
pH		
Surface	7.4	7.9
12 feet deep	-	7.6
Conductance		
Surface	23 umhos	-
12 feet deep	-	36 umhos

\* Recent weather - hot and dry

## Lakes in Absaroka Mountains

### Charlie White Lake

One overnight gill net set produced 39 cutthroat trout ranging in length from 6.2 to 12.2 inches and in weight from 0.09 to 0.55 pound. The average length and weight were 9.4 inches and 0.31 pound. The lake measured 20.5 acres from an aerial photo. Twenty-nine feet was the maximum depth measured. Charlie White Lake is popular with backpackers and fishing guides in this area. It has good trail areas and is located in a long, sloping valley at approximately 8,200 feet elevation.

### Crystal Lake

This lake measured 3.2 acres; it has a maximum depth of approximately 33 feet. Ten cutthroat trout were taken ranging from 6.7 to 14.2 inches and weighing from 0.11 to 0.95 pound. It is a remote lake at 9,300 feet elevation with poor access. Cutthroat fingerlings were planted in 1969. Age classes I and II were represented in the sample of fish taken during this survey.

### Fawn Lake

Fawn Lake is located in the Bear Creek drainage north of Jardine, Montana. Sixty-three brook trout were taken in one overnight gill net set. They averaged 7.3 inches and 0.19 pound. The largest trout taken was 11.5 inches long. The lake measured 3.9 acres with 22 feet being the maximum depth sounded. Fawn Lake is accessible from Jardine by a good road and trail.

### Fire Lake

Five cutthroat trout were taken in one overnight gill net set. They ranged from 6.5 to 12.5 inches and from 0.09 to 0.75 pound. They averaged 9.8 inches and 0.40 pound. Fire Lake measured 6.4 acres with a maximum depth of approximately 90 feet. Cutthroat trout fingerlings were planted in this lake in 1969. Age classes I and II were represented in the fish sample taken during this survey. Fire Lake is located at 9,400 feet elevation with very difficult access.

### Fish Lake

Fish Lake is located in the Bear Creek drainage at the base of Monitor Peak. It measured 7.2 acres and the maximum depth sounded was 12 feet. Three cutthroat trout, averaging 6.1 inches and 0.10 pound were taken. The lake is shallow but appears to have some potential for a year-round fishery. The origin of the cutthroat trout taken is unknown. The inlet and outlet both could provide a limited area for spawning.

### Knox Lake

Sixty brook trout were taken, averaging 7.9 inches and 0.22 pounds. Fourteen feet was the maximum depth sounded and the area is approximately 9.3 acres. Knox Lake is popular among the local people because it has easy access and the brook trout are easy to catch.

### Pine Creek Lake

This lake is located in a very steep, rugged drainage at 9,032 feet. It has received periodic plantings of fingerling cutthroat trout. Twenty-four cutthroat were taken in one overnight gill net set. They averaged 8.9 inches and 0.23 pounds. The lake measured 37.8 acres and the maximum depth sounded was 100 feet. The inlet and outlet streams probably provide no area for spawning. The lake receives relatively heavy use during the summer months.

## RECOMMENDATIONS

### Lakes in Elkhorn Mountains

#### Glenwood Lake

Plant with fingerling Yellowstone cutthroat trout every other year.

#### Hidden Lake

Being shallow, this lake appears marginal at best. When fingerling Arctic grayling are available and are being transported to other waters in the area, 1,000 might be planted in this lake on a trial basis. Grayling survive low winter oxygen conditions better than trout. If they survived they would add diversity to fishing in the Elkhorn Mountains.

#### Leslie Lake

Continue to plant every other year with fingerling Yellowstone cutthroat trout.

#### Tizer Lakes

Continue to manage as brook trout lakes.

### Lakes in Absaroka Mountains

#### Charlie White Lake

Continue present management as a self-sustaining cutthroat trout fishery.

#### Crystal and Fire Lakes

Management as cutthroat trout lakes should be continued. These lakes should be considered low priority on the planting schedule because difficult access keeps fisherman use light.

#### Fawn Lake

Arctic grayling fingerlings should be planted at the earliest convenience. The lake should be resurveyed three years after the plant is made. If a grayling fishery could be established, fishermen would have a choice between grayling, brook trout and Yellowstone cutthroat trout in this area.

Fish and Knox Lakes

Continue to manage as brook trout lakes.

Pine Creek Lake

Plant 1,500 to 2,000 fingerling Yellowstone cutthroat trout every other year.

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Waters referred to:

17-8944 - Glenwood Lake  
17-9104 - Hidden Lake  
10-8840 - Leslie Lake  
17-9696 - Upper & Lower Tizer Lakes  
22-7452 - Charlie White Lake  
22-7616 - Crystal Lake  
22-7857 - Fawn Lake  
22-7860 - Fire Lake  
22-7885 - Fish Lake  
22-8302 - Knox Lake  
22-8904 - Pine Creek Lake