MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS

FISHERIES DIVISION
JOB PERFORMANCE REPORT

STATE: Montana

PROJECT TITLE: Lake Fisheries Inventory

PROJECT NO.: F-33-R-19

JOB NO.: I-b

JOB TITLE: Measure annual trends in recruitment and migration of kokanee populations and identify major factors affecting trends.

PERIOD COVERED: July 1, 1984 to June 30, 1985

OBJECTIVES

It shall be the primary objectives of the job to establish relative abundance of the six major fish species with the present segment emphasizing kokanee, and to identify the environmental factors affecting population changes.

ACCOMPLISHMENTS

All the procedures outlined for the present segment of this job were accomplished. Population indices for kokanee 10 inches and larger were established for 1984. These indices were established by reviewing magnetic tapes collected during September on over 70 miles of acoustic transects. A weighted average of 40.94 fish/hectare (16.58 fish/surface acre) was determined from the 11 established transects on the lake. This kokanee density collectively represents 25.73 fish/ha (10.42 fish/sa) of "small" salmon ranging in size from 203 to 305 mm (8 to 12 inches) and 15.21 fish/ha (6.16 fish/sa) of "large" fish ranging from 395 to 432 mm (12 to 17 inches). These 1984 figures represent a fourfold increase of large fish targets and a decrease by one-third of the small fish targets when compared to the 1983 data. These data would suggest that a good number of salmon would be available for the 1985 fishing season and that fewer numbers would be available the following year, 1986.

Indices of smaller "2 to 4 inch" juvenile kokanee were collected during October and November. All the acoustical data during the period was collected with the portable sounding unit aboard various regional boats. The research boat, the "Dolly Varden", was inspected by a marine surveyor in July and declared unsafe without substantial repairs. She was sold and plans, specifications, and justification for funding were prepared for purchase of a replacement boat. The loss of the "Dolly Varden" did not allow species verification with the use of the mid-water trawl.

Age composition of mature salmon were determined from 965 otolith bones collected on 14 major spawning sites. These sites represent 5 river and 9 lakeshore spawning areas. Four-year old salmon dominated both the river and

lakeshore areas, over 80 percent of the spawners in all areas. The average size of the four-year old males in the lake was 375 mm (14.8 inches) while river males averaged 359 mm (14.1 inches).

Growth measurements were calculated using the Monastyrsky method on 240 scale samples collected during creel checks on the lake. The summary will represent the present year's growth patterns and will be used when making a long-term evaluation of past growth data.

Extreme cold weather during late January cooled lake temperatures, and the lake became completely frozen over on February 2. Other recent years of record of ice cover on the lake include 1946, 1962, 1969, and 1979. The ice cover offered added fishing opportunity to the Skidoo Bay kokanee anglers. Monitoring of this specialized winter fishery was accomplished in coordination with BPA contract personnel. Fishing success rates nearly doubled previously observed success rates both for kokanee and lake trout fishing. An analysis of the winter fishery is being prepared. An analysis of stomach contents from 20 kokanee taken in Skidoo Bay during February indicated the dominant food item was egg-bearing Diaptomus. These results were similar to the food analysis conducted during the 1981 winter season. One kokanee stomach contained the first record for Flathead Lake of oppossum shrimp (Mysis) being consumed by salmon; this fish was collected in Skidoo Bay during February.

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Date: August 29, 1985