F-07/08-48

F-07/08

MONTANA FISH AND GAME DEPARTMENT
FISHERIES DIVISION

PROSPECTUS ON FLATHEAD LAKE FISHERIES STUDY

NEED FOR STUDY:

Flathead Lake is Montana's most important fishing lake in terms of fishermen-days. Due to its size (126,000 surface acres, 400 feet maximum depth) comparatively little is known of the fish population. Information on species composition of the fish, their distribution in the lake from season to season and an understanding of yearly changes in the fish population is vital if the Montana Fish and Game Department is to fulfill its fisheries management responsibilities. Unquestionably fish management based on facts can increase the harvest of sport fish from Flathead Lake.

OBJECTIVE OF STUDY:

The initial objective will be to inventory the fish population of Flathead Lake to determine: (1) relative abundance of various species and if there are separate populations or races of individual species, (2) seasonal distribution of sport fish, (3) year to year trends in fish population numbers and factors affecting them, (4) adequacy of spawning facilities, and (5) what portion of the sport fish are being harvested by fishermen.

Incidental to this, information will be obtained on physical features of the lake: depths, currents and temperatures. Also it is planned that basic limnological data will be collected at the time fish are sampled: for example, temperature, dissolved oxygen and conductivity.

COOPERATIVE ASPECTS OF STUDY:

Based on discussions with Dr. C. J. D. Brown of Montana State University and Dr. Arden Gaufin, who is associated with University of Montana's Yellow Bay Biological Station, it is anticipated this will be a cooperative study between Montana Fish and Game Department, Montana State University and the University of Montana. It is proposed the fisheries studies be undertaken by Delano Hanzel and candidates for Ph.D's in fisheries from Montana State University, who would be supported by Montana Fish and Game Department. The more intensive limnological work will probably be undertaken by one or more of Dr. Gaufin's and Dr. Brown's students who the department could assist to the extent of allowing use of the department boat and equipment.

Once the project is underway the universities and the department will be in a position to seek National Science Foundation funds for certain phases.

Hanzel, as Project Leader, will not only be responsible for individual fisheries studies, but will also be project coordinator. He will serve as a clearing house for information and endeavor to coordinate activities of the cooperators.

PLAN OF STUDY - FIRST YEAR:

It is anticipated a suitable vessel will be available early in the 1966-67 fiscal year. When on hand, the immediate need will be to familiarize personnel with its operation and operation of its gear, and to establish systematic procedures for fish population sampling.

Initially, transverse transects will be established and each transect sampled in each of the four seasons. Five or six transects should suffice with emphasis on the shoreline and important bays. A mile of gill net will be set along each transect. This will require about a month in each season of the year. Another month of each three-month season will be devoted to exploratory fishing, including improving methods for collecting fish, and the third month will be devoted to incidental sampling and to data analysis. The systematic fishing of transects should yield much of the desired information on fish distribution throughout the year and be a source of material for age-growth and other fisheries studies.

At least part of the exploratory fishing will be devoted to sampling areas where fish are known to congregate. The following is a tentative schedule for initial studies of this nature:

April through June - Work on north end of lake. Collect and tag cutthroat trout and Dolly Varden running into Flathead River. Collect young salmon dropping down into lake from river to establish trends in numbers as basis for future comparisons.

July and August - Work from mid-lake down to southern portions including Big Arm. Use sampling gear to locate lake trout concentrations. Also collect kokanee for marking in a study to determine spawning area preferences of kokanee from various portions of lake. Collect largemouth bass for population trends.

September to mid-November - Work in north end of lake sampling cutthroat trout and Dolly Varden returning to lake and kokanee leaving lake. This will include tagging to determine subsequent movement, and recapture of fish previously tagged. Sampling will be the basis for establishing population trend figures.

Mid-November through December - Sample Narrows Area and south end of lake including Skiddo and Yellow Bays to locate Dolly Varden, lake trout and lake whitefish. Locate kokanee spawning concentrations and collect fish for state egg take.

January through March - Sample mid-lake, Somers, Big Arm and Skiddo Bays in effort to locate kokanee, lake whitefish, cutthroat trout, lake trout and Dolly Varden in this season.

COST - (see attached):

The anticipated cost for the initial year of the project is $60,000, including $35,000 for the vessel. Funds are available for this in the fish division 1966-67 budget. After the vessel and major gear are purchased, it is anticipated the Fish and Game Department's cost for the project will be about $25,000 per year.

BENEFITS:

This project will yield basic information on the numbers, distribution and fluctuations of fish in Flathead Lake. It will enable us to interpret what is happening to the populations as the result of natural or man-made changes in the habitat. For example, are numbers of desirable fish increasing or decreasing? Are individual fish getting larger or smaller?

Such information alone can be the basis for informing sports fishermen how to improve their harvest. Chances are sport fishes in the lake are now only lightly harvested so accurate information on where fish are, and at what depths, could be a boon to fishermen. The little work we have done so far in locating rocky drop-off areas attractive to lake trout has paid handsome dividents.

In addition, and possibly most important, information from the project will be the basis for determining if new fisheries management measures should be undertaken as a means for increasing the numbers or possibly individual size (thinking of perch) of sport fish in the lake. Such measures might include: encouragement of commercial fisheries to harvest non-sport fish, development of spawning areas, and stocking.

Prepared by George D. Holton and Delano A. Hanzel

Date October 18, 1965

F-33-R-1

PLANS, SPECIFICATIONS AND ESTIMATES
RESEARCH

A. Name of Project: Flathead Lake Fishery Study

B. Work Planned:

1. See prospectus

C. Supervision:

1. Leader: Delano A. Hanzel, Senior Biologist
Project Biologist: Unassigned sub-professional

2. Supervisors: Frank H. Dunkle, State Fish and Game Director
Keith A. Freseman, Deputy Director
Arthur N. Whitney, Chief of Fisheries Division
George D. Holton, Chief Fisheries Biologist

D. Summary of Costs:

1. Preliminary costs: None

2. Estimated expenditures: From July 1, 1966 to June 30, 1967

(a) SALARIES AND WAGES

Name	Title	Period	Rate	Total
Delano Hanzel	Project leader	12 mo.	$685.00	$8,220.00
Unassigned	Sub-professional	12 mo.	500.00	6,000.00
				$14,220.00

(b) TRAVELING EXPENSES:

(1) Subsistence

Name	Title	Period	Rate	Total
Delano Hanzel	Project leader	12 mo.	$ 40.00	$480.00
Unassigned	Sub-professional	12 mo.	40.00	480.00
				$960.00

(2) Travel by Personal Automobile

Name	Estimated Mileage	Rate	Total
Project Personnel	1,000 mi.	.08/mi.	$ 80.00

(3) Common Carrier and Miscellaneous Expenses:

Name	Total
Project Personnel	$ 100.00

(c) EQUIPMENT:

Type	Unit Cost	Total
Boat - 35 ft, diesel inboard equipped with Sonar and geared for handling commercial netting gear		$35,000.00
5-1,000-ft. gill nets	$800.00	4,000.00
		$ 39,000.00

(d) OPERATION OF EQUIPMENT:

Type	Unit Cost	Total
Motor, inboard	Fuel & Lube	$ 700.00
Boat repair, maintenance		300.00
		$1,000.00

(e) RENTALS:

Type	Period	Rate	Total
Dockage	12 mo.	$30.00/mo.	$ 360.00
Automobile	10,000 mi.	.10/mi.	1,000.00
			$ 1,360.00

(f) MATERIALS AND SUPPLIES:

Item	Number	Unit Cost	Total
Rope	5,000 ft.	.10/ft.	$ 500.00
Misc. repair, maintenance, equipment			300.00
Office Supplies			25.00
			$ 825.00

(g) OTHER EXPENSES:

Item	Total
Telephone and telegraph	$ 75.00
Freight	1,000.00
Retirement - PERS 3.3%	469.26
Social Security 3.655%	350.88
Industrial Accident 1.6%	227.52
	$2,122.66

3. Summary of estimated costs:

From Item D-2(a)	Salaries & wages	$14,220.00
D-2(b)	Traveling expenses	1,140.00
D-2(c)	Equipment	39,000.00
D-2(d)	Operation of equipment	1,000.00
D-2(e)	Rentals	1,360.00
D-2(f)	Materials & Supplies	825.00
D-2(g)	Other expenses	2,122.66
Total costs above enumerated		$59,667.66
Contingency Fund		332.34
Total estimated costs of segment		$60,000.00

PLANS, SPECIFICATIONS AND ESTIMATES
RESEARCH

A. Name of Project: Flathead Lake Fishery Study

B. Work Planned:

1. See prospectus

C. Supervision:

1. Leader: Delano A. Hanzel, Senior Biologist
Project Biologist: Unassigned sub-professional

2. Supervisors: Frank H. Dunkle, State Fish and Game Director
Keith A. Freseman, Deputy Director
Arthur N. Whitney, Chief of Fisheries Division
George D. Holton, Chief Fisheries Biologist

D. Summary of Costs:

1. Preliminary costs: None

2. Estimated expenditures: From July 1, 1967 to June 30, 1968

(a) SALARIES AND WAGES:

Name	Title	Period	Rate	Total
Delano Hanzel	Project leader	12 mo.	$685.00	$8,220.00
Unassigned	Sub-professional	12 mo.	500.00	6,000.00
Unassigned	Graduate student	12 mo.	250.00	3,000.00
				$17,220.00

(b) TRAVELING EXPENSES:

(1) Subsistence:

Name	Title	Period	Rate	Total
Delano Hanzel	Project leader	12 mo.	$40.00	$ 480.00
Unassigned	Sub-professional	12 mo.	40.00	480.00
Unassigned	Graduate student	8 mo.	40.00	320.00
				$1,280.00

(2) Travel by personal automobile:

Name	Est. Mileage	Rate	Total
Project Personnel	4,000 mi.	.08/mi.	$ 320.00

(3) Common Carrier and Miscellaneous Expenses:

Name	Total
Project Personnel	$ 200.00