DESCRIPTIVE LIMNOLOGY OF LAKE 120, A MEROMICTIC LAKE ON THE PRECAMBRIAN SHIELD IN NORTHWESTERN ONTARIO

by

PAUL CAMPBELL

A thesis
submitted to the Faculty of Graduate Studies
in partial fulfilment of the requirements for the
degree of Master of Science

Department of Zoology
University of Manitoba
Winnipeg, Manitoba
Canada

"DESCRIPTIVE LIMNOLOGY OF LAKE 120, A MEROMICTIC LAKE ON THE PRECAMBRIAN SHIELD IN NORTHWESTERN ONTARIO"

by

PAUL CAMPBELL

A dissertation submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements of the degree of

MASTER OF SCIENCE

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

RATIONALE

Detailed studies have been carried out on the effects of logging stream watersheds, for example, Likens *et al.* (1970), Bormann *et al.* (1974) or Aubertin and Patric (1974). However, little work of this nature has been directed towards lakes. The Experimental Lakes Area (ELA) in Northwestern Ontario (see Volume 28, No. 2, J. Fish. Res. Bd. Canada) provided an ideal location for such a lake study since excellent field facilities were available in an area which was actively being logged by the Minnesota and Ontario Pulp and Paper Company (MANDO).

Lake 120 (Figure 1) located southeast of Kenora, Ontario, (93°50'W, 49°39'N) was chosen in 1968 for this study for a number of reasons. It was estimated by MANDO that its watershed would be logged in 1970-71 which allowed 2-3 years to describe the lake prior to any disturbance. From a practical point of view, Lake 120 was of the type that would most typically be deemed important economically or aesthetically; that is, the water is relatively clear and of high quality and the lake is of such a depth and morphology that thermal stratification occurs during the summer. Hydrologically, the system appeared to be a relatively simple one. The lake is a headwater lake (see map insert Volume 28, No. 2, J. Fish. Res. Bd. Canada) in an apparently sealed granite basin and the narrow (approximately 20 meters) outflow channel with bedrock sides allowed the measurement of discharge (Figure 2). There is little littoral vegetation in the lake and the soils and terrestrial vegetation are rather uncomplicated.