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# INTERPRETATION OF AN ECOLOGICAL DATA BASE USING THE CANADA LAND DATA SYSTEM

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J. Thie and N. Chartrand  
Lands Directorate  
Environment Canada  
Ottawa, Ontario

G. F. Mills  
Canada-Manitoba Soil Survey  
University of Manitoba  
Winnipeg, Manitoba

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## ABSTRACT

*An integrated ecological land data base provides a great flexibility in interpretations to resource planners and managers. The wide variety of questions that can be asked of and answered instantaneously by such a data base is demonstrated through interactive analysis capabilities of the Canada Land Data System (CLDS). For this purpose the CLDS was adapted to store and analyse ecological data for an area of about 1800 km<sup>2</sup> mapped by the Manitoba Northern Resource Information Program. This paper was originally written as background material for an Interactive Graphics Display demonstration given at a CCELC workshop in Victoria.*

## RÉSUMÉ

*Une base intégrée de données écologiques sur les terres permet beaucoup de latitude d'interprétation aux planificateurs et aux gestionnaires des ressources. L'éventail des questions qu'on peut poser et auxquelles on peut obtenir une réponse immédiate grâce à pareille base est mis en évidence par le potentiel d'analyse interactive du Système de données sur les terres du Canada. Ce système a été adopté pour accumuler et analyser des données écologiques visant une superficie de terrain d'environ 1800 km<sup>2</sup> qui a été cartographiée dans le cadre du programme manitobain d'information sur les ressources du Nord. Le présent document fournit les assises d'une démonstration d'affichage graphique interactif qui a eu lieu à l'occasion d'un atelier tenu par le CCCET à Victoria.*

## INTRODUCTION

In the past, most inventories and surveys were carried out to answer specific resource management questions. The single-disciplinary approach evolved into a multidisciplinary one when it became apparent that multiple land resource demands existed and that land use conflicts were common.

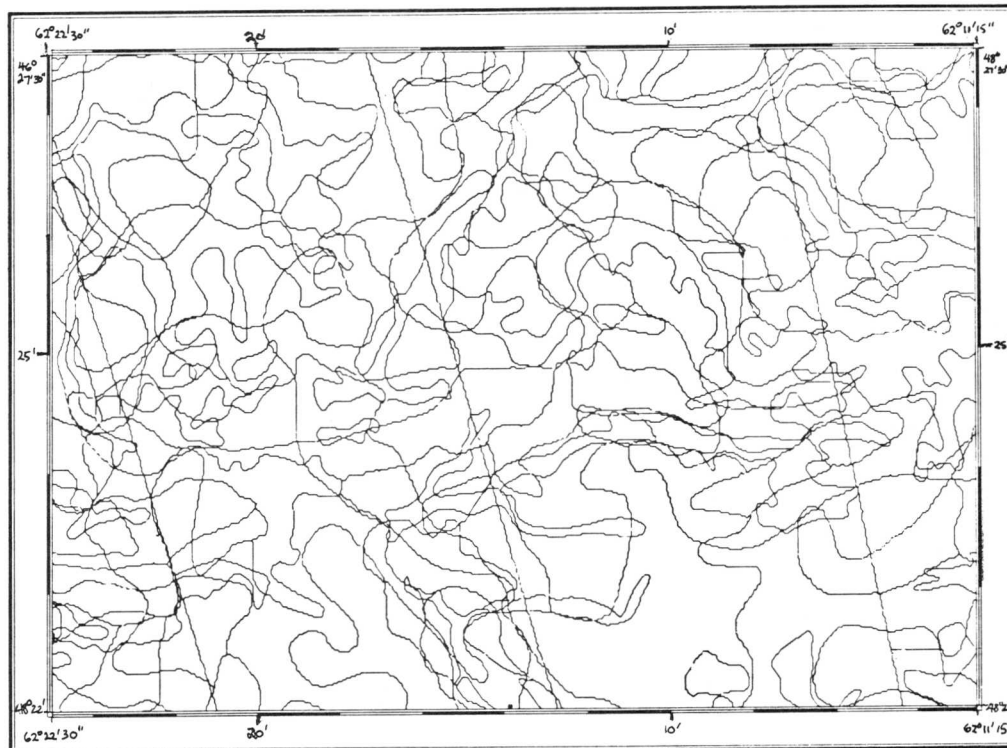
The Canada Land Inventory (CLI) project reflects the public perception, in the fifties and sixties, of what type of resource management was required to solve some of Canada's land use problems. This multidisciplinary survey provides land capability information for Forestry, Agriculture, Wildlife (waterfowl and ungulates), Sportfish, Recreation, and Present Land Use information.

In practice, however, multidisciplinary surveys such as the CLI answered only a limited number of the questions which planners ask of a data base. The use of this data base is restricted for two reasons:

- (1) The inventory describes the resource potential for only a limited number of disciplines.
- (2) The original ecological data, which formed the basis for the land capability rating, usually was not reported on and is therefore essentially not available for 'extra' analysis.

A third problem results from the fact that non-integrated single- and multi-disciplinary surveys create units for management and planning which, at the same scale, may show similarities, but are never identical. Overlaying maps, as part of a planning exercise, generates many boundary units with little or no significant meaning (Figure 1).

Ecological (biophysical) land classification methodology was originally developed to form the basis for an extension of the CLI in northern areas. Coverage of large inaccessible areas was contemplated in a relatively short period of time. Classification and operational approaches would have to allow the creation of a



*Figure 1: A multiple overlay of 1:50,000 scale CLI maps (reduced in this figure) showing forestry, agriculture, waterfowl, recreation, present land use and administrative boundaries.*

data base for resource management at a reasonable cost. Considering the experience with the CLI data and reflecting the new perception offered by integrated, environmental resources management, it is not surprising that an ecologically-based integrated survey approach evolved. Though the extension of the CLI did not materialize, ecological (biophysical) land surveys have been carried out in many parts of Canada by a wide range of agencies (CCELC, 1977). Initially, primarily CLI-type interpretations have been attempted. However, due to the integrated ecological basis, the data lends itself to a far wider range of interpretations as well demonstrated by Jurdant et al (1977).

To demonstrate the flexibility of interpretation of an ELC data base to potential users, a pilot study was carried out by the Lands

Directorate (Environment Canada) and the Manitoba Northern Resource Information Team. This study was also intended to demonstrate the effectiveness of the computer storage and retrieval of ELC information. One 1:125,000 - scale biophysical map (Figure 2) was stored in the Canada Land Data System. The complex geomorphology legend (Figure 5) and soil and vegetation legends (Figure 3) are stored in such a way that each parameter can be retrieved and mapped separately or in combinations with one or more other parameters.

#### NORTHERN RESOURCE INFORMATION PROGRAM IN MANITOBA

A systematic biophysical land classification of Northern Manitoba was initiated in July 1974. A detailed description of this program is given