

# AN EFFECTIVE MANAGEMENT TOOL

The *Ecological Land Classification Hierarchy* is one of the information tools used to plan forest operations and prepare management plans in conformity with the principles of biodiversity conservation and sustainable development. The system enables forest managers to apply an integrated resource management approach to their planning activities. It is based on a forest heritage development perspective that should be adopted by all public and private forest managers and stakeholders.

## PRINCIPAL PRODUCTS AND DOCUMENTS

- Integrated forest inventory maps to a scale of 1:20,000 showing ecological types, surface deposits and drainage
- Surficial deposit maps to a scale of 1:50,000
- Land district maps to a scale of 1:250,000 and fact sheets
- Maps of southern Québec's regional landscapes to a scale of 1:1,250,000 and fact sheets
- Maps of southern Québec's land regions and subregions to a scale of 1:1,250,000
- Maps of Québec's bioclimatic domains and vegetation zones
- Ecological classification reports by bioclimatic domain
- Field guides for identifying ecological types by land region

Note: All these products, except for the map of bioclimatic domains and vegetation zones, cover southern Quebec only.

## MINISTÈRE DES RESSOURCES NATURELLES DE LA FAUNE ET DES PARCS

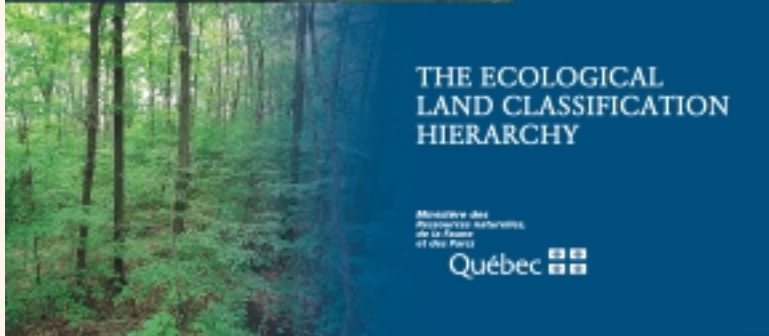
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The *Ecological Land Classification Hierarchy* and its derivatives were made possible by the efforts of many people who have worked on this vast project over the years, and continue to do so. They include: Denis Alain, Christian Bédard, Jean-Pierre Berger, Jean-François Bergeron\*, Jacques Blouin, Héléne D'Avignon, André Faucher, Caroline Flaschner, Claude Gagné, Jocelyn Gosselin, Pierre Grondin\*, Yves Landry, Pierre Leboeuf, Gaëtan Lord, Anne Morissette, Jean Noël, Philippe Racine, Denis Robert\*, André Robitaille\*, Normand Routhier, Jean-Pierre Saucier\*, Lynda Simard, Sylvie Tremblay, Eric Vaillancourt. Many other people were also involved in data collection and analysis.

- Responsible for concept development and methods.



## THE ECOLOGICAL LAND CLASSIFICATION HIERARCHY

Ministère des  
Ressources naturelles,  
de la Faune  
et des Parcs

Québec

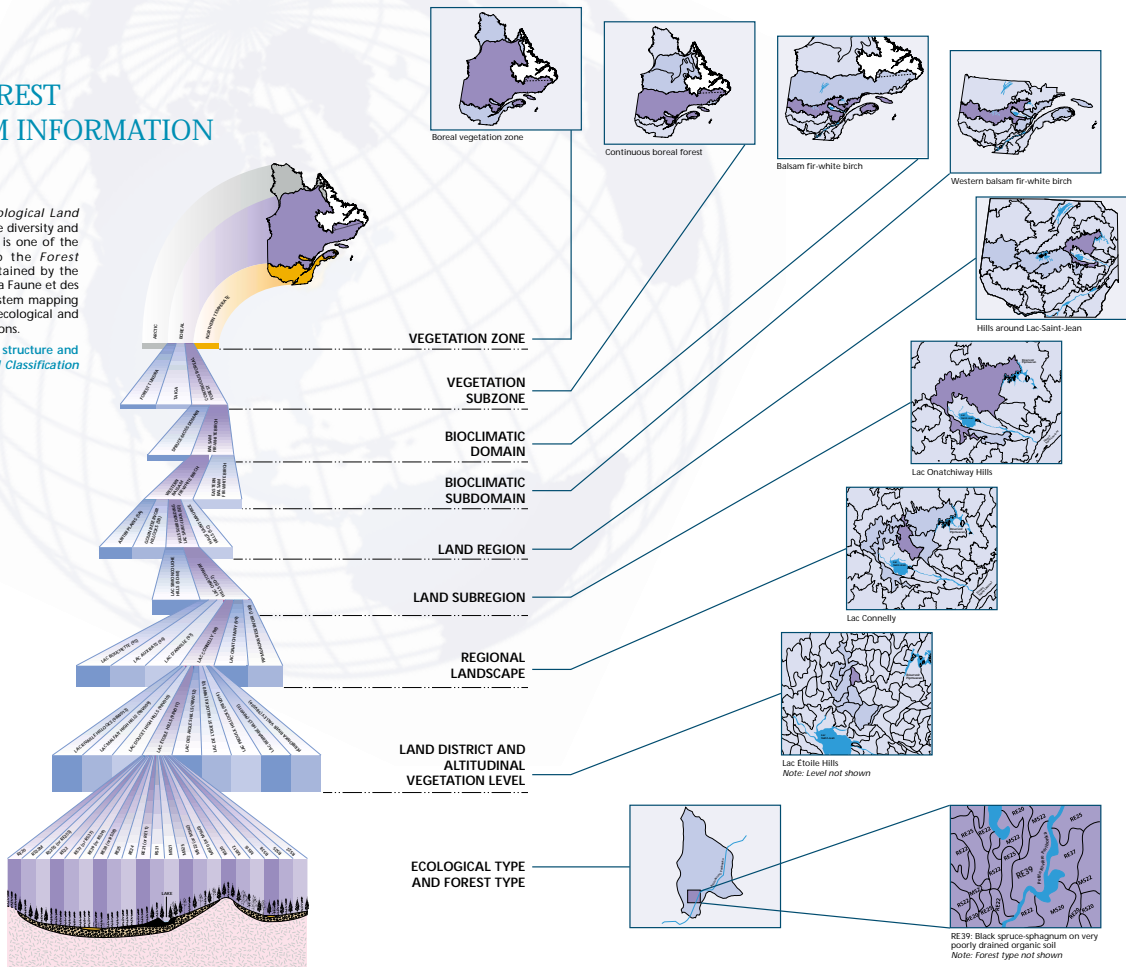
# THE MRNFP'S FOREST ECOSYSTEM INFORMATION PROGRAM

The purpose of the *Ecological Land Classification Hierarchy* is to describe the diversity and distribution of Québec's ecosystems. It is one of the numerous elements that make up the *Forest Ecosystem Information Program* maintained by the Ministère des Ressources naturelles, de la Faune et des Parcs. The program also includes ecosystem mapping activities at different scales, as well as ecological and dendrometric surveys and data compilations.

The diagram to the right illustrates the structure and interconnections of the *Ecological Land Classification Hierarchy*.

## A HOST OF POSSIBLE APPLICATIONS

New applications of the *Ecological Land Classification Hierarchy* are developed constantly as planners use its derivative products and apply its various levels to forest management needs. For example, connections have been identified between vertical tree growth and biophysical features, especially ecological type, within ecological regions. Projects such as this one have fostered the use of ecological information in the preparation of silvicultural scenarios and forest management plans. The MRNFP has also produced a map of areas sensitive to rutting after logging in forest wetlands. The map, based on regional landscapes, is designed to help with the monitoring of work in Québec's most sensitive sectors. In recent years, derivative products from the hierarchy have also been used by other agencies for research into wildlife habitats, landscapes and land use planning.





# THE ECOLOGICAL LAND CLASSIFICATION HIERARCHY

## BIOCLIMATIC DOMAIN

An area characterized by a particular type of vegetation in the final stage of succession, reflecting the balance between climate and potential vegetation on mesic sites.

### INTEREST

#### Forests

- Analysis of the distribution and extent of forest fires and natural disturbances (e.g. spruce budworm infestations)

#### Land Use Planning

- Location and creation of provincial parks

#### Wildlife

- Distribution of bird nesting areas (e.g. Atlas of Nesting Birds in Southern Québec)



Black spruce forests are characteristic of the black spruce-moss domain.



A typical landscape in the eastern sugar maple-yellow birch subdomain.



The Arctic vegetation zone is characterized by low-growth bush, grass, moss and lichen formations.

## VEGETATION ZONE

Large continental-scale area characterized by its plant formation physiognomy.

## VEGETATION SUBZONE

A portion of a vegetation zone characterized by the dominant vegetation physiognomy at the final stage of succession.

### INTEREST

#### Forests

- General climatic research and links with the major vegetation zones
- Research into wildlife distribution and large-scale migrations (e.g. caribou)



Some sectors of the boreal vegetation zone are characterized by the presence of large lakes and extensive areas of bare rock.



The mixed forests cover the northern portion of the northern temperate vegetation zone.

## BIOCLIMATIC SUBDOMAIN

A portion of a bioclimatic domain exhibiting distinct vegetation patterns reflecting differences in precipitation types and levels.



A landscape characterized by extensive black spruce forests typical of the eastern black spruce-moss subdomain. This subdomain is distinguished from its western counterpart by its more abundant precipitation, among other things.

## LAND REGION

An area characterized by the composition and dynamics of the vegetation growing on mesic sites, and by the distribution of ecological types within the landscape.



An ecological region in the northern portion of the black spruce-moss domain. In some places the forest cover is less dense, and frequent forest fires cause breaches in the canopy.

## LAND SUBREGION

A portion of a land region where the vegetation growing on mesic sites is typical of either the bioclimatic domain to which it belongs, or of more southerly or more northerly areas.



Ecological subregion formed by hillocks in the northern temperate vegetation zone.

### INTEREST

#### Forests

- Illustrates the distribution of ecological types used for ecoforest photo-interpretation

- Identification of rules for the displacement and origin of forest seeds and plants seedlings

#### Land Use Planning

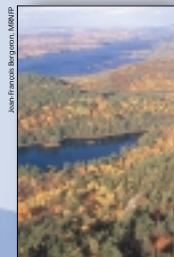
- Location and creation of provincial parks

#### Wildlife

- Regional location of sites suitable for wildlife (moose, white-tailed deer, wolf, etc.)

## REGIONAL LANDSCAPE

An area characterized by a recurrent arrangement of the principal permanent ecological factors and vegetation.



A regional landscape composed of rounded hills in the southern portion of the northern temperate vegetation zone.

### INTEREST

#### Forests

- Constitution of survey units for ecoforest surveys
- Location of forest wetlands likely to be disturbed by forest operations

#### Land Use Planning

- Potential for and limitations on land use planning (farming, urban development, etc.)
- Planning of leisure and tourist developments

#### Wildlife

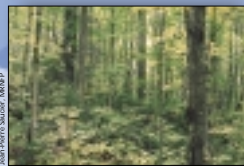
- Environmental analyses
- Research on forest mosaics resulting from interactions between vegetation and natural disturbances.

## FROM FOREST TYPE TO VEGETATION ZONE

The Ecological Land Classification Hierarchy describes the diversity and distribution of ecosystems characteristic of Québec as a whole, from the hardwood forest landscapes in the extreme south of Québec to the Arctic tundra in the north. It is composed of eleven levels, illustrated by maps to different scales, grouped from south to north, with perfectly coordinated boundaries. The Hierarchy's lower levels (e.g. ecological type) provide information on local forest ecosystem dynamics and give a detailed overview of the forest. They can be used for the preparation of silvicultural scenarios among other things. The Hierarchy's higher levels (e.g. land region, vegetation zone) help situate Québec at the regional and continental level. They are useful, for example, in producing summary analyses for forest planning and general forest management strategies.

The Ecological Land Classification Hierarchy takes into account certain ecological variables related to the physical environment, climate and vegetation. Some of its levels are climate-specific or vegetation-specific (vegetation zones), while others are based more on the physical environment (land districts) or a combination of all these elements (regional landscapes).

The diagram to the right presents definitions of the Hierarchy's eleven levels and describes their utility for forestry, land use planning and wildlife purposes.



Sugar maple-basswood forest located in the southern portion of the northern temperate vegetation zone.

## FOREST TYPE

Describes current vegetation based on physiognomy, tree cover and species groups.

## ECOLOGICAL TYPE

A local sector exhibiting a permanent combination of potential vegetation and physical features.



Black spruce trees are characteristic of the black spruce-sphagnum forests typically found in poor, badly drained areas in the southern sector of the boreal vegetation zone.

### INTEREST

#### Forests

- Forest management
- Silvicultural planning
- Allowable annual cut calculations
- Research on growth and yield tables by ecological type

#### Land Use Planning

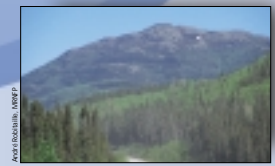
- Location of exceptional and rare forest ecosystems
- Creation of nature interpretation trails

#### Wildlife

- Location of hunting areas
- Research into wildlife habitats

## ALTITUDINAL VEGETATION LEVEL

An area in which altitude has such a significant impact on climate that it changes the structure and sometimes the type of vegetation, causing it to resemble that of more northerly regions.



In the black spruce-moss domain, high altitude has a significant impact on vegetation levels, fostering the presence of ecological types usually found in more northerly bioclimatic domains, such as the forest tundra.

## LAND DISTRICT

A sector characterized by a unique pattern of relief, geology, geomorphology and regional vegetation.

### INTEREST

#### Forests

- Planning and management of forest roads
- Limitations to forest operations (presence of steep slopes, hydrographic density, etc.)
- Location of gravel and sand pits

#### Land Use Planning

- Regional development plans, municipal urban development plans
- Integrated management for drainage basins, especially with regard to the hydrological behaviour of watercourses

#### Wildlife

- Location and distribution of northern plant and animal species in southern Québec



A high altitude land district characterized by its hilly relief, fairly high altitude, recurrent rocky outcrops and thin soil cover.