



AN INTRODUCTION TO Canadian Ecozones

PERSPECTIVE

This document introduces Canada's ecozones and the general concepts of ecological classification. Thinking, planning and acting in the context of ecosystems is essential for today's environmental management and for sustainability issues.

Ecozones have been established as a holistic scheme for nationally classifying large ecosystem units. Ecozones mesh socio-economic and biophysical characteristics into one common framework that serves a multitude of uses; these spatial units provide a means whereby information from various sources can be assimilated and ecological assessments can be interpreted.

CANADA'S ECOZONES

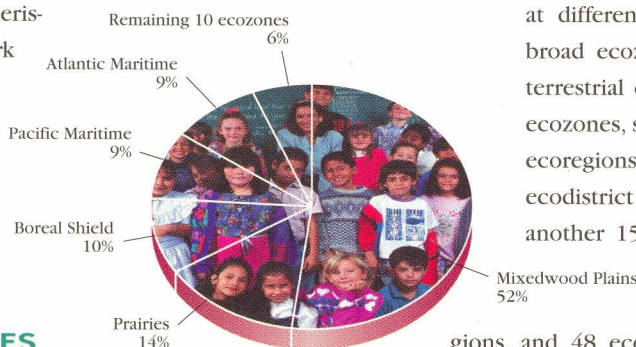
An ecozone is a large area of the earth's surface representative of very generalized ecological characteristics. A unique mosaic of plants, wildlife, climate, landforms, water, and human activities within each unit distinguishes one ecozone from the next. Canada is comprised of 15 terrestrial and 5 marine ecozones. Ecozones are diverse in size, shape, and attributes. Terrestrial ecozones range from the smallest of 175,963 km² in the Mixedwood Plains to an extensive 1,878,290 km² in the Boreal Shield (Environment Canada, 1995). Ecozones typically span jurisdictional boundaries of provinces, territories, and countries. The seemingly small Prairies Ecozone in Canada, for example, covers portions of three provinces and is the northern extension of the Great Plains stretching well into the heartland of the United States.

HIERARCHY OF ECOSYSTEMS

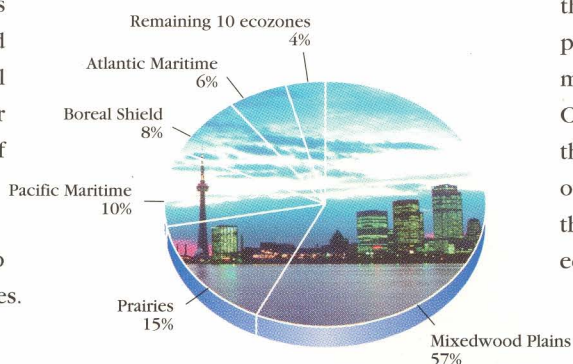
Since the 1970's professionals from governments, non-government organizations, universities, and industry have worked through the Canada Committee on Ecological Classification to establish a common basis and language for an ecological classification system.

The ecological classification system is hierarchical in nature. Ecologically distinct areas are described at different levels of generalization, ranging from broad ecozones to detailed ecoelements. Canada's terrestrial ecosystems consists of a hierarchy of 15 ecozones, subdivided into 45 ecoprovinces and 217 ecoregions which are further divided into 1030 ecodistrict polygons, which in turn, are linked to another 15 000 soil landscape units. Canada's five marine ecozones have been broken down into 12 ecoprovinces, 18 ecoregions, and 48 ecodistricts. This ladder-like system allows jurisdictions and professionals to investigate or apply an ecosystem approach and concept from a national perspective through to a local perspective (Wiken, 1995).

Canada's 1991 Population by Ecozone



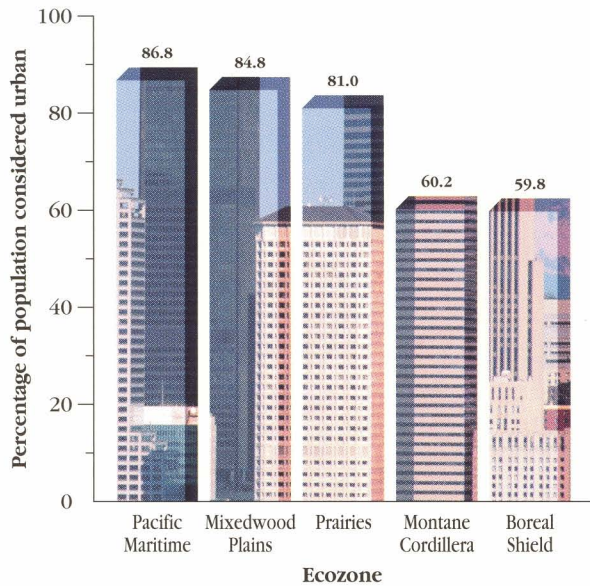
Canada's 1991 Urban Population by Ecozone



LINKAGES

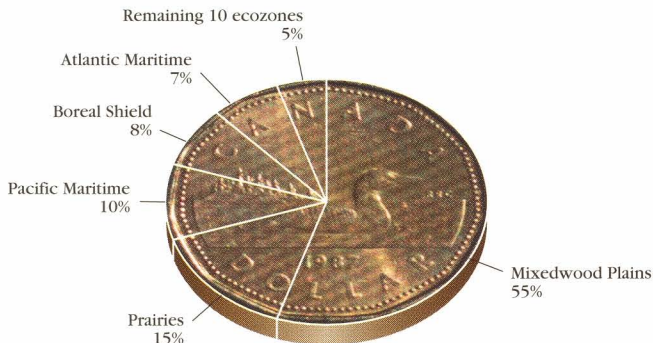
Ecozone maps, reports, and databases are available. An Ecozones and Ecoregions of Canada map, at the scale of 1:7.5 million, is available both as hard copy and digital versions suitable for various geographic information systems. Present and future ecozone initiatives include further integrating other complementary data on protected areas, species distribution and range maps, the CanSIS National Soil Database, and the Canadian Forest Inventory. Statistics Canada and the Canadian Wildlife Service are examples of other organizations that continue to contribute their information and expertise to building the ecosystem framework.

Top 5 Ecozones with the Highest Percentage of Urban Population, 1991

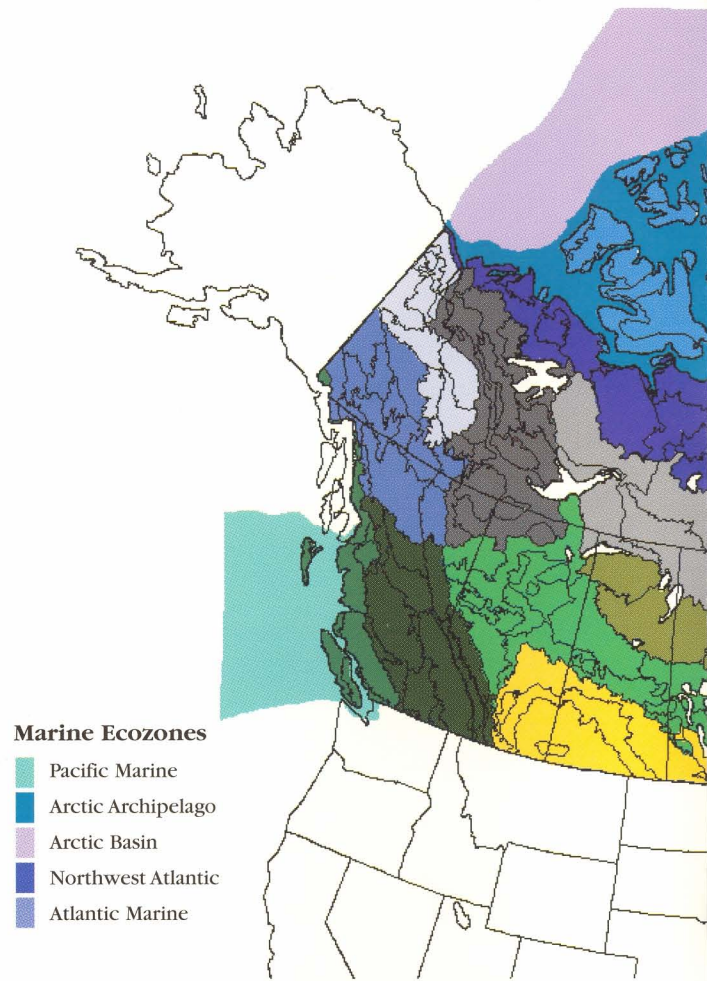


Note: These 5 ecozones account for 92.5% of Canada's total urban population.

Canadian Gross Domestic Product Generation by Ecozone, 1991



Marine and Terrestrial



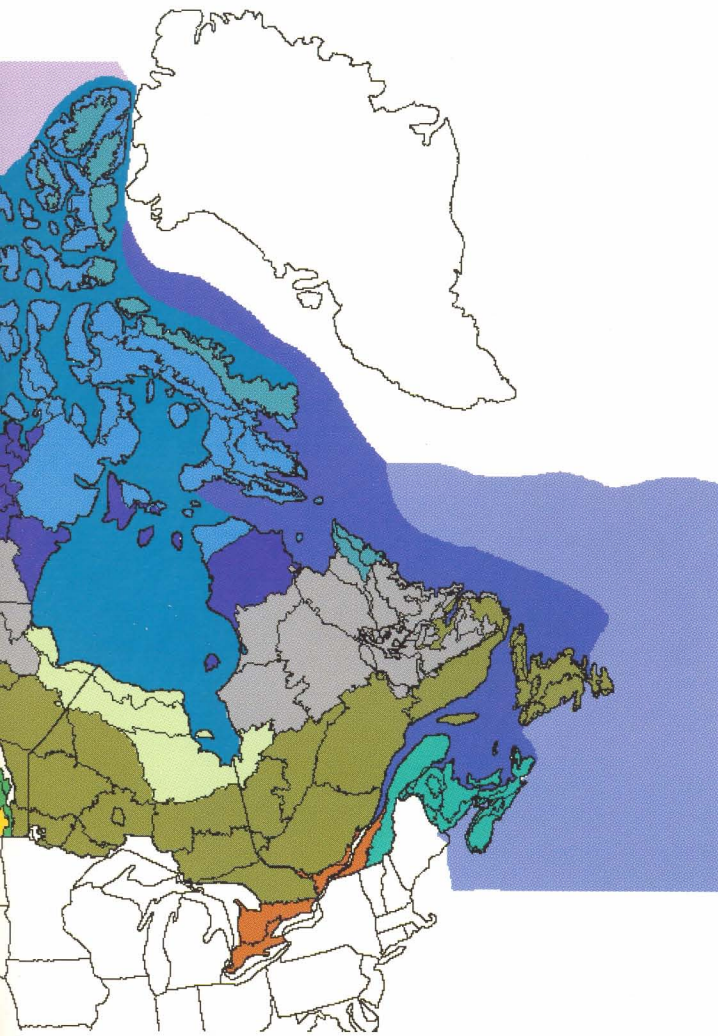
| ECOZONE | Total Area with water (km ²) | Total Area (% of Canada) | PROTECTED AREAS | | | |
|--------------------|--|--------------------------|--------------------------|---------------------|--------------------------|---------------------|
| | | | IUCN* Categories I to VI | | IUCN Categories I to III | |
| | | | No. of Sites | % of Area Protected | No. of Sites | % of Area Protected |
| Arctic Cordillera | 228,956 | 2 | 4 | 23.7 | 3 | 19.8 |
| Northern Arctic | 1,323,525 | 14 | 16 | 6.4 | 6 | 3.9 |
| Southern Arctic | 773,062 | 8 | 13 | 11.7 | 5 | 0.3 |
| Taiga Plains | 602,509 | 6 | 25 | 4.4 | 23 | 3.2 |
| Taiga Shield | 1,356,598 | 15 | 19 | 3.2 | 13 | 0.9 |
| Taiga Cordillera | 272,734 | 3 | 5 | 6.1 | 3 | 4.7 |
| Hudson Plains | 357,415 | 4 | 27 | 19.1 | 16 | 7.5 |
| Boreal Plains | 701,232 | 7 | 407 | 7.8 | 96 | 6.4 |
| Boreal Shield | 1,878,290 | 20 | 676 | 8.2 | 494 | 3.0 |
| Boreal Cordillera | 418,208 | 5 | 27 | 11.5 | 23 | 6.3 |
| Pacific Maritime | 181,945 | 2 | 309 | 11.1 | 230 | 9.1 |
| Montane Cordillera | 473,500 | 5 | 353 | 11.6 | 289 | 11.5 |
| Prairies | 453,148 | 5 | 441 | 3.3 | 73 | 0.6 |
| Atlantic Maritime | 190,558 | 2 | 380 | 7.1 | 235 | 1.9 |
| Mixedwood Plains | 175,963 | 2 | 724 | 1.3 | 128 | 0.4 |
| TOTAL | 9,387,643 | 100 | 3426 | | 1637 | |

* IUCN, once known as the International Union of Conservation of Nature, is now referred to as the World Conservation Union.

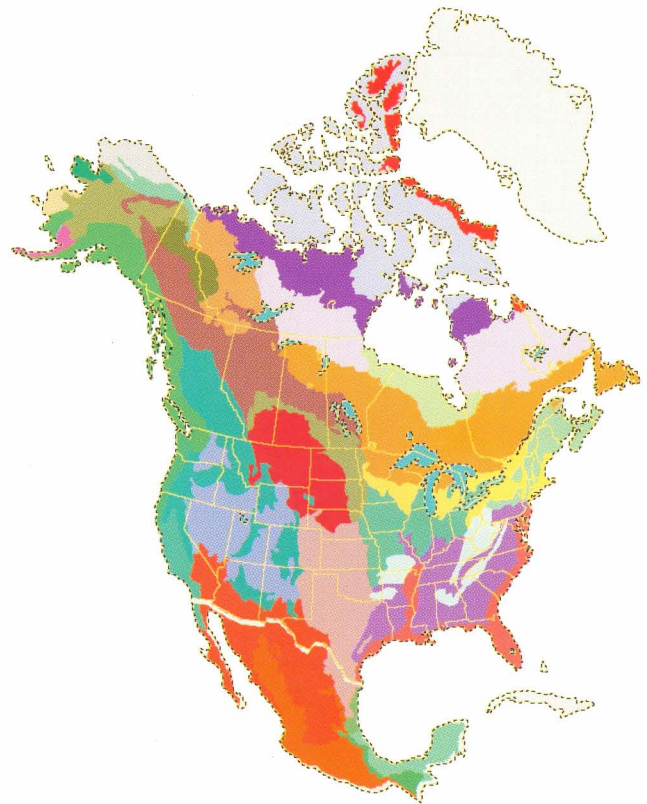
Note: IUCN Categories I to III include strict nature reserves/wilderness areas, national parks, and natural monuments, respectively.

IUCN Categories IV to VI include habitat/species management areas, protected landscape/seascape, and managed resource protected areas, respectively.

Terrestrial Ecozones

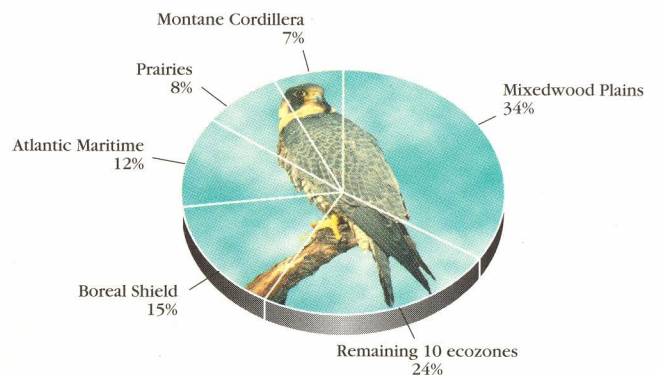


North America: Ecological Areas



Just how big are these ecozones? Well, the Mixedwood Plains Ecozone, Canada's smallest terrestrial ecozone, is two and a half times the size of Ireland. The five Great Lakes could fit inside the area of the Taiga Cordillera Ecozone. The Prairies Ecozone is roughly equivalent in size to Sweden, but has less than half of Sweden's population. And it would take less time to fly directly from New York to London, England, than it would to traverse the length of the Boreal Shield Ecozone (Wiken, 1995).

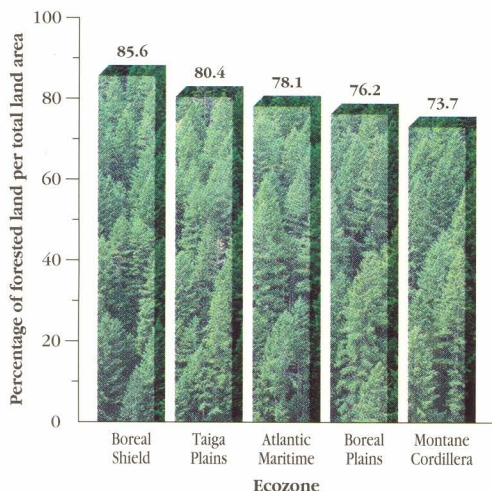
Distribution of Endangered and Threatened Species
by Ecozone, 1995



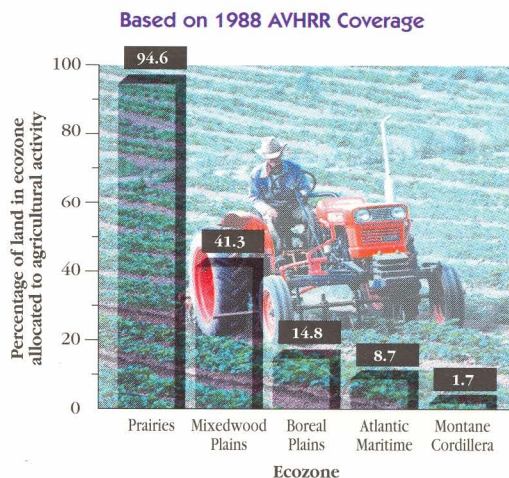
ECOZONE SUPERLATIVES

- The world's largest wetland is situated in the Hudson Plains Ecozone and stretches over an expanse of nearly 300,000 km².
- The Pacific Maritime Ecozone has the oldest (1,000 years) and tallest trees in Canada.
- The Mixedwood Plains Ecozone contains the highest concentration of urban centres and is also the most densely populated.
- In 1993 52% of Canada's forest harvest occurred in the Boreal Shield Ecozone.
- Canada's three Arctic ecozones account for 20% of the world's Arctic circumpolar system and nearly 50% of the world's polar bear population.
- The Prairies Ecozone is the most extensive farm-scape in Canada.
- The Northern Arctic Ecozone supports the largest goose colony in the world - over one million migratory birds on the Great Plain of the Koukdjuak, Baffin Island.

Top 5 Ecozones by Amount of Forested Land, 1991



Top 5 Ecozones with the Greatest Amount of Land Allocated to Agricultural Activity



The ecozone approach has also been applied on a continental basis. Issues such as biodiversity and air-borne pollution do not stop suddenly at national borders; instead, a broader context is essential to address these challenges. An ecosystem perspective of North America has been recently adopted by the Commission on Environmental Cooperation. Similarly, a circumpolar ecosystem map has been developed for North America and will likely be extended to other countries.

The ecological framework has successfully launched an integrative, national ecological information base. In turn, decision making has been sensitized at many levels of management. By incorporating environmental, social, and economic information, people develop a better understanding of our influences and linkages with surrounding ecosystems.

ADDITIONAL SOURCES

Further information on Canada's ecozones can be obtained from the Center of Land and Biological Resources Research, Agriculture and Agri-Food Canada, and the State of the Environment Directorate, Environment Canada. Information is also available on the internet at <http://res.agr.ca> and <http://www.doe.ca>.

Additional material may be obtained from:

Canadian Council on Ecological Areas

Secretariat/Manager

Canadian Wildlife Service, 3rd Floor

351 St. Joseph Blvd.

Hull, Quebec

K1A 0H3

Tel: (819) 953-1444

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