

# EnviroStats



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## In this issue

### Trends in glacier mass balance for six Canadian glaciers

This article describes changes to the mass balance of six Canadian glaciers through time and is the first in an ongoing series of short analytical articles featuring climate related data. This and future articles are the product of ongoing collaboration among Statistics Canada, Environment Canada and Natural Resources Canada.

### Ecoregion profile: Îles-de-la-Madeleine

The Îles-de-la-Madeleine ecoregion profile is the fourth in a series of ecoregion profiles. The information presented includes a brief description of the physical setting, a snapshot of land cover and use as well as statistics on selected socio-economic characteristics of the region. This is Canada's fifth most densely populated ecoregion.

### Quick fact: Purchase of environmentally friendly or "green" cleaning products

In 2007, 77% of Canadian households reported they purchased these products.

**Table 1**  
Latest Canadian indicators

|  | Period       | Percentage change   |
|--|--------------|---------------------|
|  |              | %                   |
| Population   | 2008 to 2009 | 1.2                 |
| Gross domestic product, monthly                        | June 2010    | 0.2                 |
| Greenhouse gas emissions                               | 2007 to 2008 | -2.1                |
| Particulate matter (PM <sub>2.5</sub> )                | 2000 to 2007 | n.s.s. <sup>1</sup> |
| Ground-level ozone (median percentage change per year) | 1990 to 2007 | 0.8                 |
| Natural resource wealth                                | 2008 to 2009 | -37.8               |

1. Not statistically significant.

**Source(s):** Statistics Canada, CANSIM tables 051-0001 and 378-0005 (accessed September 9, 2010). Statistics Canada, 2010, *Gross Domestic Product by Industry*, Catalogue no. 15-001-X. Environment Canada, 2010, *National Inventory Report 1990-2008: Greenhouse Gas Sources and Sinks in Canada*, Catalogue no. En81-4/2008E-PDF. Environment Canada, 2010, *Air Quality: Data Sources and Methods*, [www.ec.gc.ca/indicateurs-indicators/default.asp?lang=En&n=ED311E59-1&offset=6&toc=show](http://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=En&n=ED311E59-1&offset=6&toc=show) (accessed September 9, 2010).



## Trends in glacier mass balance for six Canadian glaciers

Jeff Fritzsche, Environment Accounts and Statistics Division

Glaciers throughout the world are dynamic, constantly losing and gaining snow and ice. A glacier's mass can increase through the accumulation of snow and other types of frozen precipitation. On the other hand, a glacier can lose mass (a process known as ablation) through processes such as melting, evaporation and calving.

Glacier mass balance measures the net results of accumulation and ablation and is expressed in millimetres of water equivalence.<sup>1</sup> The difference between accumulation and ablation for a glacier over a given year is the net (mass) balance. The charts in this article feature *cumulative* mass balance, which adds together sequential annual measurements over a number of years. The cumulative mass balance indicates magnitude, direction, trend and the presence of acceleration with regard to the change of mass over time. In the case of the six glaciers presented in this article, the cumulative mass balance estimate is calculated for each glacier through the length of the glacier's time series. This allows scientists to assess if the glaciers are in equilibrium, growing, or shrinking over the time period in question and whether that rate of change is accelerating.

### A new data collaboration

This article is the first of a new series in *EnviroStats* to present data related to Canada's climate and the impacts of climate change. The focus of these articles will be short statistical analyses of climate related data, such as sea ice extent and glacier mass balance.

This series is the product of ongoing collaboration among Statistics Canada, Environment Canada and Natural Resources Canada to make data related to Canada's climate easily and regularly accessible.

This collaboration will also ensure that the data featured in these *EnviroStats* articles will be available through the Statistics Canada website, both through free CANSIM data tables and through new articles re-examining trends every few years.

For readers who are interested in obtaining further information related to glaciers and the effect of climate, please visit [http://sst-ess.mcan-nrcan.gc.ca/ercc-rrcc/proj3/theme1/index\\_e.php](http://sst-ess.mcan-nrcan.gc.ca/ercc-rrcc/proj3/theme1/index_e.php).

The mass balance of glaciers is very sensitive to fluctuations in climate<sup>2</sup> resulting in direct and immediate responses to these fluctuations.<sup>3</sup> For this reason, this measure is considered by the World Meteorological Organization-Global Climate Observing System as an Essential Climate Variable<sup>4</sup> and is thought to provide one of the clearest signals found in nature to monitor ongoing trends in climate.<sup>5</sup>

This article focuses on data for six glaciers found in two regions, the Western Cordillera (Map 1) and the High Arctic (Map 2). These data are part of Canada's contribution to the World Glacier Monitoring Service,<sup>6</sup> which reports on a network of glaciers throughout the world.

Charts 1 and 2 show the cumulative mass balance for the monitored glaciers in each region. In these charts the mass gain or loss of glaciers is tallied up over time. An upward sloping line means the glaciers are gaining mass; a downward one indicates mass loss. If the line is getting steeper, the loss or gain is accelerating. Different types of time-series trend analysis were performed on the data for each glacier. All methods revealed that each glacier showed a statistically significant loss of mass over the time period analysed.

1. The World Glacier Monitoring Service expresses net mass balance reported annually as water equivalence. 1 mm water equivalent/year = 1 kg/m<sup>2</sup>/year.
2. M. Zemp, I. Gärtner-Roer, W. Haeberli, M. Hoelzle and F. Paul, 2009, "Glaciers and Ice Caps," *Assessment of the Status of the Development of the Standards for the Terrestrial Essential Climate Variables*, T6, Global Terrestrial Observing System, Rome.
3. M. Zemp, M. Hoelzle and W. Haeberli, 2009, "Six decades of glacier mass-balance observations: a review of the worldwide monitoring network," *Annals of Glaciology*, Vol. 50, Issue 50, pages 101 to 111.
4. Global Climate Observing System, 2010, *Global Climate Observing System*, [www.wmo.int/pages/prog/gcos/index.php?name=EssentialClimateVariable](http://www.wmo.int/pages/prog/gcos/index.php?name=EssentialClimateVariable) (accessed September 16, 2010).
5. Global Terrestrial Observing System, 2010, "Glacier mass balance," *Terrestrial Ecosystem Monitoring Sites*, [www.fao.org/gtos/tems/variable\\_show.jsp?VARIABLE\\_ID=73](http://www.fao.org/gtos/tems/variable_show.jsp?VARIABLE_ID=73) (accessed September 16, 2010).
6. World Glacier Monitoring Service, 2010, *Welcome to the World Glacier Monitoring Service*, [www.geo.unizh.ch/wgms/index.html](http://www.geo.unizh.ch/wgms/index.html) (accessed September 16, 2010).

## Background and methodology

The glacier mass balance time series includes six glaciers (Maps 1 and 2), three located in the mountains of British Columbia and Alberta of the Western Cordillera and three located in the High Arctic. These six glaciers form Canada's contribution to the Global Terrestrial/Climate Observing System and World Glacier Monitoring Service.<sup>7</sup>

The glacier data used in this article are derived from Natural Resources Canada's Earth Science Sector's Climate Change Geoscience Program, which supports Canada's national glacier-climate observing system. Research and monitoring of Canada's glaciers is conducted in partnership with several government departments and universities.

Western Cordillera glaciers:

Helm Glacier – southern Coast Mountains (Garibaldi Provincial Park), British Columbia

Peyto Glacier – Rocky Mountain eastern slopes (Banff National Park), Alberta

Place Glacier – southern Coast Mountains, British Columbia

High Arctic glaciers:

Devon Ice Cap NW – Devon Island, Nunavut

Meighen Ice Cap – Meighen Island, Nunavut

White Glacier – Axel Heiberg Island, Nunavut

The data series for each glacier varies in duration, from a minimum of 30 years to a maximum of 48 years. A number of analytical techniques were applied to the data, in both raw and smoothed form, to determine if statistically significant trends existed. These techniques ranged from ordinary least squares analysis to a non-parametric analytical approach using Sen's method.<sup>8</sup> Linear regression was run on the raw and on the smoothed data, while Sen's method was applied to the raw data only. Various time series models were fitted to the data to identify the one that provided the best fit. All six techniques showed that the cumulative mass balance time series for all six glacier sites showed statistically significant decreases. The linear regression method provided the most suitable fit to the data and these results are depicted in this study.<sup>9</sup>

Ideally, trends in glacier mass balance should be analyzed using as long a time period as possible. However, the cumulative mass balance time series featured in this article are of short duration relative to the lifespan of a glacier. Glaciologists use other sources of information in order to put these observations into the long-term context, including, evidence left behind by the retreating glaciers hundreds and thousands of years ago as well as new mapping and remote sensing data.

Although the mass of all six glaciers declined, there were regional differences, with the glaciers located in the High Arctic showing a less pronounced loss of mass than those in the Western Cordillera. These regional differences can be attributed to several factors, such as the size of the individual glaciers, as smaller glaciers will lose mass at an accelerated rate given similar weather and topographic conditions in comparison to their larger counterparts. The High Arctic features both larger individual glaciers as well as a greater extent of glacier cover (approximately 150,000 km<sup>2</sup>) than the Western Cordillera Mountains (approximately 50,000 km<sup>2</sup>) which extend into British Columbia, Alberta and the Yukon.<sup>10</sup>

The three glaciers of the Western Cordillera all experienced a loss of mass (Chart 1). The Helm and Place Glaciers, both located in the southern Coast Mountains of British Columbia, experienced the most significant decrease of the three glaciers in this area. The Peyto Glacier, located in Banff National Park, Alberta, lost more mass than the glaciers located in the High Arctic, but less than Helm and Place glaciers. The Peyto Glacier experienced an early period of stable mass, but began showing a downward trend in the late 1970s that continued to the end of the period.

All three High Arctic glaciers are located in Nunavut (Map 2). Like the three glaciers located in the Western Cordillera, the three glaciers located in this area also showed a loss of mass (Chart 2). Their rates of loss, however, were lower than for the glaciers in the Western Cordillera. The Devon Ice Cap showed a gradual downward trend throughout

7. World Glacier Monitoring Service, 2009, *Glacier Mass Balance Bulletin* No. 10 (2006-2007), W. Haeberli, I. Gärtner-Roer, M. Hoelzle, F. Paul and M. Zemp (eds.), ICSU(WDS)/IUGG(IACS)/UNEP/UNESCO/WMO, World Glacier Monitoring Service, Zurich.

8. For more information related to Sen's method, please see: P.K. Sen, 1968, "Estimates of the regression coefficient based on Kendall's tau," *Journal of the American Statistical Association*, Vol. 63, pages 1379 to 1389.

9. To enquire about the statistical analysis used in this article, contact the Information Officer (613-951-0297; [environ@statcan.gc.ca](mailto:environ@statcan.gc.ca)), Environment Accounts and Statistics Division.

10. C.S.L. Ommanney, 2002, "History of Glacier Investigations in Canada," pages J27 to J82 in R.S. Williams Jr. and J.G. Ferrigno (eds.), *Satellite Image Atlas of Glaciers of the World – Glaciers of North America – Glaciers of Canada*, U.S. Geological Survey Professional Paper 1386-J-I.

the entire time period, but with a more pronounced loss of mass from the mid-1990s to 2007. The Meighen Ice Cap, on Meighen Island, shrank at a faster rate than the Devon Ice Cap. It decreased more rapidly in the first half of the 1960s, and then experienced a slower rate of decline. The White Glacier on Axel Heiberg Island, also showed a significant downward trend, and like the Devon Ice Cap, has shown a more pronounced loss of mass from the mid-1990s to 2007.

Glaciologists use a variety of information in order to put these relatively shorter observations into context. Analysis of evidence left behind by the retreating glaciers hundreds and thousands of years ago, and new mapping and remote sensing data, has helped glaciologists place these mass balance data in a longer term context. Analysis by glaciologists at Natural Resources Canada suggests the rate and amount of mass loss for sites in the Western Cordillera have occurred at an unprecedented pace towards a state not in evidence for several millennia.<sup>11</sup>

## Summary

The six glaciers studied for this article experienced statistically significant reductions in their mass over the length of the data series. The major difference between the two regional groups of glaciers was the rate of mass loss, with the glaciers in the Western Cordillera losing mass at a faster rate than those in the High Arctic. These findings are consistent with international research, which shows that worldwide and rapid glacier shrinkage has been taking place over the past century.<sup>12</sup>

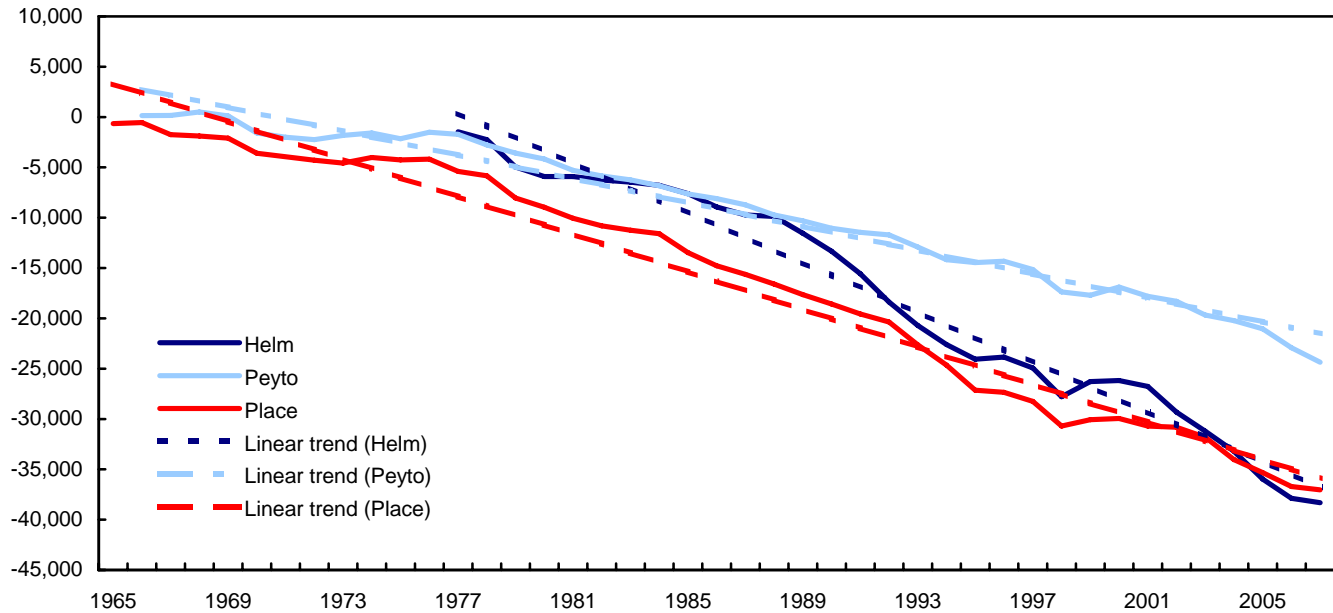
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11. M.N. Demuth, V. Pinard, A. Pietroniro, B. Luckman, C. Hopkinson, P. Domes, and L. Comeau, 2008, "Recent and past-century variations in the glacier resources of the Canadian Rocky Mountains: Nelson River system," *Terra Glacialis* Special Issue: *Mountain glaciers and climate changes of the last century*, pages 27 to 52.

12. United Nations Environment Program, World Glacier Monitoring Services, 2008, *Global Glacier Changes: facts and figures*.

**Chart 1**  
**Cumulative net mass balance, Western Cordillera glaciers**

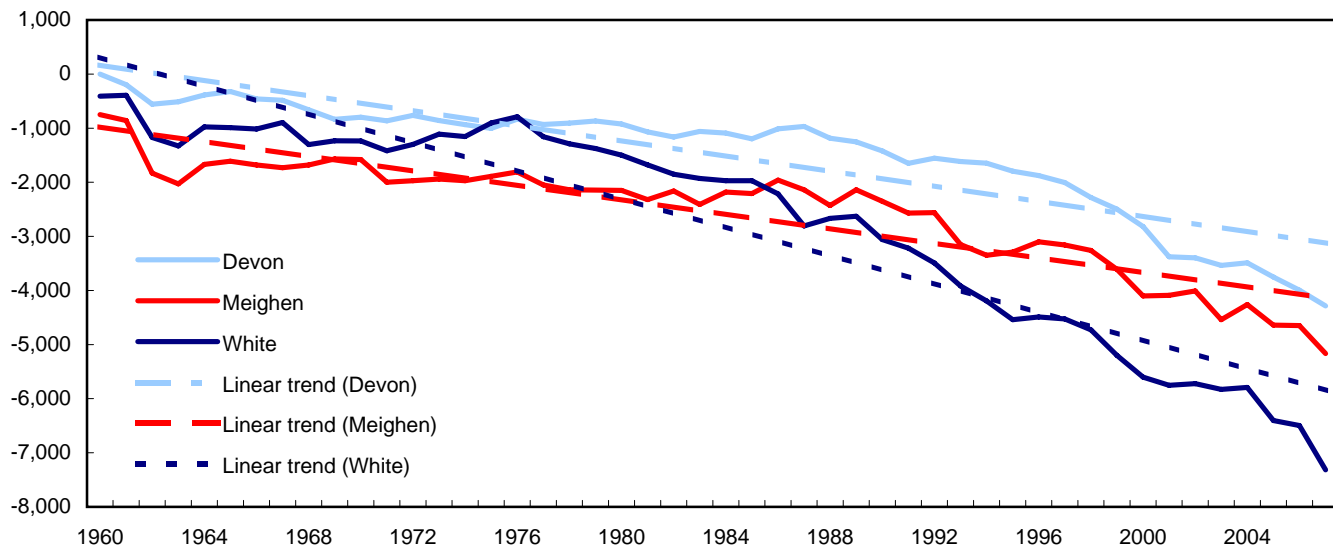
millimetres of water equivalence



**Note(s):** Chart 1 and Chart 2 use different scales for the y-axis.  
**Source(s):** Natural Resources Canada, Glaciology Section - State and Evolution of Canada's Glaciers Initiative.

**Chart 2**  
**Cumulative net mass balance, High Arctic glaciers**

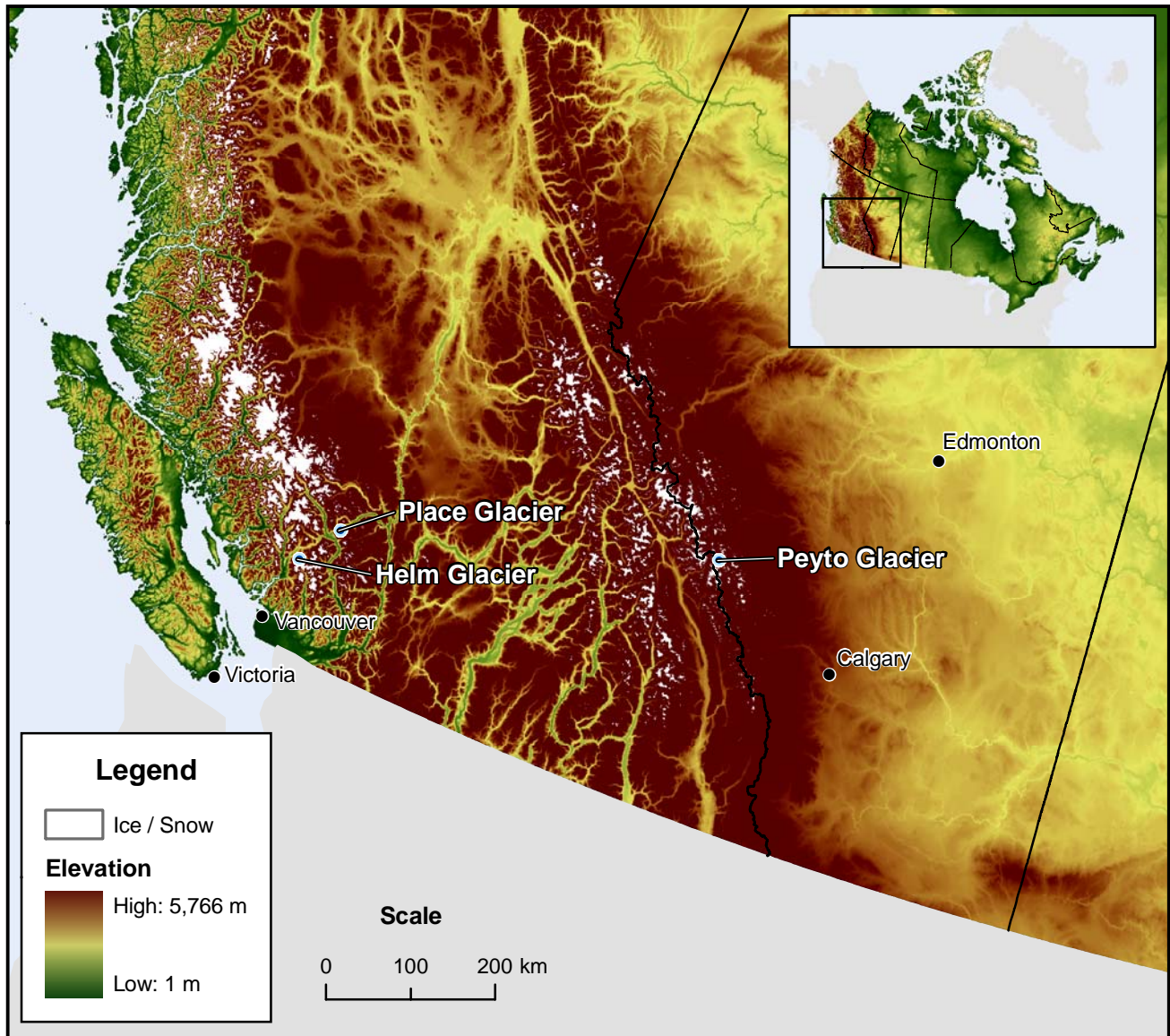
millimetres of water equivalence



**Note(s):** Chart 1 and Chart 2 use different scales for the y-axis.  
**Source(s):** Natural Resources Canada, Glaciology Section - State and Evolution of Canada's Glaciers Initiative.

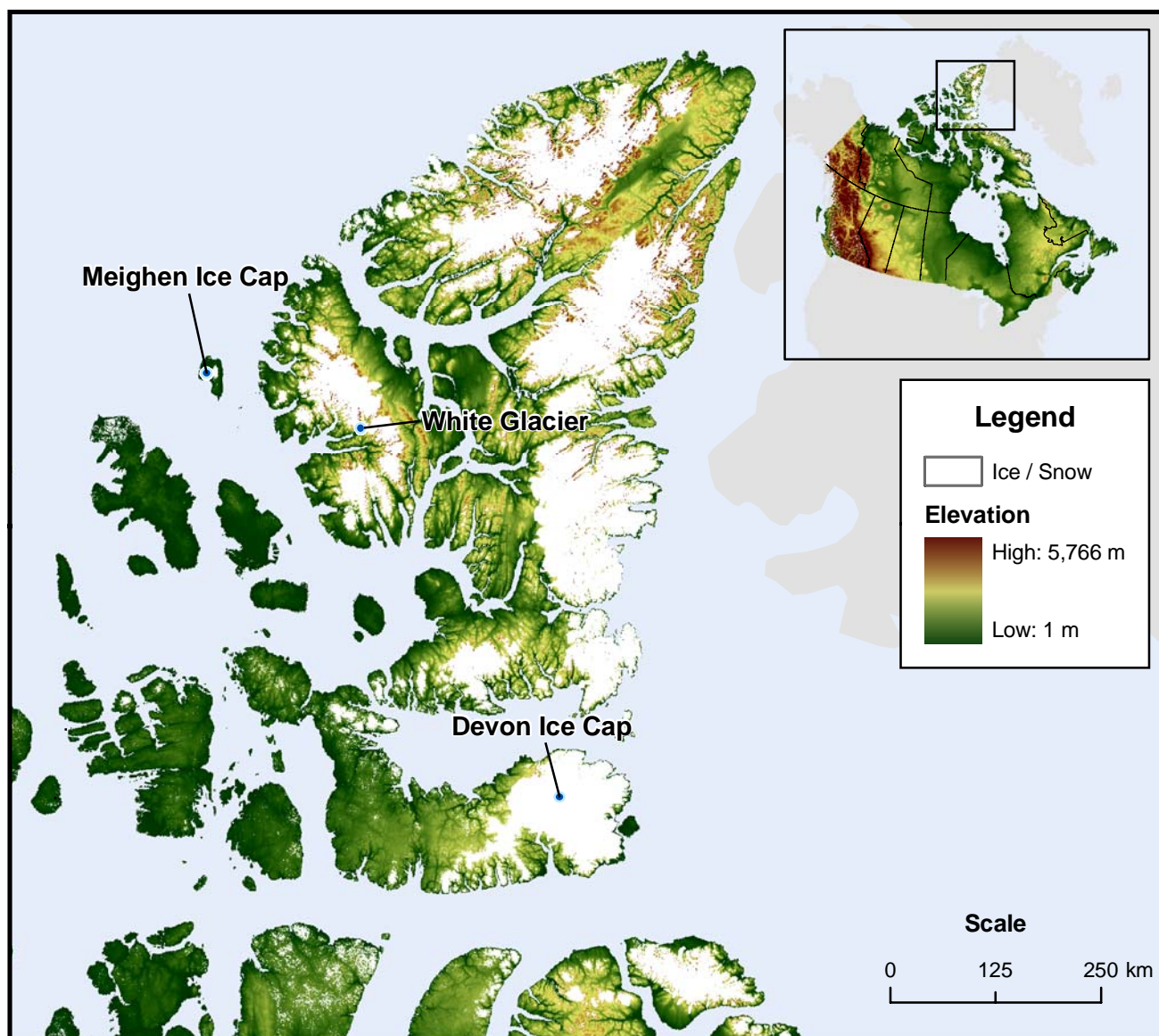


Map 1  
 Location of featured glaciers – Western Cordillera



Source(s): Natural Resources Canada, 2007, *Canadian Digital Elevation Data*, Earth Sciences Sector, Centre for Topographic Information, <http://ftp2.cits.nrcan.gc.ca/pub/canada3D/> (accessed August 4, 2010).  
 Natural Resources Canada, 2005, *MODIS AVHRR 250 metre raster image of Canada*, Earth Sciences Sector, Canada Centre for Remote Sensing, [ftp.ccrs.nrcan.gc.ca/ad/NLCLandCover/LandcoverCanada2005\\_250m/LCCanadaV1\\_3.rar](ftp.ccrs.nrcan.gc.ca/ad/NLCLandCover/LandcoverCanada2005_250m/LCCanadaV1_3.rar) (accessed August 4, 2010).

Map 2  
 Location of featured glaciers – High Arctic



Source(s): Natural Resources Canada, 2007, *Canadian Digital Elevation Data*, Earth Sciences Sector, Centre for Topographic Information, <http://ftp2.cits.nrcan.gc.ca/pub/canada3D/> (accessed August 4, 2010).  
 Natural Resources Canada, 2005, *MODIS AVHRR 250 metre raster image of Canada*, Earth Sciences Sector, Canada Centre for Remote Sensing, [ftp.ccrs.nrcan.gc.ca/ad/NLCC/LandCover/LandcoverCanada2005\\_250m/LCCanadaV1\\_3.rar](ftp.ccrs.nrcan.gc.ca/ad/NLCC/LandCover/LandcoverCanada2005_250m/LCCanadaV1_3.rar) (accessed August 4, 2010).



## Ecoregion profile: Îles-de-la-Madeleine

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The Îles-de-la-Madeleine ecoregion (Map 3) is one of the smallest and most isolated of Canada's 194 ecoregions. These islands are located in the Gulf of St. Lawrence and despite their size and isolation they are the fifth most densely populated ecoregion in Canada. The population density in 2006 was 57 people per km<sup>2</sup>, with 13,091 permanent residents living on an area of roughly 230 km<sup>2</sup>.

The geography of the Îles-de-la-Madeleine ecoregion is constantly changing due to the influence of wind, tidal forces and wave action. These islands are made up of soft sedimentary rocks (sandstones, conglomerates and shales) that are easily eroded thus providing the building materials for the beaches that surround much of the ecoregion.

### Environment

Forests, rock outcrops, sand dunes, lagoons and wetlands, coupled with a mild maritime climate, all combine to form ecosystems that support many different species of plants and birds in the Îles-de-la-Madeleine ecoregion. There are very few wild mammals on the islands.

A number of rare plant and animal species are found in the Îles-de-la-Madeleine ecoregion due to the unique characteristics of the ecoregion. Some of these species, such as the Piping Plover (*Charadrius melodus*) and Roseate Tern (*Sterna Dougallii*) are both listed as endangered under Schedule 1 of the *Species at Risk Act*, while the Gulf of St. Lawrence Aster (*Symphotrichum laurentianum*) is listed as threatened.<sup>13</sup>

Forests cover 31% of the ecoregion, followed by grasses and herbaceous plants at 21% and exposed lands, which include beaches and sand dunes, at 20%. Only 2% of the ecoregion is developed land (Chart 3, Table 2 and Map 4).

13. Government of Canada, 2007, *Species at Risk Public Registry*, [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca) (accessed July 9, 2010).



**Table 2**  
**Îles-de-la-Madeleine ecoregion**

|   | Îles-de-la-Madeleine<br>ecoregion | Canada           | Percentage share<br>of Canada total |
|---|-----------------------------------|------------------|-------------------------------------|
| <b>Total area (km<sup>2</sup>)</b>  | <b>230</b>                        | <b>9,976,182</b> | <b>0.002</b>                        |
| <b>Land cover circa 2000<sup>1, 2</sup></b>                               |                                   |                  |                                     |
| Annual cropland and perennial cropland (km <sup>2</sup> )                 | 30                                | ..               | ...                                 |
| Forest (km <sup>2</sup> )   | 72                                | ..               | ...                                 |
| Developed land (km <sup>2</sup> )   | 4                                 | ..               | ...                                 |
| Water (km <sup>2</sup> )  | 23                                | ..               | ...                                 |
| Exposed land (km <sup>2</sup> )   | 46                                | ..               | ...                                 |
| Grasses-herbaceous (km <sup>2</sup> )                                     | 47                                | ..               | ...                                 |
| Other classes (km <sup>2</sup> )  | 0                                 | ..               | ...                                 |
| Shrubland (km <sup>2</sup> )  | 2                                 | ..               | ...                                 |
| Wetland (km <sup>2</sup> )  | 5                                 | ..               | ...                                 |
| <b>Protected areas</b>  |                                   |                  |                                     |
| Protected area (km <sup>2</sup> )   | 49                                | 1,002,939        | 0.005                               |
| Proportion of area protected (percent)                                    | 21.1                              | 10.1             | ...                                 |
| <b>Agricultural land</b>  |                                   |                  |                                     |
| Area of dependable agricultural land <sup>3</sup> (km <sup>2</sup> )      | 65                                | 454,630          | 0.014                               |
| Proportion of area in dependable land (percent)                           | 28.2                              | 4.6              | ...                                 |
| <b>Population</b>   |                                   |                  |                                     |
| Population in 1971 (number)   | 13,303                            | 21,568,310       | 0.062                               |
| Population in 1981 (number)   | 14,130                            | 24,343,181       | 0.058                               |
| Population in 1991 (number)   | 13,991                            | 27,296,859       | 0.051                               |
| Population in 1996 (number)   | 13,802                            | 28,846,761       | 0.048                               |
| Population in 2001 (number)   | 12,824                            | 30,007,094       | 0.043                               |
| Population in 2006 (number)   | 13,091                            | 31,612,895       | 0.041                               |
| Population density in 2006 (people/km <sup>2</sup> )                      | 56.9                              | 3.2              | ...                                 |
| Change in population 1971 to 2006 (percent)                               | -1.6                              | 46.6             | ...                                 |
| <b>Labour force 2006</b>  |                                   |                  |                                     |
| Sales and service occupations   | 1,620                             | 4,037,725        | 0.040                               |
| Business, finance and administrative occupations                          | 735                               | 3,025,430        | 0.024                               |
| Health occupations  | 450                               | 950,365          | 0.047                               |
| Occupations in social science, education, government service and religion | 485                               | 1,414,320        | 0.034                               |
| Trades, transport and equipment operators and related occupations         | 990                               | 2,550,295        | 0.039                               |
| Occupations unique to primary industry                                    | 1,225                             | 648,315          | 0.189                               |
| Occupations unique to processing, manufacturing and utilities             | 715                               | 992,765          | 0.072                               |
| Other occupations <sup>4</sup>  | 815                               | 3,526,925        | 0.023                               |
| Total labour force  | 7,035                             | 17,146,140       | 0.041                               |
| <b>Tourism</b>  |                                   |                  |                                     |
| Number of visitors 1975   | 18,776                            | 13,661,170       | 0.137                               |
| Number of visitors 2006   | 50,500                            | 18,265,406       | 0.276                               |
| Change in number of visitors 1975 to 2006 (percent)                       | 169.0                             | 33.7             | ...                                 |
| Visitors per capita 2006  | 3.86                              | 0.58             | ...                                 |
| <b>Fish landings</b>  |                                   |                  |                                     |
| Groundfish 1990 (tonnes)  | 15,541                            | 791,246          | 1.964                               |
| Pelagic fish 1990 (tonnes)  | 1,663                             | 560,238          | 0.297                               |
| Shellfish 1990 (tonnes)   | 3,492                             | 246,796          | 1.415                               |
| Total landings 1990 (tonnes)  | 20,696                            | 1,598,280        | 1.295                               |
| Value of landings 1990 (thousands of current dollars)                     | 16,849                            | 1,419,424        | 1.187                               |
| Groundfish 2005 (tonnes)  | 1,035                             | 304,286          | 0.340                               |
| Pelagic fish 2005 (tonnes)  | 1,743                             | 324,465          | 0.537                               |
| Shellfish 2005 (tonnes)   | 6,317                             | 443,537          | 1.424                               |
| Total landings 2005 (tonnes)  | 9,095                             | 1,072,288        | 0.848                               |
| Value of landings 2005 (thousands of current dollars)                     | 46,141                            | 2,048,822        | 2.252                               |
| <b>Agriculture</b>  |                                   |                  |                                     |
| Area of farmland in 1971 (hectares)                                       | 956                               | 68,662,444       | 0.001                               |
| Area of farmland in 2006 (hectares)                                       | 936                               | 67,586,739       | 0.001                               |
| Change in area of farmland (percent)                                      | -2.1                              | -1.6             | ...                                 |
| Farms in 1971 (number)  | 108                               | 366,128          | 0.029                               |
| Farms in 2006 (number)  | 28                                | 229,373          | 0.012                               |
| Change in number of farms (percent)                                       | -74.1                             | -37.4            | ...                                 |
| Area of cropland in 1971 (hectares)                                       | 344                               | 27,828,479       | 0.001                               |
| Area of cropland in 2006 (hectares)                                       | 595                               | 35,912,247       | 0.002                               |

See notes at the end of the table.

Table 2 – continued

Îles-de-la-Madeleine ecoregion

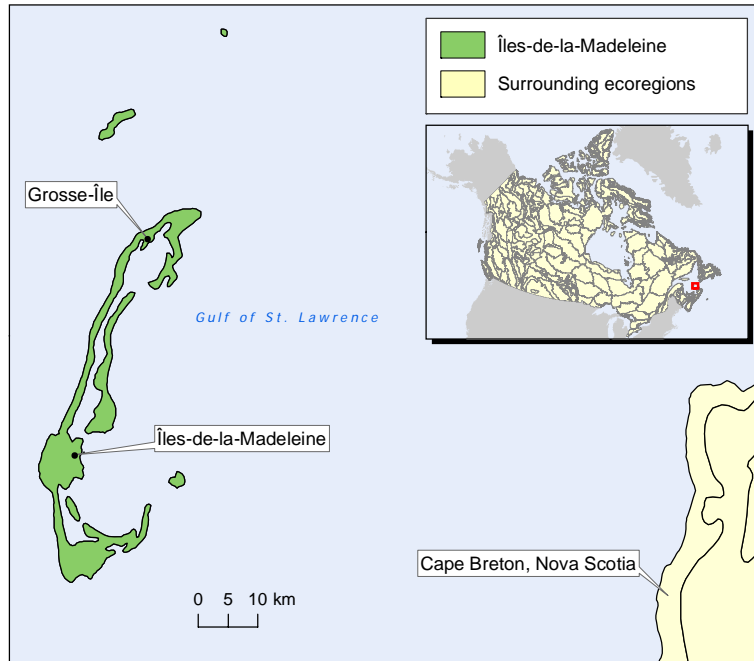
|   | Îles-de-la-Madeleine ecoregion | Canada     | Percentage share of Canada total |
|---|--------------------------------|------------|----------------------------------|
| Change in area of cropland (percent)  | 73.2                           | 29.0       | ...                              |
| Gross farm sales (excluding forest products) 2005 ( thousands of current dollars) | 1,850                          | 42,191,981 | 0.004                            |

1. Land cover classes are aggregated. Forest area contains all types of forest. 'Developed land' includes built-up areas, lawns, road surfaces, industrial sites and farmsteads. In this ecoregion, 'exposed land' refers primarily to sand and gravel beaches and sand dunes. 'Other' refers to unclassified land types due to shadow and clouds in the satellite imagery. Land cover is based on LANDSAT satellite data from 1996 to 2003.
2. Land cover statistics have not been compiled nationally from this source.
3. Dependable agricultural land is defined as land designated as Class 1, Class 2 and Class 3 by the Canada Land Inventory.
4. Includes natural and applied sciences and related occupations; occupations in art, culture, recreation and sport; management occupations; and the category 'occupation - not applicable.'

**Source(s):** Statistics Canada, CANSIM tables 153-0057 (accessed October 8, 2009) and 387-0004 (accessed May 28, 2010). Statistics Canada, Census of Population and Census of Agriculture. Statistics Canada, 2008, *Labour, 2006 Census*, Catalogue no. 97-559-X2006024. Statistics Canada, 2008, *2006 Agriculture Community Profiles*, Catalogue no. 95-631-X. Statistics Canada, 1973, *Census of Canada, 1971, Agriculture, Quebec and Ontario*, Vol. 4, Pt. 2. Statistics Canada, Environment Accounts and Statistics Division, Spatial Environmental Information System. Natural Resources Canada, 2008, *Canada Land Inventory—Land Capability for Agriculture*, Earth Sciences Sector, [www.geogratis.ca/geogratis/en/collection/cli.html](http://www.geogratis.ca/geogratis/en/collection/cli.html) (accessed October 8, 2009). Natural Resources Canada, 2009, *Land Cover, Circa 2000-Vector*, Earth Sciences Sector, [www.geobase.ca/geobase/en/data/landcover/index.html](http://www.geobase.ca/geobase/en/data/landcover/index.html) (accessed October 8, 2009). Agriculture and Agri-Food Canada, 2008, *A National Ecological Framework for Canada*, <http://sis.agr.gc.ca/cansis/nsdb/ecostrat/intro.html> (accessed February 19, 2010). Canadian Council on Ecological Areas, 2010, *Conservation Areas Reporting and Tracking System (CARTS)*, [www.ccea.org/en\\_carts.html](http://www.ccea.org/en_carts.html) (accessed April 21, 2010). Fisheries and Oceans Canada, Quebec Region, n.d. (no date), *1998-2005 Statistics Series*, [www.qc.dfo-mpo.gc.ca/peches/en/statistique/Series1998-2005/default.html](http://www.qc.dfo-mpo.gc.ca/peches/en/statistique/Series1998-2005/default.html) (accessed May 20, 2010). Fisheries and Oceans Canada, Quebec Region, 2009, *1984-1997 Statistics*, [www.qc.dfo-mpo.gc.ca/peches/en/statistique/1997.htm](http://www.qc.dfo-mpo.gc.ca/peches/en/statistique/1997.htm) (accessed May 20, 2010). Fisheries and Oceans Canada, 2009, *Commercial Fisheries, Landings, Seafisheries*, [www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm](http://www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm) (accessed August 16, 2010). Tourisme Îles de la Madeleine, Visitor statistics, 2010, special tabulation, [www.tourismeilesdelamadeleine.com/magdalen-islands/atrim-ang-696-home.cfm](http://www.tourismeilesdelamadeleine.com/magdalen-islands/atrim-ang-696-home.cfm) (accessed May 18, 2010). Ministère du Développement Durable, de l'Environnement et des Parcs, Direction du patrimoine écologique et des parcs, Îles de la Madeleine protected area digital boundary file, 2010, special tabulation.

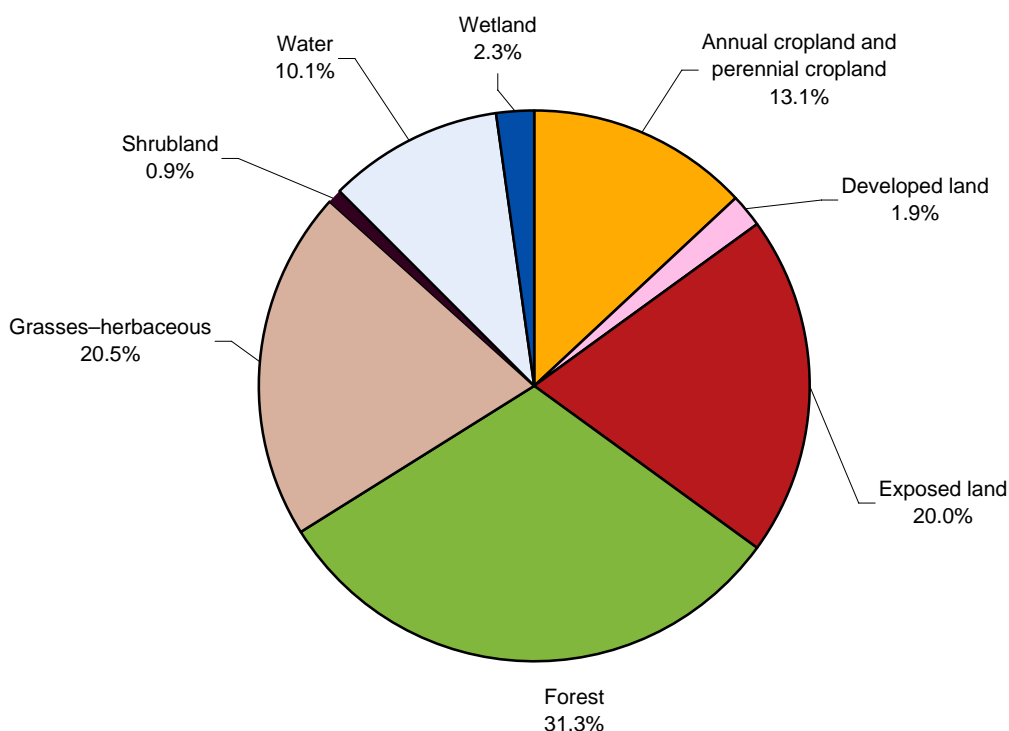
Map 3

Îles-de-la-Madeleine ecoregion



**Source(s):** Agriculture and Agri-Food Canada, 2008, *A National Ecological Framework for Canada*, <http://sis.agr.gc.ca/cansis/nsdb/ecostrat/intro.html> (accessed February 19, 2010).

**Chart 3**  
**Îles-de-la-Madeleine ecoregion, land cover by type, circa 2000**



**Note(s):** 'Developed land' includes built-up areas, lawns, road surfaces, industrial sites and farmsteads. In this ecoregion, 'exposed land' refers primarily to sand and gravel beaches and sand dunes. Land cover is based on LANDSAT satellite data from 1996 to 2003.

**Source(s):** Natural Resources Canada, 2009, *Land cover, Circa 2000-Vector*, Earth Sciences Sector, [www.geobase.ca/geobase/en/data/landcover/index.html](http://www.geobase.ca/geobase/en/data/landcover/index.html) (accessed October 8, 2009).

A large portion of the Îles-de-la-Madeleine ecoregion is protected by both federal and provincial governments. Forty-nine km<sup>2</sup>, or 21.1%, of the total area is protected by government agencies (Table 2). This area understates the total area actually protected in the ecoregion as private landowners and/or municipal regulations and conventions also serve to protect other parcels of land on the islands.

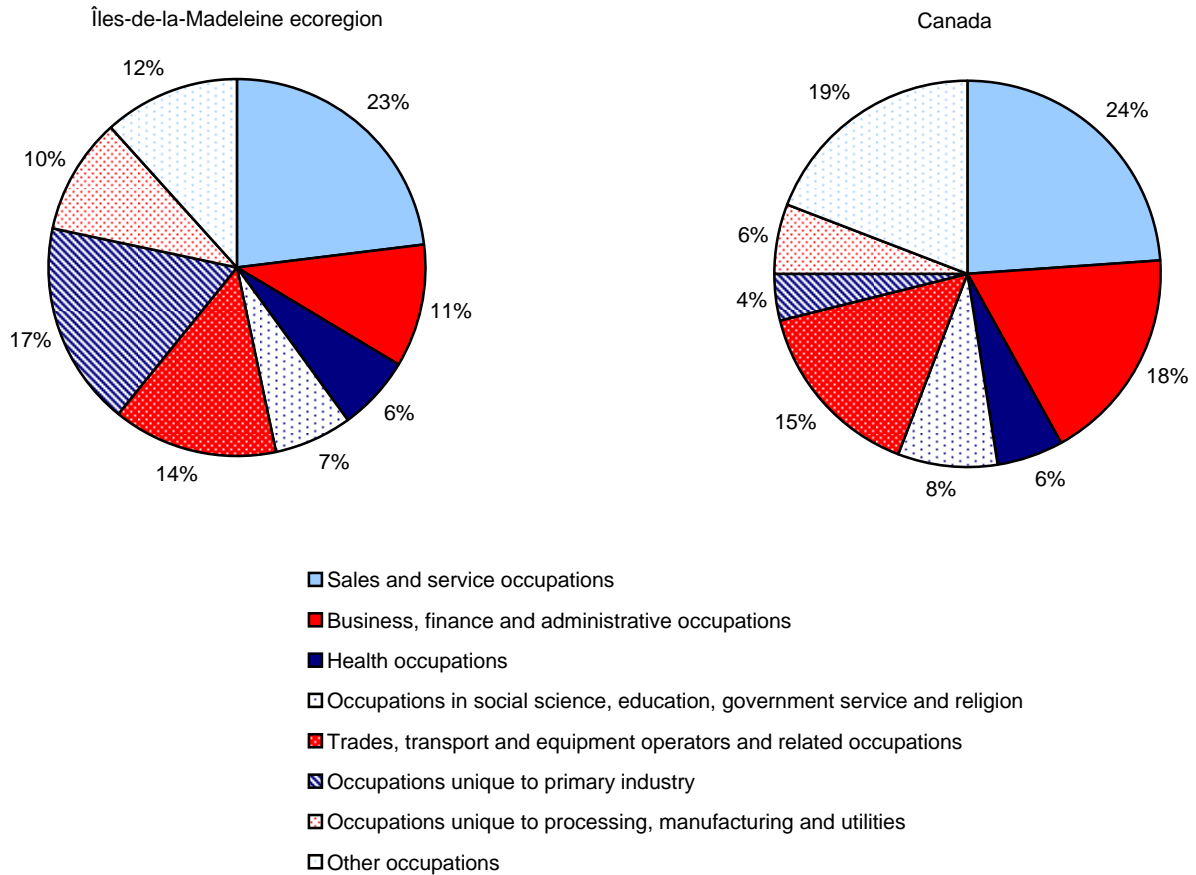
### Population and the economy

Fishing and tourism are the two main industries in the Îles-de-la-Madeleine ecoregion. These industries create employment in other sectors such as transportation and utilities.

### Labour force

More than 7,000 people were employed in the Îles-de-la-Madeleine ecoregion in 2006 (Table 2). Sales and service occupations, which include hospitality, were the most common, employing 23% of the total labour force. The second largest employment category was the primary industry sector, which includes the fishing industry. Primary industry occupations comprised 17% of the labour force in the ecoregion compared to only 4% for Canada as a whole (Chart 4). This reflects the reliance of the local economy on the fishing industry.

**Chart 4**  
**Total labour force, 2006**



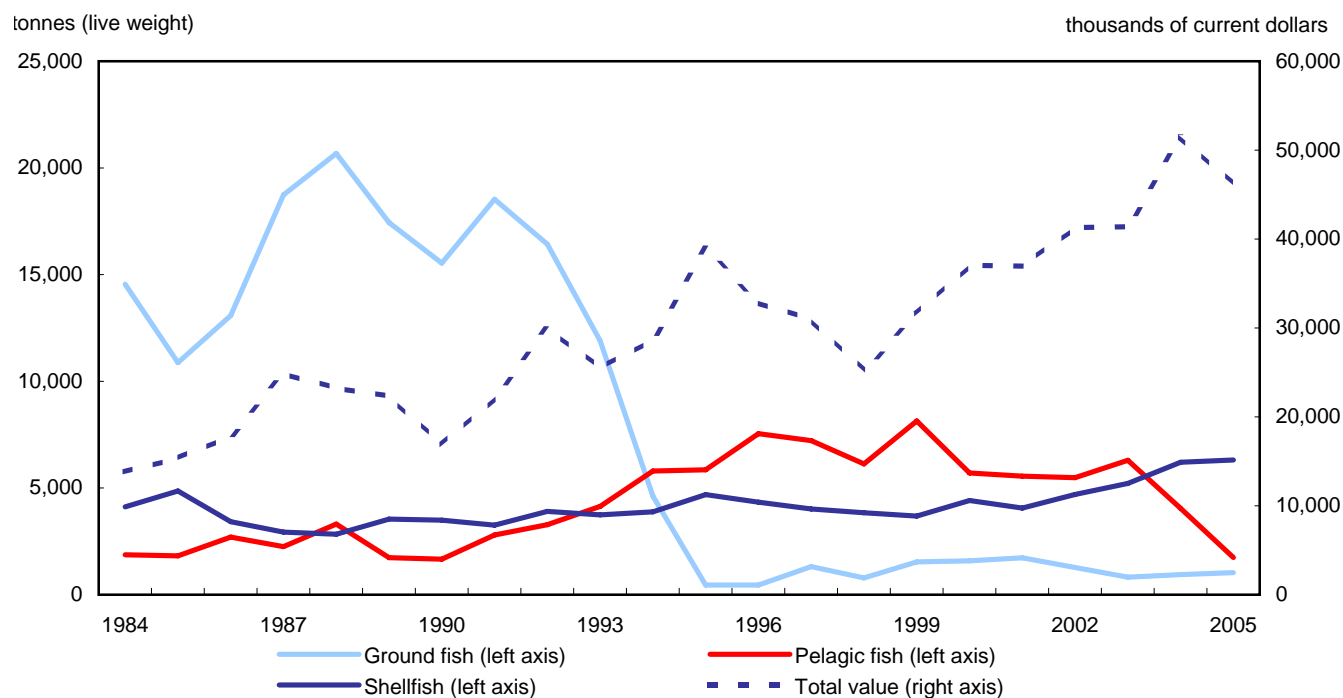
**Note(s):** 'Other occupations' includes natural and applied sciences and related occupations; occupations in art, culture, recreation and sport; management occupations; and the category 'occupation - not-applicable.'  
**Source(s):** Statistics Canada, 2008, *Labour, 2006 Census*, Catalogue no. 97-559-X2006024.

**Fishing**

Despite declines in groundfish landings, brought on in part by the 1993 moratorium on Atlantic cod fishing, the value of fish landed has been rising since 1984 (Chart 5). In 2005, the value of fish landed exceeded \$46 million. High value shellfish made up 69% of total landings (based on weight) in the Îles-de-la-Madeleine ecoregion in 2005, compared to 17% in 1990 (Table 2).



**Chart 5**  
**Landed catch and value, Îles-de-la-Madeleine ecoregion, 1984 to 2005**

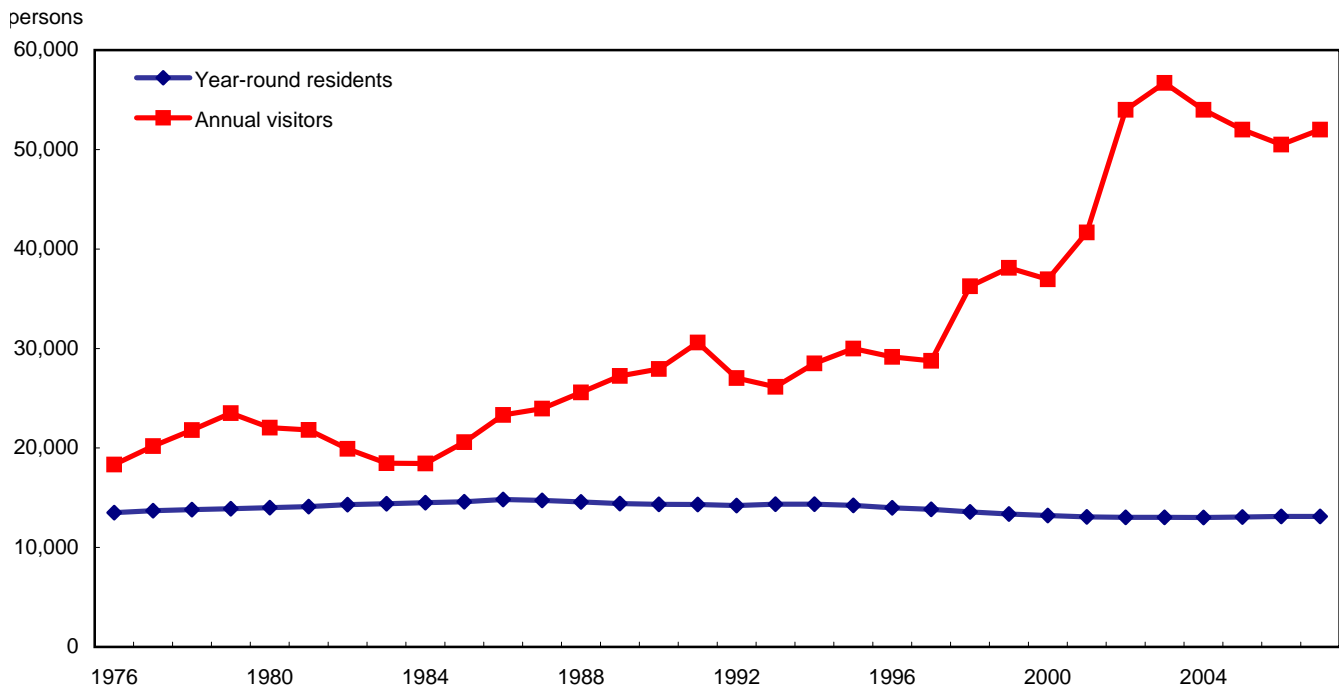


**Source(s):** Fisheries and Oceans Canada, Quebec Region, n.d. (no date), *1998-2005 Statistics Series*, [www.qc.dfo-mpo.gc.ca/peches/en/statistique/Series1998-2005/default.html](http://www.qc.dfo-mpo.gc.ca/peches/en/statistique/Series1998-2005/default.html) (accessed May 20, 2010). Fisheries and Oceans Canada, Quebec Region, 2009, *1984-1997 Statistics*, [www.qc.dfo-mpo.gc.ca/peches/en/statistique/1997.htm](http://www.qc.dfo-mpo.gc.ca/peches/en/statistique/1997.htm) (accessed May 20, 2010).

### Population and tourism

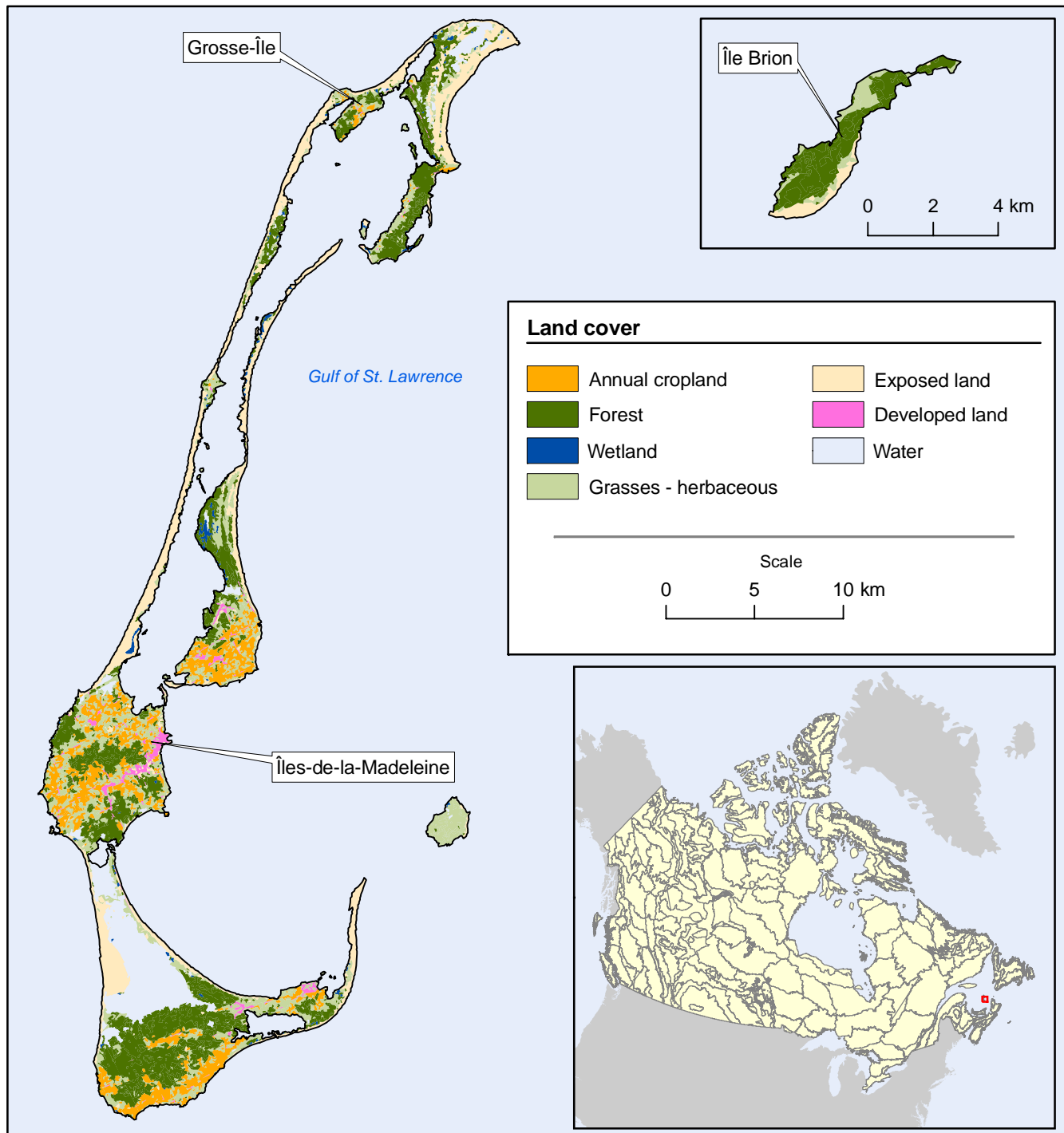
The year-round residential population has been relatively stable in the ecoregion since 1971, ranging between 13,000 and 14,000 inhabitants. In the summer months the tourist season brings a large number of visitors. In 2006, the 13,091 permanent residents received 50,500 visitors, or 3.86 visitors per inhabitant (Table 2 and Chart 6). For comparison, Canada as a whole received 18.3 million visitors from abroad or just under 0.58 visitors for each Canadian in 2006 (Table 2).

**Chart 6**  
**Residents and visitors, Îles-de-la-Madeleine ecoregion, 1976 to 2007**



**Source(s):** Statistics Canada, CANSIM tables 051-0030 and 051-0036 (accessed July 15, 2010). Tourisme Îles de la Madeleine, Visitor statistics, 2010, special tabulation, [www.tourismeilesdelamadeleine.com/magdalen-islands/atrim-ang-696-home.cfm](http://www.tourismeilesdelamadeleine.com/magdalen-islands/atrim-ang-696-home.cfm) (accessed May 18, 2010).

Map 4  
 Land cover, Îles-de-la-Madeleine ecoregion, circa 2000



Source(s): Natural Resources Canada, 2009, *Land Cover, Circa 2000-Vector (LCC2000-v)*, Earth Sciences Sector, [www.geobase.ca](http://www.geobase.ca) (accessed October 8, 2009).  
 Agriculture and Agri-Food Canada, 2008, *A National Ecological Framework for Canada*, <http://sis.agr.gc.ca/cansis/nsdb/ecostrat/intro.html> (accessed February 19, 2010).

## Quick fact

### Purchase of environmentally friendly or “green” cleaning products

Using environmentally friendly or “green” cleaning products is one way Canadians can reduce the environmental impacts associated with some conventional cleaning products. In 2007, 77% of Canadian households reported they purchased these products.

**Table 3**  
**Purchase of environmentally friendly or “green” cleaning products, Canada and provinces, 2007**

|                           | Purchased environmentally friendly or “green” cleaning products | Frequency      |           |           |           | Had not purchased environmentally friendly or “green” cleaning products |
|---------------------------|---|----------------|-----------|-----------|-----------|---|
|                           |   | Always         | Often     | Sometimes | Rarely    |   |
|                           |   | percent        |           |           |           |   |
| <b>Canada</b>             | <b>77</b>   | <b>9</b>       | <b>16</b> | <b>35</b> | <b>17</b> | <b>20</b>   |
| Newfoundland and Labrador | 76  | 5 <sup>E</sup> | 14        | 40        | 18        | 18  |
| Prince Edward Island      | 75  | F              | 13        | 35        | 21        | 21  |
| Nova Scotia               | 75  | 7              | 14        | 36        | 19        | 23  |
| New Brunswick             | 74  | 5 <sup>E</sup> | 14        | 34        | 21        | 21  |
| Quebec                    | 74  | 9              | 16        | 29        | 19        | 24  |
| Ontario                   | 78  | 9              | 16        | 38        | 16        | 18  |
| Manitoba                  | 77  | 9              | 12        | 37        | 20        | 20  |
| Saskatchewan              | 76  | 9              | 11        | 40        | 16        | 20  |
| Alberta                   | 79  | 7              | 19        | 38        | 14        | 18  |
| British Columbia          | 78  | 10             | 19        | 34        | 15        | 18  |

**Note(s):** As a percentage of all households. Figures may not add up to totals as a result of rounding or due to the exclusion of respondents that answered “don’t know” or refused to answer the question.

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, Households and the Environment Survey, 2007.



## Canadian environment and sustainable development indicators

**Table 4**  
**Population indicators**

|   | 2004       | 2005       | 2006       | 2007       | 2008       | 2009       |
|---|------------|------------|------------|------------|------------|------------|
| <b>Population</b>   |            |            |            |            |            |            |
| Persons <sup>1</sup>  | 31,940,676 | 32,245,209 | 32,576,074 | 32,931,956 | 33,327,337 | 33,739,859 |
| Percent change from previous year   | 1.0        | 1.0        | 1.0        | 1.1        | 1.2        | 1.2        |
| Aged 65 and over (percent of total)   | 13.0       | 13.1       | 13.3       | 13.5       | 13.7       | 13.9       |
| Census metropolitan areas and census agglomerations (percent of total) <sup>2</sup> | ..         | ..         | 81.1       | ..         | ..         | ..         |
| Density (per square kilometre)  | 3.5        | 3.6        | 3.6        | 3.7        | 3.7        | 3.7        |

- Population data is based on the Estimates of Population program, except for data on population in census metropolitan areas and census agglomerations, which is based on the Census of Population.
  - Area consisting of one or more neighbouring municipalities situated around a major urban core. A census metropolitan area must have a total population of at least 100,000 of which 50,000 or more live in the urban core. A census agglomeration must have an urban core population of at least 10,000.
- Note(s):** For 2003 data, see: Statistics Canada, 2010, *EnviroStats*, Vol. 4 no. 1, Catalogue no. 16-002-X. For 2002 data, see: Statistics Canada, 2009, *EnviroStats*, Vol. 3 no. 1, Catalogue no. 16-002-X.
- Source(s):** Statistics Canada, CANSIM table 051-0001 (accessed August 19, 2010). Statistics Canada, 2007, *Population and Dwelling Count Highlight Tables, 2006 Census*, Catalogue no. 97-550-X2006002.

**Table 5**  
**Economy indicators**

|  | 2004      | 2005      | 2006      | 2007      | 2008      | 2009      |
|--|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>Gross Domestic Product (GDP)</b>      |           |           |           |           |           |           |
| GDP (millions of chained 2002 dollars)   | 1,211,239 | 1,247,807 | 1,283,033 | 1,311,260 | 1,318,055 | 1,285,604 |
| Percent change from previous year        | 3.1       | 3.0       | 2.8       | 2.2       | 0.5       | -2.5      |
| Per capita (chained 2002 dollars)        | 37,922    | 38,697    | 39,386    | 39,820    | 39,562    | 38,126    |
| <b>Consumer Price Index (2002 = 100)</b> | 104.7     | 107.0     | 109.1     | 111.5     | 114.1     | 114.4     |
| <b>Unemployment rate (percent)</b>       | 7.2       | 6.8       | 6.3       | 6.0       | 6.1       | 8.3       |

- Note(s):** For 2003 data, see: Statistics Canada, 2010, *EnviroStats*, Vol. 4 no.1, Catalogue no. 16-002-X. For 2002 data, see: Statistics Canada, 2009, *EnviroStats*, Vol. 3 no.1, Catalogue no. 16-002-X.
- Source(s):** Statistics Canada, CANSIM tables 380-0017, 051-0001, 326-0021 and 282-0002 (accessed September 7, 2010).

**Table 6**  
**Social indicators**

|  | 2004      | 2005    | 2006      | 2007    | 2008    | 2009    |
|--|-----------|---------|-----------|---------|---------|---------|
| <b>Average household spending <sup>1</sup></b>   |           |         |           |         |         |         |
| Total (current dollars)  | 62,464    | 65,575  | 67,736    | 69,946  | 71,364  | ..      |
| Water and sewage (current dollars)   | 204       | 211     | 221       | 253     | 251     | ..      |
| Electricity (current dollars)  | 1,040     | 1,070   | 1,111     | 1,147   | 1,162   | ..      |
| Food (current dollars)   | 6,772     | 6,978   | 7,046     | 7,305   | 7,435   | ..      |
| Gasoline and other motor fuels (current dollars)   | 1,854     | 2,024   | 2,079     | 2,223   | 2,233   | ..      |
| <b>Personal expenditure on consumer goods and services</b><br>(millions of chained 2002 dollars) | 697,566   | 723,146 | 753,263   | 787,765 | 810,723 | 814,344 |
| <b>Residential waste</b>   |           |         |           |         |         |         |
| Production per capita (kilograms)  | 386       | ..      | 399       | ..      | ..      | ..      |
| Disposal (tonnes)  | 8,961,583 | ..      | 9,238,376 | ..      | ..      | ..      |
| Disposal per capita (kilograms)  | 281       | ..      | 284       | ..      | ..      | ..      |
| Diversion (tonnes)   | 3,363,803 | ..      | 3,744,843 | ..      | ..      | ..      |
| Diversion per capita (kilograms)   | 105       | ..      | 115       | ..      | ..      | ..      |
| Diversion rate (percent of waste production)   | 27        | ..      | 29        | ..      | ..      | ..      |
| <b>Distance driven by light vehicles <sup>2</sup></b> (millions of kilometres)                   | 285,164   | 289,717 | 296,871   | 300,203 | 294,361 | 303,576 |
| <b>Asthma</b> (percent of population age 12 and over)  | ..        | 8.3     | ..        | 8.1     | 8.4     | 8.1     |

1. Data on average household spending is based on the Survey of Household Spending (SHS). For information on the difference between the SHS and personal expenditure data please see: Statistics Canada, 2008, *Guide to the Income and Expenditure Accounts*, Catalogue no. 13-017-X.

2. Distance driven for vehicles weighing less than 4.5 tonnes, excluding the territories.

**Note(s):** For 2003 data, see: Statistics Canada, 2010, *EnviroStats*, Vol. 4 no.1, Catalogue no. 16-002-X. For 2002 data, see: Statistics Canada, 2009, *EnviroStats*, Vol. 3 no.1, Catalogue no. 16-002-X.

**Source(s):** Statistics Canada, CANSIM tables 203-0001, 203-0003, 203-0002, 203-0007, 380-0017, 153-0041, 153-0042, 051-0001, 405-0063 and 105-0501 (accessed September 7, 2010).

**Table 7**  
**Energy indicators**

|   | 2004        | 2005        | 2006        | 2007        | 2008        | 2009        |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Primary energy availability</b> (terajoules)           | 11,527,500  | 11,307,113  | 11,176,879  | 11,969,050  | 11,545,145  | ..          |
| <b>Primary and secondary energy</b>                       |             |             |             |             |             |             |
| Exports (terajoules)                                      | 9,810,695   | 9,641,137   | 9,833,549   | 10,308,635  | 10,186,895  | ..          |
| Residential consumption (terajoules)                      | 1,313,015   | 1,296,644   | 1,243,425   | 1,336,452   | 1,360,303   | ..          |
| <b>Established reserve</b>                                |             |             |             |             |             |             |
| Crude bitumen (closing stock, 1 millions of cubic metres) | 1,660       | 1,620       | 3,340       | 3,500       | 4,300       | ..          |
| Crude oil (closing stock, 1 millions of cubic metres)     | 603.8       | 752.3       | 712.6       | 721.8       | ..          | ..          |
| Natural gas (closing stock, 1 billions of cubic metres)   | 1,497.5     | 1,553.7     | 1,577.7     | 1,534.3     | ..          | ..          |
| <b>Recoverable reserves</b>                               |             |             |             |             |             |             |
| Coal (closing stock, 1 millions of tonnes)                | 4,666.3     | 4,560.4     | 4,468.8     | 4,395.1     | 4,331.5     | ..          |
| Uranium (closing stock, 1 tonnes)                         | 444,000     | 431,000     | 423,400     | 482,000     | ..          | ..          |
| <b>Electricity generation</b>                             |             |             |             |             |             |             |
| Total (megawatt hours)                                    | 571,291,905 | 597,810,875 | 585,097,531 | 603,572,420 | 601,719,256 | 574,874,313 |
| Hydro-electric (percent of total)                         | 58.7        | 60.1        | 60.0        | 60.6        | 62.0        | 63.2        |
| Nuclear (percent of total)                                | 14.9        | 14.5        | 15.8        | 14.6        | 14.7        | 14.8        |
| Fossil fuel and other fuel combustion (percent of total)  | 26.4        | 25.4        | 24.2        | 24.8        | 23.3        | 22.0        |

1. The size of the reserve at year-end.

**Note(s):** For 2003 data, see: Statistics Canada, 2010, *EnviroStats*, Vol. 4 no.1, Catalogue no. 16-002-X. For 2002 data, see: Statistics Canada, 2009, *EnviroStats*, Vol. 3 no.1, Catalogue no. 16-002-X.

**Source(s):** Statistics Canada, CANSIM tables 128-0009, 153-0012, 153-0013, 153-0014, 153-0017, 153-0018, 153-0019, 127-0001 and 127-0002 (accessed September 7, 2010).

**Table 8**  
**Environment and natural resources indicators**

|  | 2004      | 2005      | 2006              | 2007      | 2008      | 2009      |
|--|-----------|-----------|-------------------|-----------|-----------|-----------|
| <b>Greenhouse gas (GHG) emissions</b> (megatonnes of carbon dioxide equivalent (CO <sub>2</sub> eq)) | 741       | 731       | 718               | 750       | 734       | ..        |
| <b>GHG emissions per capita</b> (tonnes of CO <sub>2</sub> eq)                                       | 23.2      | 22.7      | 22.0              | 22.8      | 22.0      | ..        |
| <b>GHG emissions by final demand</b>   |           |           |                   |           |           |           |
| Total household <sup>1</sup> (megatonnes of CO <sub>2</sub> eq)                                      | 423       | 415       | 411 <sup>p</sup>  | ..        | ..        | ..        |
| Total household per capita (tonnes of CO <sub>2</sub> eq)  | 13.2      | 12.9      | 12.6 <sup>p</sup> | ..        | ..        | ..        |
| Direct household <sup>2</sup> (megatonnes of CO <sub>2</sub> eq)                                     | 110       | 111       | 109 <sup>p</sup>  | ..        | ..        | ..        |
| Indirect household <sup>3</sup> (megatonnes of CO <sub>2</sub> eq)                                   | 313       | 304       | 302 <sup>p</sup>  | ..        | ..        | ..        |
| Exports (megatonnes of CO <sub>2</sub> eq)   | 277       | 274       | 264 <sup>p</sup>  | ..        | ..        | ..        |
| <b>Annual temperature departures</b> <sup>4</sup> (degrees Celsius)                                  | 0.1       | 1.7       | 2.4               | 0.9       | 0.7       | 0.8       |
| <b>Value of selected natural resources</b> (millions of current dollars)                             |           |           |                   |           |           |           |
| Land   | 1,227,819 | 1,367,002 | 1,532,193         | 1,708,196 | 1,824,120 | 1,891,438 |
| Timber   | 311,771   | 283,572   | 265,747           | 246,713   | 236,556   | 192,660   |
| Subsoil resource stocks  | 566,179   | 805,761   | 931,530           | 941,765   | 1,543,864 | 914,173   |
| <b>Average farm pesticide expenditures</b> (current dollars)   | 7,602     | 7,792     | 8,268             | 9,147     | 11,361    | ..        |
| <b>Air quality</b> <sup>5</sup>  |           |           |                   |           |           |           |
| Ozone (population weighted, parts per billion)   | 36        | 40        | 38                | 39        | ..        | ..        |
| PM <sub>2.5</sub> (population weighted, micrograms per cubic metre)                                  | 9         | 10        | 8                 | 8         | ..        | ..        |

1. Total household greenhouse gas emissions are the sum of direct plus indirect household greenhouse gas emissions.
  2. Direct household greenhouse gas emissions include all greenhouse gas emissions due to energy use in the home and for private motor vehicles.
  3. Indirect household greenhouse gas emissions are those business-sector emissions due to the production of the goods and services purchased by households. An estimate of the greenhouse gas emissions from foreign companies due to the production of the imported goods purchased by Canadian households is included.
  4. Annual departures from the 1951 to 1980 temperature normals.
  5. Ground level ozone and fine particulate matter (PM<sub>2.5</sub>) are two key components of smog that have been linked to health impacts ranging from minor respiratory problems to hospitalizations and premature death. Exposure studies indicate that adverse health effects can occur even with low concentrations of these pollutants in the air. Annual data are revised, based on the latest release of the Canadian Environmental Sustainability Indicators report.
- Note(s):** For 2003 data, see: Statistics Canada, 2010, *EnviroStats*, Vol. 4 no. 1, Catalogue no. 16-002-X. For 2002 data, see: Statistics Canada, 2009, *EnviroStats*, Vol. 3 no. 1, Catalogue no. 16-002-X.
- Source(s):** Statistics Canada, CANSIM tables 051-0001, 153-0046, 378-0005 and 002-0044 (accessed August 18, 2010). Environment Canada, 2010, *National Inventory Report 1990-2008: Greenhouse Gas Sources and Sinks in Canada*, Catalogue no. En81-4/2008E-PDF. Environment Canada, 2010, *Annual national temperature departures, ranked warmest to coolest, 1948-2009*, <http://ec.gc.ca/adsc-cmda/default.asp?lang=en&n=30FB538A-1> (accessed August 18, 2010). Environment Canada, 2010, *Air Quality Data Tables*, [www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=B1385495-1#air1\\_en](http://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=B1385495-1#air1_en) (accessed August 18, 2010). Statistics Canada, Environment Accounts and Statistics Division, Material and Energy Flow Accounts.

## Updates

### New releases

#### Human Activity and the Environment 2010: Freshwater supply and demand in Canada

The *Human Activity and the Environment* publications bring together a collection of environmental statistics from many sources, and paint a statistical portrait of Canada's environment. Special emphasis is given to the relationship of human activity to air, water, soil, plants and animals.

The analytical article "Freshwater supply and demand in Canada" provides information on Canada's freshwater supply as well as the demands placed on it. New research done within Statistics Canada is incorporated with information from other sources, including other federal government departments, international bodies and scientific journals.

- Canada's average annual renewable freshwater supply, or water yield, is 3,472 km<sup>3</sup>. To put this in perspective, this water yield amounts to almost as much water as there is in Lake Huron (which contains 3,540 km<sup>3</sup>).
- The southern part of the country, where 98% of the population is located, is responsible for 38% of the water yield or 22,661 m<sup>3</sup> of renewable freshwater per capita. In the North, water yield per capita is 185 times greater, or 4,193,014 m<sup>3</sup>.
- From 1971 to 2004 water yield in Southern Canada decreased an average of 3.5 km<sup>3</sup> per year, which is equivalent to an overall loss of 8.5% of the water yield over this time period. This average annual decrease of 3.5 km<sup>3</sup> is almost as much as the 3.8 km<sup>3</sup> of water that is supplied to the residential population of Canada in a year.
- The area in Canada that had the lowest water yield, and the highest variability in water yield between 1971 and 2004, was the Prairies.
- In 2005, an estimated 42 km<sup>3</sup> of water were withdrawn from the environment and used in household and economic activities in Canada. About 14% of this water flowed through the public utility water system, while about 86% was extracted from the environment directly by the end user.
- In 2005, total water withdrawals in Canada amounted to 1.2% of the average annual renewable water resources. More pressure however, is placed on water resources in some areas of the country than in others, with this pressure peaking in summer.
- In August 2005, more than 40% of the water yield in the Okanagan–Similkameen drainage region and the Prairies was withdrawn by agriculture, industry and households. In the Prairies, where stocks are limited, water demand must be met primarily by renewable water, and water shortages are evident when demand exceeds the renewable supply.

Released September 13, 2010 (Statistics Canada Catalogue no. 16-201-X).

#### Using a Trend-cycle Approach to Estimate Changes in Southern Canada's Water Yield from 1971 to 2004

Quantifying how Canada's water yield has changed over time is an important component of the water accounts maintained by Statistics Canada. This study evaluates the movement in the series of annual water yield estimates for Southern Canada from 1971 to 2004. We estimated the movement in the series using a trend-cycle approach and found that water yield for Southern Canada has generally decreased over the period of observation.

Released September 13, 2010 (Statistics Canada Catalogue no. 16-001-M2010014).



## Industrial Water Use, 2007

The information collected for the Industrial Water Survey measures, by volume, the sources of water used, the purposes of water use, whether or not water was re-circulated or re-used, where the water was discharged, the types of treatments applied to intake water prior to use and the types of treatments applied to wastewater prior to discharge. Water acquisition costs, treatment costs and operating and maintenance expenses related to water intake and discharge are also collected.

The results of this survey are used in the development of environmental accounts, aid in tracking the state of stocks of water and contribute to national indicators of water quality.

Released September 8, 2010 (Statistics Canada Catalogue no. 16-401-X).

## Households and the Environment Survey, 2009

Selected data pertaining to radon awareness and testing from the Households and the Environment Survey are now available for 2009.

Released July 26, 2010. To order data, to obtain more information, or to enquire about the concepts, methods or data quality of this release, contact the Information Officer (613-951-0297; [environ@statcan.gc.ca](mailto:environ@statcan.gc.ca)), Environment Accounts and Statistics Division.

### CANSIM tables and updates

CANSIM is Statistics Canada's key socio-economic database.

The following table has been added to CANSIM:

**CANSIM table 153-0098**, Households and the environment survey, knowledge of radon and testing, Canada and provinces

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Release date: September 2010

### Symbols

The following standard symbols are used in Statistics Canada publications:

|                |  |
|----------------|--|
| .              | not available for any reference period   |
| ..             | not available for a specific reference period  |
| ...            | not applicable   |
| 0              | true zero or a value rounded to zero   |
| 0 <sup>s</sup> | value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded |
| P              | preliminary  |
| r              | revised  |
| x              | suppressed to meet the confidentiality requirements of the <i>Statistics Act</i>                                   |
| E              | use with caution   |
| F              | too unreliable to be published   |

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