

The Greater Toronto bioregion has important natural assets: beaches, wetlands, and bluffs along the waterfront; deep, wooded river valleys; the moraine's rolling, pastoral hills; majestic rock cliffs along the Niagara Escarpment; cool trout streams; fertile soils for agriculture; and more. Despite these blessings, there are many signs of environmental, social, and economic stress in the region. A better understanding of these stresses helps in devising strategies to deal with existing problems, and to meet future needs.

The following is a brief description of some of the challenges facing the Greater Toronto bioregion today, based on a more detailed discussion in the *Watershed* report.

POPULATION AND SETTLEMENT

The single greatest challenge facing the Greater Toronto region is probably the number of people who live here, and the expected high rate of population growth. The GTA has more than 40 per cent of Ontario's population (almost four million people) living on one per cent of the province's land base. Approximately 10 per cent of those live along the waterfront.

The GTA population has grown rapidly — from a pre-war population of about one million — and is expected to continue doing so, reaching about six million by 2021. That kind of growth places a tremendous strain on all sectors of society, trying to cope with the need to provide such basic necessities as housing, jobs, and health care, and to take care of services including transportation, waste disposal, and sewage treatment. It also threatens the quality of life that attracted many people in the first place: green spaces, recreational

opportunities, clean air and water, a relatively safe city, good economic prospects, diverse amenities, and the like.

Even more important than the actual number of people living in the bioregion, however, is the pattern of settlement, and the way in which development occurs. The City of Toronto, and the centres of many other cities and towns in the bioregion, started as compact settlements kept compact by limitations of transportation by foot and horse. With the advent of streetcars, a more spacious form of settlement spread along early transit lines.

Most of the built-up parts of the bioregion, however, were developed for a society with a high degree of car ownership. As a result, there is low-density sprawl, inefficient in its use of land, energy, and other resources.

Not only have settlement patterns encouraged inefficiencies, they have tended to ignore existing natural features and processes (e.g., significant natural habitats, hydrological systems, landforms), as well as cultural and heritage values. The results are degraded environments and a blandness that comes from blurring the distinct attributes of different places.

GREENSPACE

Many of the green spaces in the Greater Toronto bioregion — particularly those of the Oak Ridges Moraine, Lake Ontario waterfront, and river valleys — have been harmed and fragmented, and are further threatened by patterns of development that ignore natural features and processes.

More than half the original wetlands in the bioregion have been drained for farms, bulldozed for housing or infilled to provide land for industry or transportation.

Most of the remaining wetlands have been debased by upstream pollution or surrounding land uses, and are subject to intense pressure from increased urbanization. Waterfront marshes at the mouths of rivers and creeks are at particular risk, because they are susceptible to changes in the flows, quality, and temperature of water from the watersheds, as well as to waterfront development, such as conversions to harbours and marinas.

Because of widespread forest clearing in Ontario in the past 200 years, only one-fifth of the GTA remains forest-covered today — and that includes parks, Crown land, conservation areas, and private woodlots. There is disturbing evidence that the trees still remaining — like their urban cousins — are under significant stress from drought, salt, and other pollutants.

WILDLIFE

Ever since the first European settlement, there has been a dramatic decrease in the diversity and abundance of wildlife in the bioregion, and remaining wildlife populations are under stress. The primary causes have been, and continue to be: loss, alteration, and fragmentation of habitat; fishing and hunting; pollution of ecosystems by excess nutrients and persistent chemicals; and the introduction of non-native animal and plant species.

As a result of these stresses, some species, like the passenger pigeon, have become extinct. Others, including the timber wolf, black bear, lynx, and elk, are no longer found in this bioregion. An increasing number of species are becoming rare: in the GTA today, there are as many as 114 provincially rare kinds of plants, reptiles, amphibians, mammals, and fish.



Muskrat

WATER SUPPLY

Most residents of the Greater Toronto bioregion get their water from Lake Ontario. However, a large part of York Region, including rapidly growing communities like Aurora and Newmarket, as well as the northern parts of Halton, Peel, and Durham regions, depends primarily on groundwater supplies.

This has caused serious water quantity and quality issues: first, there is evidence that in several areas, aquifers are actually being “mined” — water is being withdrawn faster than it is being naturally replenished. Second, in some areas, groundwater has been contaminated by a variety of sources including agricultural and industrial chemicals, leachate from landfills, road salt (groundwater in the lower Don Valley is as saline as seawater), and inadequate septic systems. Third, groundwater provides about 40 per cent of the water flow in the bioregion’s rivers and streams, making them vulnerable to changes in water flows and purity. All three issues may be critical, limiting future growth in groundwater-dependent regions, unless water is piped from Georgian Bay or Lake Ontario.

Even in the areas supplied by Lake Ontario water, it is becoming evident that we need to reduce total consumption — not

because of any lack of water (there is plenty in the lake), but there are the mounting costs of treating the water before it is used and of treating large volumes of sewage, as well as the impact on the environment of streams, rivers, and the waterfront that comes from stormwater and combined sewer overflows.

WATER QUALITY

As explained earlier, the Metro Toronto waterfront is one of 43 “hot spots” around the Great Lakes, identified by the International Joint Commission as needing Remedial Action Plans (RAPs) because of water quality problems. In the Metro Toronto RAP area, bottom sediments are contaminated, organisms living in them show bioaccumulation of toxic substances, fish of some species have such high levels of contaminants they cannot be safely eaten by humans, aquatic life is stressed from pollution, and swimming beaches are frequently closed during the summer.

For the most part, sewage treatment plants in the bioregion meet provincial standards for concentrations of different pollutants they discharge, but they contribute massive loads of nutrients, heavy metals, and organic chemicals to the waterfront. It is clear that substantial improvements are required to most existing sewage treatment facilities, just to ensure that the wastes of the present residents of the bioregion are adequately handled. In addition, further capacity will be required to treat wastes generated by the expected increases in population over the coming decades.

The condition of the 60 or so rivers and tributaries in the Greater Toronto bioregion varies considerably. Although a few are still fairly healthy, many have been

seriously degraded. Forest cutting has removed shade and caused banks to erode. Pesticides, fertilizers, and topsoil from farms, as well as a potent cocktail of rain-washed pollutants from urban areas, flow into the rivers. In some municipalities, when there are heavy rains, sewers overflow into rivers and the waterfront, carrying a bacteria-laden mixture of stormwater and sewage that means beaches have to be posted to warn people not to swim.

AGGREGATES

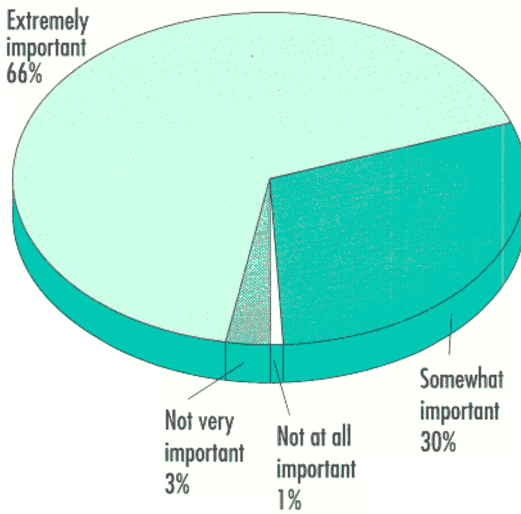
Glacial deposits of sand and gravel in the bioregion provide extensive aggregate resources, a fifth of those produced in the province. It is ironic, indeed, that the areas richest in aggregates — the Niagara Escarpment and the Oak Ridges Moraine — are the most sensitive to the extraction process. Removing aggregate from the Niagara Escarpment threatens its integrity as a landform and its natural habitats, while doing so in the moraine interferes with its hydrogeological functions as an aquifer and the source of many rivers.

SOILS

In some parts of the bioregion, soils are contaminated with heavy metals and organic chemicals, often the legacy of industrial activities, lakefilling, transportation or waste dumping. Although the extent of soil contamination from industrial activities throughout the region is not known, there is reason to believe that many former and existing industrial and refinery sites are contaminated as the result of poor handling of hazardous materials in the past.

In this century, significant lakefilling has been carried out to create land for industry, transportation corridors, ports,

Importance of Water Clean-Up



Two-thirds of the respondents believe it is "extremely important" that a major effort be made to clean up the Lake Ontario waterfront and rivers like the Don, the Humber, the Rouge, and the Credit so people can safely swim and fish in them again.

Source: Environics Poll, 1991.

N.B. Due to rounding figures may not add to 100.

and parks. Until very recently, and particularly along the central Toronto waterfront, this lakefilling included contaminated materials from construction sites, sewage sludge, incinerator refuse, and municipal garbage.

Inland, there are as many as 276 abandoned landfill sites throughout the GTA. Because waste dumping was virtually unregulated until about 20 years ago, there is little information about what may have been dumped in these sites or, for most of them, whether pollutants are now leaking into groundwater or nearby streams.

AIR

Air quality in the Greater Toronto bioregion is influenced by many sources, some of which are hundreds of kilometres

away. For example, trace toxic organic chemicals can be carried long distances from other parts of Ontario, the United States, and beyond, and most chemical precursors of smog (ground-level ozone) come from American sources. Air quality is also influenced by activities in the bioregion itself — particularly from automobiles, coal-fired generating stations, incinerators, and industry, as well as from furnaces for heating homes, offices, and other structures.

Over the past few decades, levels of sulphur dioxide, particulates, carbon monoxide, and some metals have been declining, because of a combination of regulations controlling the sulphur content of coal and gas, a shift from coal and oil to natural gas, and replacement of leaded with unleaded gasoline. However, levels of nitrogen dioxide and volatile organic compounds (contributors to acid rain and ozone) have remained fairly constant and at high levels. Improved control of the main sources of these pollutants — automobiles, power plants, and certain industries — has been offset by increased numbers of automobiles on the roads.

For the last 10 years, levels of ground-level ozone have remained fairly constant, and are quite uniform across southern Ontario. However, they are highest in the City of Toronto, where they regularly exceed health-related guidelines on warm, sunny days in spring and summer.

ENERGY

Canadians consume more energy per capita than any other people in the world. The high proportion of Canada's population and industrial base in the Greater Toronto bioregion may make this one of the most energy-intensive regions in the world. Approximately 275 gigajoules of energy