

The GTA Bioregion



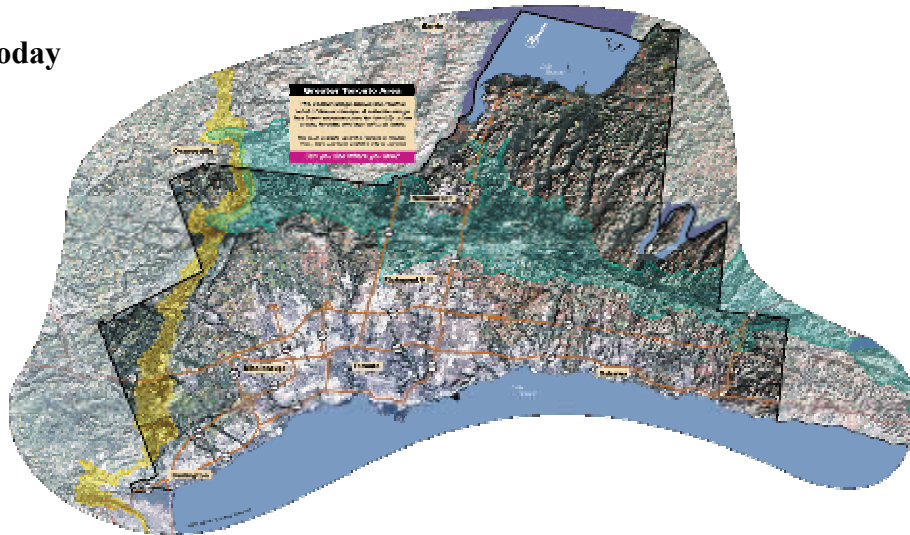
The Greater Toronto Area

- The City of Toronto includes a physical area of approximately 630 square kilometres and is bounded by Lake Ontario to the south, Etobicoke Creek and Highway #427 to the west, Steeles Avenue to the north, and the Rouge River to the east.
- The Greater Toronto Area (GTA) defines the urban agglomeration extending from city boundaries and includes the regional municipalities of Halton, Peel, York, and Durham.
- Both the city and the GTA are part of a larger, natural ecosystem known as the Greater Toronto Bioregion. This ecosystem is bounded by Lake Ontario, the Niagara Escarpment, the Oak Ridges Moraine, and includes several watersheds that drain into Lake Ontario.

GTA History

- Oldest rocks in Ontario 1.5 billion years old
- Canadian Shield rocks are visible in Muskoka and Haliburton
- In the GTA, the Shield is covered by younger rocks and glacial settlements
- 20 000 years ago, Toronto was covered by ice 4 times the height of the CN Tower
- 12 000 years ago, Lake Ontario is 50 metres higher than it is today – covering Toronto completely
- Higher ground is a refuge – found in the **Niagara Escarpment & the Oak Ridges Moraine**

The GTA Today



Niagara Escarpment

- Continental Drift created the Taconic Mountains in the northeastern United States and the “Michigan Basin”
- As the mountains eroded, sediments were carried away, exposing older, less resistant rocks underneath
- Today, the escarpment contains wetlands, forests, rock, and recreation

Oak Ridges Moraine

- Ice sheets expand and contract on a regular basis (over geologic time)
- The last time the ice left the GTA was only about 10 000 years ago
- As the ice sheet last contracted, glacial meltwater ponded between the ice sheet and the Niagara Escarpment
- A lake basin was formed into which gravel and sand were deposited
- As the ice sheet melted, the ponded lake water drained, leaving the moraine high above the surrounding landscape.
- Rain and snow that falls on the moraine replenish large reservoirs of groundwater that supply drinking water for over 200 000 people
- The moraine's sand and gravel filter the water and allow it to flow out of springs, forming the headwaters of the majority of the GTA's watersheds

Shorelines & Watersheds

- As the ice sheet last contracted, meltwater flooded the Lake Ontario basin to form "Lake Iroquois"
- Deposits along the shoreline of Lake Iroquois are now vital aggregate sources (sand, gravel, clay)
- The natural shoreline of Lake Ontario is at Front Street (Union Station, Hockey Hall of Fame, and the Royal York)
- Since 1850, the shoreline has been extended by almost a kilometre by dumping millions of tons of fill
- Originally used for industry and shipping, now for parks, hotels, etc.
- Rainwater and snow melt flows from higher lands like the Niagara Escarpment and Oak Ridges Moraine to lower lands and lakes through rivers
- All the land drained by a river and its tributaries is known as a **watershed**
- Major watersheds have their own conservation authority to manage them

Urbanization & Soil Quality

- In a natural environment, some water will infiltrate into the soil
- Pavement forces ALL of the water to flow over the land, flooding streams and rivers, causing erosion and increased sediments in the water
- Developers now let rivers run their course and build stormwater ponds
- Rivers and streams perform important ecological functions such as providing habitats for fish and insects
- Rivers and valley lands act as corridors for fish, animals, and birds and form some of the last green spaces in the urban portions of the GTA.
- As glaciers moved across the land, they left behind boulders, sand, and clay known as till – the parent material for our soil in the GTA
- Water, chemical, and biological reactions created layers in the soil – decaying biotic life created humus for the topsoil which is good for agriculture
- The Canada Land Inventory ranks agricultural potential based on a variety of factors
- Only 5% of Canada's land is "prime agricultural land"
- 80% of the GTA was originally "prime agricultural land" but urbanization is taking a toll the agriculture industry