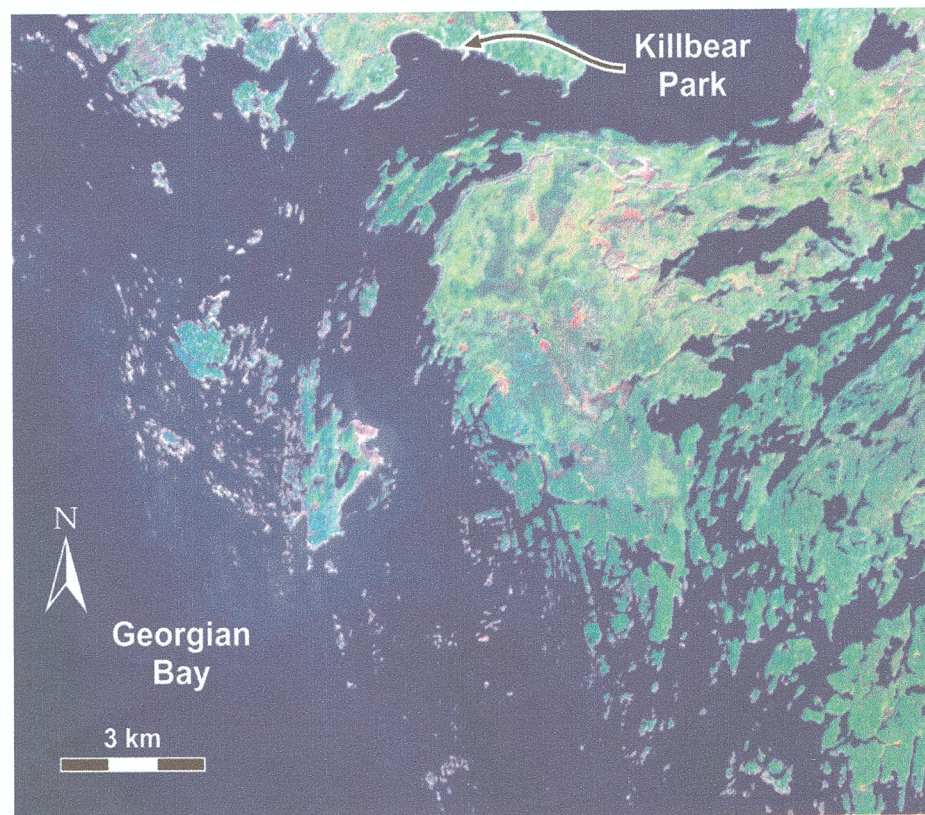


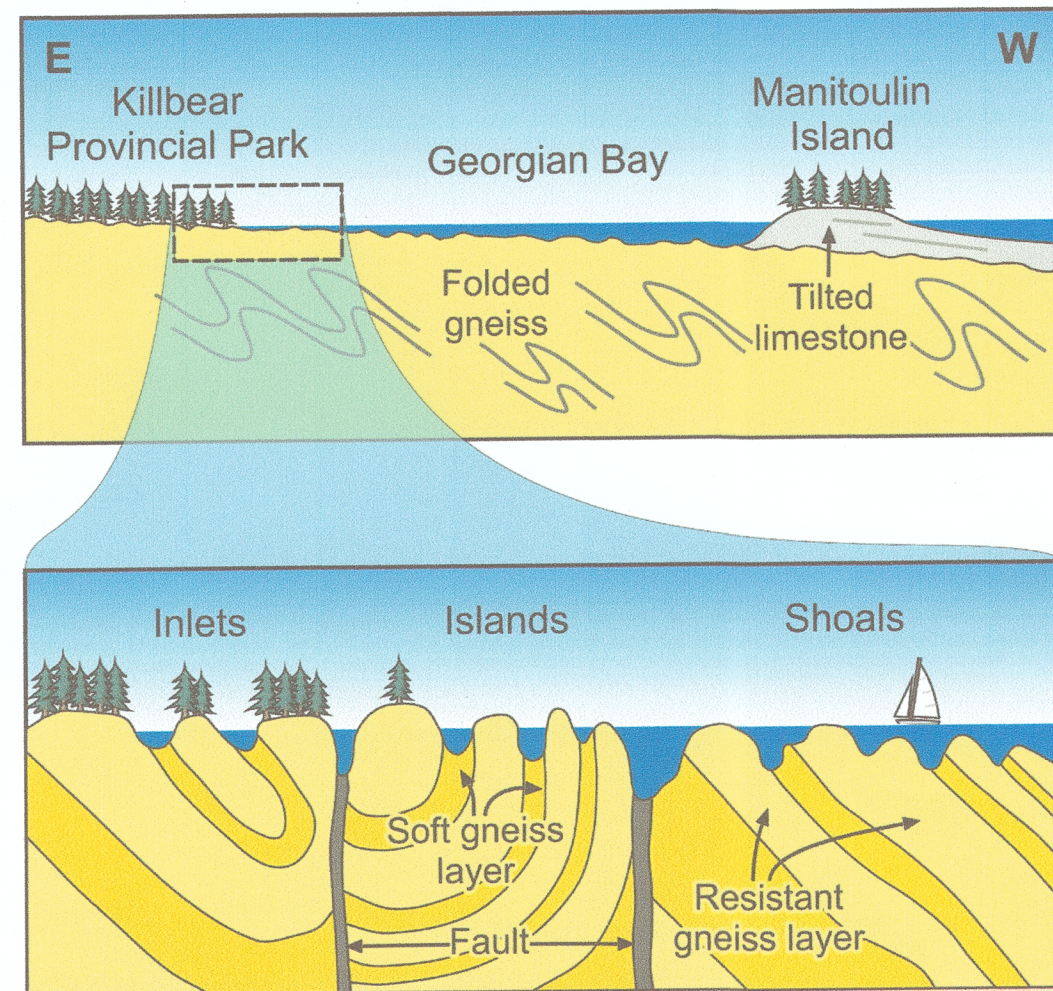
Parry Sound

Of all the shorelines of the Great Lakes, only those of eastern and northern Georgian Bay are carved from gneiss bedrock. Other Great Lakes shorelines are carved from other kinds of rock such as granite, volcanic rock or limestone, or by Ice Age deposits of sand or glacial debris. Another example of island-rich shorelines carved into gneiss bedrock is the Thousand Islands region of the St. Lawrence River near Kingston.

Why do shorelines underlain by gneiss favour the formation of islands? The answer lies in the differing resistance to erosion of lighter coloured layers rich in the durable minerals quartz and feldspar, versus the darker layers rich in minerals more susceptible to weathering. Such layers can be tens to hundreds of metres thick. Where the layers have been tilted by Earth forces during ancient mountain-building events, the resistant layers erode to form ridges while the less resistant layers are eroded to form parallel valleys. Where these ridges and valleys form the shorelines of Georgian Bay, they create narrow peninsulas and elongate bays. The second factor that favours the formation of islands is that the land surrounding eastern and northern Georgian Bay is relatively flat. Because the land slopes very gently under the waters of Georgian Bay and forms extensive areas of shallow-water, undulations in the ridges can rise above or fall below the level of the lake, and thus form islands and shoals.



This satellite image of Georgian Bay near Killbear Provincial Park shows the elongated peninsulas, bays and islands left by the erosion of layers of hard and soft gneiss. Image generated from Natural Resources Canada GeoBase Orthoimage 2005–2010 under the Open Government Licence—Canada.



A geological cross section illustrates how alternating resistant and soft layers of gneiss create inlets, islands and shoals.