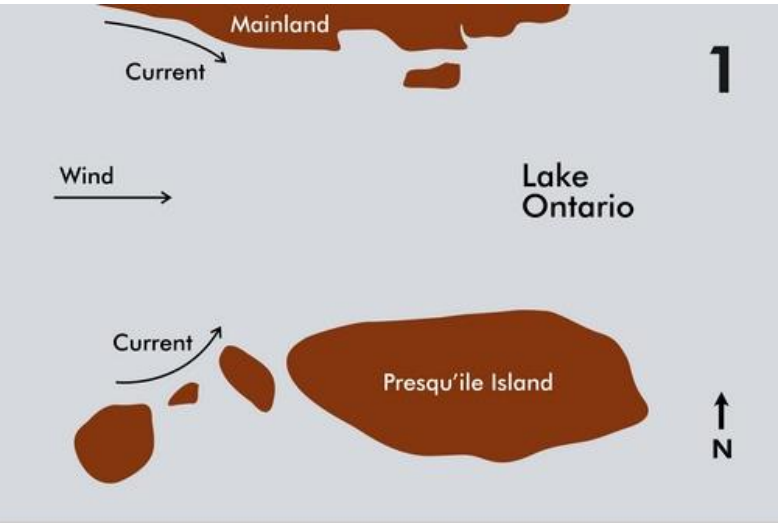
Formation of the Presqu'ile Tombolo

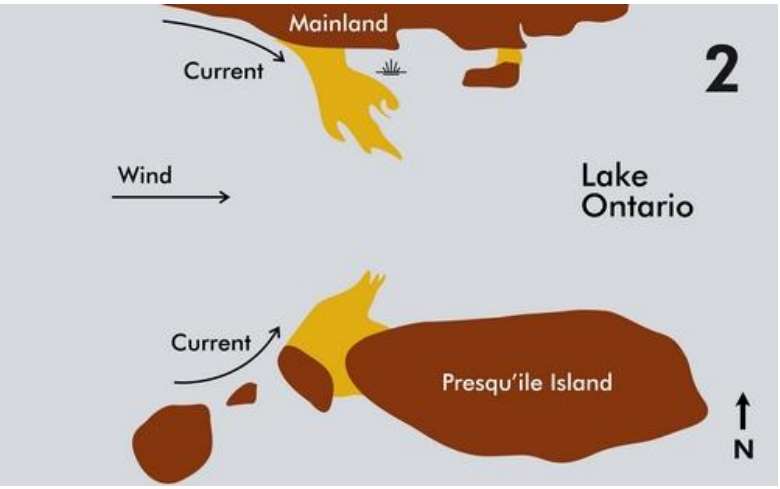
It is only in the last 10,000 years that the elements conspired to form the Presqu'ile we know today. Presqu'ile Provincial Park includes the Presqu'ile Peninsula as well as Gull and High Bluff Islands. The mainland portion of the park is a feature known as a tombolo. A tombolo is a peninsula that is formed when an island is connected to the mainland by a sandbar. The Presqu'ile tombolo is a fascinating formation, unequaled in size, complexity, and degree of development on the Great Lakes.



5 000 Years Ago – *Four islands emerge from the water offshore of present-day Brighton.*

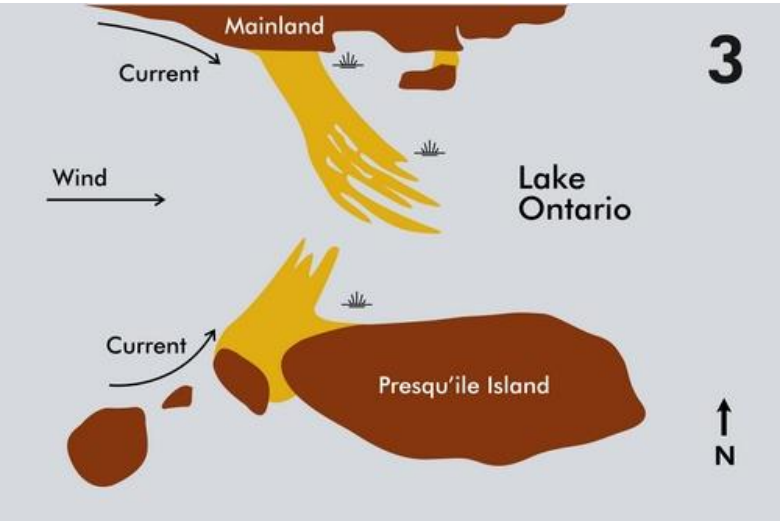
When the glaciers retreated this area was covered by Glacial Lake Iroquois which was much bigger and deeper than present day Lake Ontario. Eventually the ice sheet that covered the area that is now the St. Lawrence River began to melt and the water began to drain from Lake Iroquois. As the water drained four islands appeared offshore from present-day Brighton.

Two of the four islands that rose above the surface of the lake, High Bluff and Gull Island, are still separated from the mainland. The other two islands have since become attached to the mainland to form the tombolo. One small former island now forms the area around Owen Point. The much larger former Presqu'ile Island now makes up most of the southern part of the Presqu'ile Peninsula.

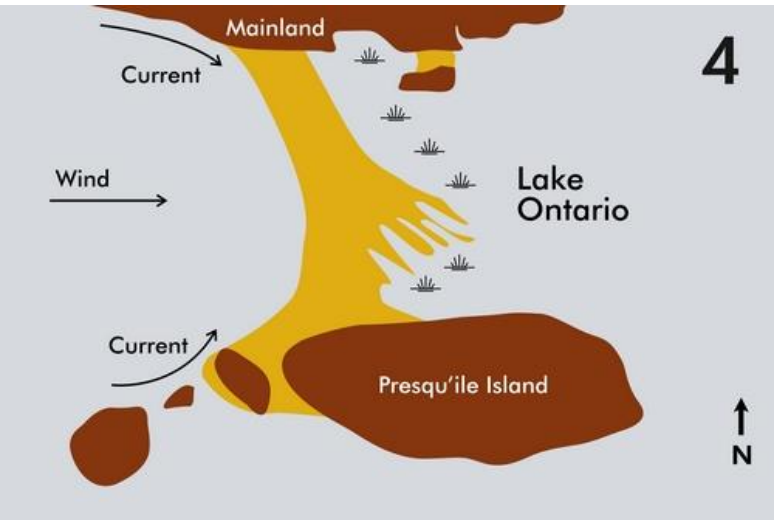


3 000 Years Ago *– Lake currents bring sand and gravel into the shallow channel between the mainland and the islands, sand spits behind to form.*

Over time the Presqu'ile tombolo began to form. Lake currents from the west and southwest carried sand and gravel left behind by the glaciers. When the currents enter the shallow channel between the islands and the mainland they slowed down and dropped their deposits. As the deposits deepened, sand spits began to form on the mainland and on the former Presqu'ile island.



1 500 Years Ago – *The islands are nearly attached to the mainland. A marsh begins to develop on the east side of the sandbars.*



500 Years Ago – Today – *The islands are attached to the mainland by the sandbars and a tombolo is born.*

The lake currents continued to deposit sand and gravel in the shallow channel. On the east side of the sandbars water loving plants began to grow in the warm, shallow water with reduced water currents and a marsh began to develop.

Eventually a northern spit grew across the intervening channel and became joined to the much smaller island spit. Once the two spits had joined, creating the tombolo, sand which had formerly moved eastward into Presqu'ile Bay became trapped to the west of the tombolo and a beach began to grow westward.

The process of sand deposition continues today, at a remarkably rapid rate. Air photos suggest that the beach deposits grew an average of more than two metres a year between 1949 and 1986.

Extrapolating these rates back through time, the relatively young age of the sand connection to the mainland is evident. The entire area west of the main park access road, for example, has been deposited since the early 1800s. Under natural conditions pannes and dunes slowly fill into forest and the continuous deposition of sand results in the creation of new panne, dune, and beach habitats. Raking of the beach to enhance its attractiveness to swimmers has modified the natural processes, preventing foredune formation and succession of plant communities and leaving an unnaturally wide stretch of bare sand making up the present beach.

Today the tombolo remains a dynamic formation subject to the whims of the wind and waves. It is most noticeable at Owen Point. Owen Point grows and shrinks continually and since 2006 Gull Island has been attached twice to Owen Point only to be broken apart again.

Only time will tell what the water may give or take away.