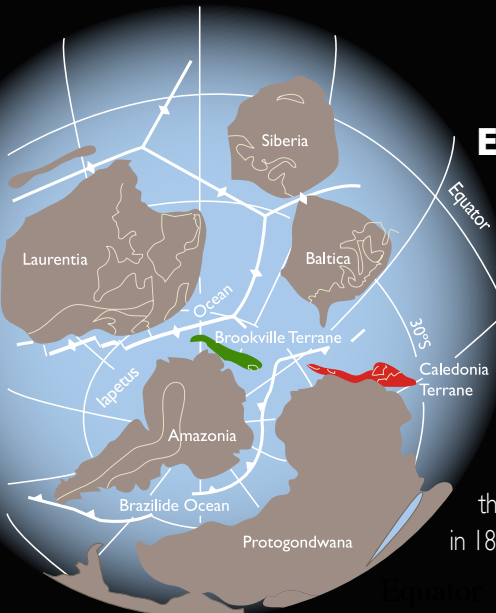


Rapids Lookout

The Reversing Rapids are famous for the tidal phenomenon that forces the St. John River to flow backwards as the Bay of Fundy reaches high tide.



When the river found its new outlet 15,000 years ago it flowed over the rock ridges here to create this gorge. Thousands of years ago there was a waterfall here, but as sea level rose and the riverbed eroded, the waterfall was drowned. The phenomenon of the Reversing Rapids is only about 3,000 years old. A much older geological story here involves the collision of ancient continents. You are standing on Cambrian age rocks of the Caledonia Terrane. These are the same layered rocks you saw near the gazebo. A terrane is a fragment of the earth's crust formed on, or broken off from, one piece of the earth's crust (or tectonic plate) and attached or welded to the crust on another plate.



Earth 555 million years ago...

The place where the terrane attaches to the other crust is often marked by a fault. The Caledonia Fault crosses the river beneath the bridges separating the terranes. The two terranes have a very different fossil record. The Cambrian rocks have trilobites, sponges, brachiopods and small shelly fossils. The Precambrian rocks preserve stromatolites, fossil structures created by cyanobacteria.

Geologists have walked these rock outcrops and studied the geology here since the 1830s. Sir Charles Lyell, a founder of the science of geology, visited this place in 1852 and saw the graphite mines while in operation below the bridge.

The fragment of crust preserves its own distinctive geologic history, which is different from the crust it has become welded to. Under the bridge across the river you will see a light gray rock. These are Precambrian age rocks of the Brookville Terrane. They are 750 million to 1.2 billion years old. Look at the interpretation panel and you will see these two terranes had their origin in the southern hemisphere near the South Pole. 'Continental Drift' moved them across the equator where they became attached to ancient North America, called Laurentia. At the Reversing Rapids we can see the contact of these two ancient continental fragments. —>



FINISH the trail under the bridge and walk across the terrane boundary.

REVERSING RAPIDS GEOLOGY WALK



STONE HAMMER™
GEOPARK / GÉOPARC

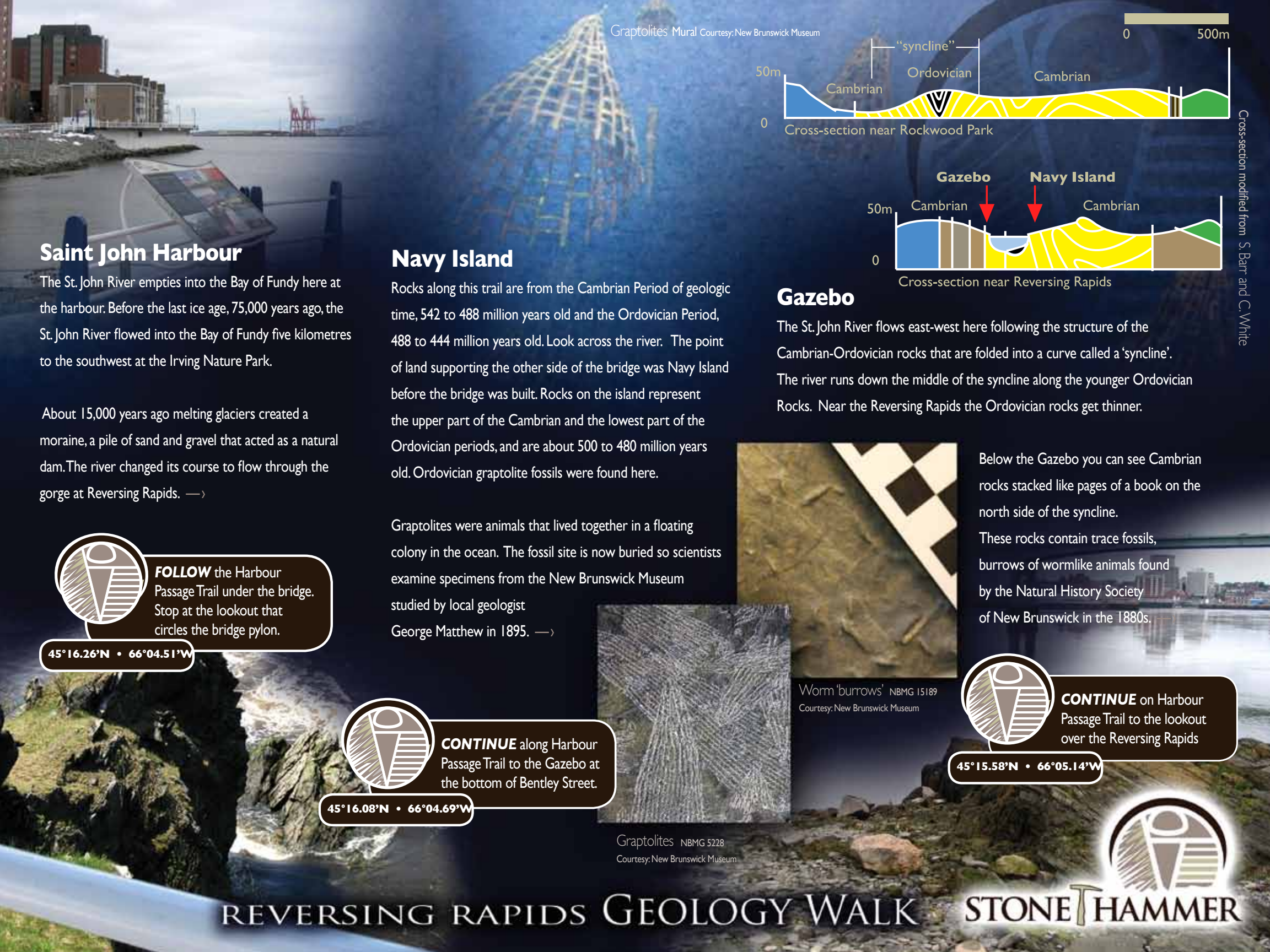
This tour follows the red Harbour Passage Trail from Market Square in Uptown Saint John to the Reversing Rapids. At lookouts along the route we will examine the geology...

45°16.37'N • 66°03.97'W

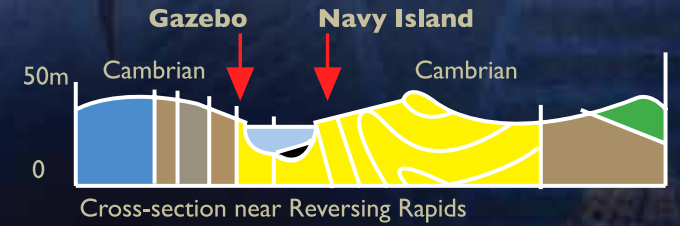
—> **START** outside Market Square on the Boardwalk, follow Harbour Passage Trail toward Reversing Rapids. Stop at the interpretation panels before crossing the railway tracks...

45°16.49'N • 66°04.06'W





Graptolites Mural Courtesy: New Brunswick Museum



Cross-section modified from S. Barr and C. White

Saint John Harbour

The St. John River empties into the Bay of Fundy here at the harbour. Before the last ice age, 75,000 years ago, the St. John River flowed into the Bay of Fundy five kilometres to the southwest at the Irving Nature Park.

About 15,000 years ago melting glaciers created a moraine, a pile of sand and gravel that acted as a natural dam. The river changed its course to flow through the gorge at Reversing Rapids. —>

Navy Island

Rocks along this trail are from the Cambrian Period of geologic time, 542 to 488 million years old and the Ordovician Period, 488 to 444 million years old. Look across the river. The point of land supporting the other side of the bridge was Navy Island before the bridge was built. Rocks on the island represent the upper part of the Cambrian and the lowest part of the Ordovician periods, and are about 500 to 480 million years old. Ordovician graptolite fossils were found here.

Graptolites were animals that lived together in a floating colony in the ocean. The fossil site is now buried so scientists examine specimens from the New Brunswick Museum studied by local geologist George Matthew in 1895. —>

Gazebo

The St. John River flows east-west here following the structure of the Cambrian-Ordovician rocks that are folded into a curve called a 'syncline'. The river runs down the middle of the syncline along the younger Ordovician Rocks. Near the Reversing Rapids the Ordovician rocks get thinner.

Below the Gazebo you can see Cambrian rocks stacked like pages of a book on the north side of the syncline. These rocks contain trace fossils, burrows of wormlike animals found by the Natural History Society of New Brunswick in the 1880s.



FOLLOW the Harbour Passage Trail under the bridge. Stop at the lookout that circles the bridge pylon.

45°16.26'N • 66°04.51'W



CONTINUE along Harbour Passage Trail to the Gazebo at the bottom of Bentley Street.

45°16.08'N • 66°04.69'W



Graptolites NBMG 5228
Courtesy: New Brunswick Museum



Worm 'burrows' NBMG 15189
Courtesy: New Brunswick Museum



CONTINUE on Harbour Passage Trail to the lookout over the Reversing Rapids

45°15.58'N • 66°05.14'W