


# STONE HAMMER

## REVERSING RAPIDS

**Location:** Hwy 100 at Fallsview Dr., Saint John, NB.  
**GPS:** 45°15.5' N; 66°05.3' W

**Access:** accessible dawn until dusk, free 

**Geological Age:** Precambrian, Cambrian 1 billion to 500 million years old; Neogene, modern

**Features:** Visitor Information, interpretation, trails, restaurant, boat tours



## ROCKS

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. A much older geological story here involves the collision of ancient continents. The rocks at the Reversing Rapids exhibit one of the most interesting stories in the Stonehammer park. Here you can see the contact of two ancient geologic terranes, and the fault line that marks the boundary between them. The rocks south of the bridge are Cambrian age rocks (COs<sub>1</sub>) of the Caledonia Terrane, 542 to 490 million years old. North of the bridge the light gray rocks are Precambrian age from the Brookville Terrane. The Ashburn Formation marble (ZAs) and the Martinon Formation (ZMA) are 750 million to 1.2 billion years old. At the Reversing Rapids we can see the contact of these two ancient continental fragments.

## TERRANE CONTACT

The gorge at the Reversing Rapids displays a terrane contact. 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. The fragment of crust preserves its own distinctive geologic history, which is different from the crust it has become welded to. In this case the two terranes, Brookville and Caledonia, both originated in the southern hemisphere, but they are 500 million years apart in age. Starting in the Cambrian perhaps 540 million years ago these two fragments of crust were sliced off a continental mass centered near the South Pole. As an ocean basin opened behind them, and one closed in front, they drifted northward to collide with ancient North America. Here they are! A line of weakness separates the two terranes and during later crustal movements a fault (Caledonia Fault) developed along the terrane boundary.

## ICE AGE

About 20,000 years ago the last glacial period reached its maximum. Glaciers covered all of the Maritimes. As the continental glaciers retreated they left a changed landscape. Before the last glaciation the St. John River flowed to the sea through South Bay, past the Irving Nature Park. Glacial moraines dammed that outlet. When the river found its new route 15,000 years ago it flowed over the rock ridges at Reversing Rapids to create this gorge. Thousands of years ago a waterfall existed 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 profile of the river bed shows a series of three waterfalls must have existed here starting near the islands at Fallsview Park and ending near the bridges. Just past the islands the river bottom drops to about 25 metres below low water level. It then drops two more times to more than 40 metres below low water level just past the road bridge.



Caledonia Fault



Photographs and text, R.F. Miller, New Brunswick Museum