Fundy Trail Parkway



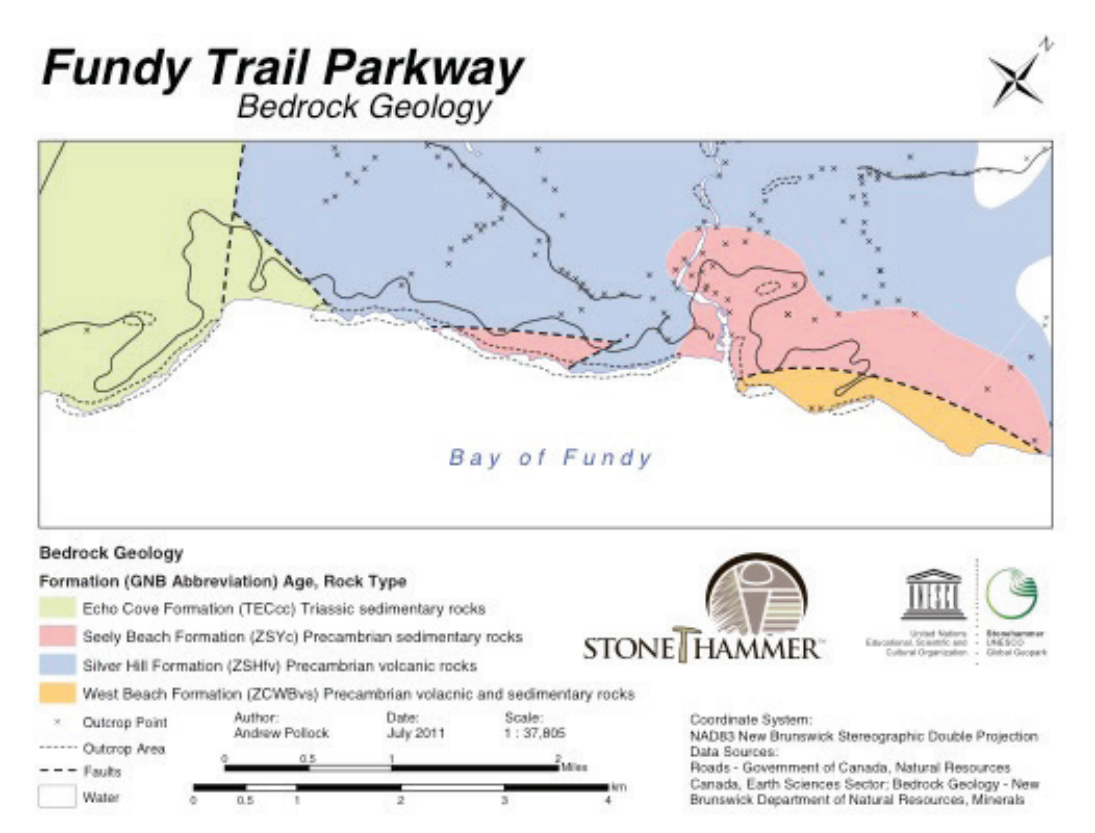
Teacher's Sheet

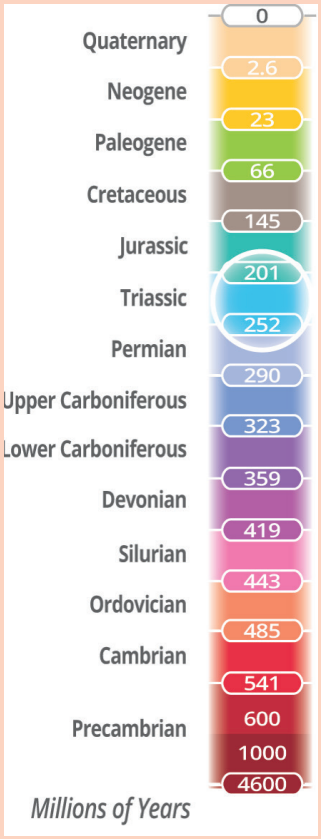
The 19km Fundy Trail is a must-see attraction in New Brunswick. From Highway 1 the Fundy Trail exit is marked along with St. Martins via Highway 111, then 10km east of St. Martins.

Location Map

Teacher's Notes

SUGGESTED STOPS	POINTS TO NOTE
Access:	The best time to visit the Fundy Trail is 1-2 hours before low tide so that you can access all coastal areas safely. If it is past low tide, do not take your class down to Melvin Beach where you could become cut off, but focus on Long Beach instead and warn them to stay ahead of the tide coming in.
	Access: 45˚23'11" N / 66˚27'55" W, W. Mid-May to Mid-October, interpretive centre open 8am to 8pm daily. October to March: no facilities, accessible for hiking and winter sports Many of the lookouts and observation decks along the low-speed auto route are wheelchair friendly and all offer spectacular views Check if seasonal washrooms, parking, gates, and other facilities are open at the time you plan to visit. Amenities: Scenic drive and hiking trails, interpretation centre, picnic tables, boardwalks covered bridge, guided tours. Open seasonally, washrooms are found at the interpretation centre and Long Beach and pit facilities regularly throughout the trails. Equipment: maps, compasses, sharpies to write on sticks found onsite; homemade clinometer made in advance http://geoconservationlive.org/wp-content/uploads/2014/05/WernDdu-English-V3.pdf Geological Age: Triassic (250 million years old)





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Flower Pot Rock Task 1, 2, 3

Geological Age: Triassic (about 251 to 227 Ma). The first 6km of the Fundy Trail is the Middle Triassic Echo Cove Formation comprising fluvial, alluvial fan and dune deposits into a rift valley (aulacogen) associated with the breakup of Pangea and the initial stages of the Atlantic Ocean formation.

At the Flower Pot Rock Scenic Footpath you can see the dramatic effects of coastal erosion. 'Flower pots' are a picturesque result of coastal erosion. They are small fragments of the eroding coastline that have withstood the pounding of the sea. They remind us where the coastline once stood. Someday they will succumb to the sea.

The rocks are being eroded by the action of water slowly breaking down the layers into smaller pieces. As the rocks are slowly worn down the sand and mud will be washed out into the Bay of Fundy. They will eventually become sedimentary rocks again as part of the recycling of the Earth's crust.

2	Melvin Beach Task 3,4 At Quaco, St. Martins and along the Fundy Trail to Melvin Beach Head, reddish-coloured Permian to Triassic age rocks about 250 million years old overlie the much older Precambrian and Cambrian rocks below. As at the Flowerpot Rock the Triassic rocks are made of sediments that accumulated in rivers, lakes and sand dunes in a rift valley, created as the supercontinent Pangea began to break up to create the modern Atlantic Ocean. The Atlantic Ocean is a relatively recent geological feature created by seafloor spreading over the past 200 million years starting in the Jurassic Period. As the ancient continent Pangea broke up a rift developed between North America and North West Africa. This marked the opening of the Atlantic Ocean. To create a new ocean, molten rock from the Earth's interior rises to the surface. As it rises and cools, the new crust expands along volcanic mountain chains on the seafloor. The rising molten material creates a 'bubble' in the crust that eventually breaks to create volcanoes. As the crust continues to stretch, cracks appear through which magma rises forming dykes. The cracks normally form a triple rift, three cracks joined like spokes of a wheel. Two cracks eventually join another, triple rift to form a long break in the crust where a new ocean is born. One crack fails to join others. This 'failed rift' is called an aulacogen. The Bay of Fundy is a 'failed rift'. Instead of becoming part of a new ocean, it became a 'rift valley' that filled with sediment. At Melvin Beach you can look for the layers of sandstone and conglomerate, rocks made from sediments deposited in rivers flowing into the rift valley. You are looking at the first step in the breakup of the supercontinent Pangea and the creation of the Atlantic Ocean. Melvin Beach looks wild and deserted today but historically it was one of many sites along the Fundy Coast used by shipbuilders in the golden age of wind, wood and sail. Please be aware that the climb down to Melvin Beach is very steep, including a long stairway, and the red Triassic sedimentary rocks are only accessible at low tide. Water cuts off the return to the stairs as the tide comes in. There is a single pit toilet halfway down the trail. If you have students who cannot make the climb, the tide time is wrong, or you do not have time for this expedition, the task of measuring the angle of the rock bedding can be done in several more accessible sites along the way, or directly from a photograph with a protractor. However, if you are able to get down to Melvin Beach, it is a perfect spot to observe the strike of the bedding in the sedimentary rock. Layers of conglomerate alternate with fine siltstone and sandstone and differences in erosion are easy to observe in this complex formation of sedimentary rock. Students will also be fascinated with the well rounded rocks in abundance and might want time to collect and observe these or build inuksuk and other structures. They will also want to climb and rules of where this is allowed and how high should be set out by the teacher upon arrival. Note Overhanging Rocks: Risk of rockfall! Drawings should be done from a safe distance.
3	Across Big Salmon River. You may add a stop at parking Lot #7 to allow students to cross the suspension bridge on foot, looking at the waters of the Salmon River, and climb the cliff stairs. As you drive over the Big Salmon Bridge towards your next student tasks at Long Beach, take time to note the changing bedrock. About 400 million years of Earth history can be seen in this location! The older rocks in this location tell the story of the Iapetus Ocean, an ocean which existed before the Atlantic Ocean. In Greek mythology Iapetus was a Titan and father of Atlas. The Atlantic Ocean is named after Atlas, so it seems quite appropriate that you can see evidence of both the Iapetus and Atlantic oceans in the same place. To see rocks related to the ancient Iapetus Ocean which started to form about 600 million years ago during the Cambrian and closed around 400 million years ago during the Silurian, please drive across the road bridge. The exposure of rock along the roadside cuts through Late Precambrian to Cambrian sedimentary and volcanic rocks, about 600 to 500 million years old. Most of the underlying geology along this part of the Fundy Trail is similar and is comprised of the Seelys Beach and Sliver Hill Formations. These formed during the breakup of an ancient supercontinent called Rodina which began during the Precambrian, followed by the collision of small continental fragments against the ancient core of North America. The geology along this stretch of coastline is complex with many faults displacing rocks and changes in rock type that often mark the river valleys and brooks that dissect the steep cliffs. Rock outcrops are almost continuous along the coast and sometimes along river valleys. These rocks are part of the Iapetus Ocean story and include island arc volcanics and seafloor sediments.

4	Long Beach Task 5,6,7 Long Beach has nearly level beach access, lookout points, shelters and facilities available including washrooms, an interpretation building, bus parking, class-size picnic shelters, and a wheelchair-accessible path that leads up to the edge of the beach where a few steps lead down to the sand and cobbles. Note that at low tide the beach extends for 500 meters into the bay so you can truly walk on the ocean floor. Please review tide timetables before you visit this location. This is a great location for explaining and visualizing the sedimentary part of the rock cycle as there are sediments of all grain sizes from mud through gravel and onto rocks of increasing size. There is also visible evidence of landslide activity as a contrast to the erosion of the sandstone cliffs visible in the red Triassic rocks from St. Martin's to Melvin Beach. The banks bordering on the beach are examples of Colluvium -- loose, unconsolidated sediments that have been deposited at the base of hillslopes by either rainwash, sheetwash, slow continuous downslope creep, or a variable combination of these processes. You can make out beds of sand and gravel, sorted and sometimes layered, which suggests deposition in flowing water. This sediment arrived here in the ice age as outwash from meltwater in front of (or within) the glacier. The rocks on the beach most likely represent bedrock types across southern New Brunswick picked up by the advancing glacier. The 2.5 km sandy beach has a shoreline rimmed with an interesting variety of cobbled rocks, ideal for exploring. For help in identification, refer to http://ags.earthsciences.dal.ca/TransferFolder/NSPebbles.pdf
	Teaching tips for the Student Tasks: Task 2 This location shows physical erosion. If you do not visit Rockwood Park, you may use here the experiment in Rockwood Park Task 3 to contrast the Karst landscape in the limestone/marble there, a result of chemical erosion, with the physical erosion we see here along the Fundy Trail. Task 4 Make a clinometer with a protractor or Bristol board marked with a protractor template, and string tied to a weight (a pebble). Good instructions can be found on youtube or sites such as wikihow. We like the template in the "Wern Ddu Rocks" activity pack from the Britsh Institute for Geological Conservation at http://geoconservationlive.org/wp-content/uploads/2014/05/WernDdu-English-V3.pdf If you are not visiting Reversing Falls Rapids, you could do the glacier experiment in task 4 from that student sheet here.