

Brundage Point

Information Sheet



Location: BRUNDAGE POINT

Conservation designations: Stonehammer UNESCO Global Geopark, Grand Bay-Westfield Municipal Heritage Trail, Trans-Canada Trail, International Sculpture Trail, The Canadian Heritage Rivers System

Grid reference: GPS: 45.3476675, -66.2236648

Address: 4 Ferry Road, Grand Bay-Westfield, NB E5K 0A8

Parking available: Yes

Personnel to be contacted prior to visit: Laureen Lennan at 506-738-6406 or rivercentre@towngbw.ca

Useful Equipment:

- Camera
- Hiking equipment
- Drill to test ice depth and shovel if planning to take a group on the ice in the winter

Relevance national curriculum:

Grade 7 Unit 2 Earth's Crust.

Grade 8 Unit 1 Water Systems on Earth.

Grade 9 Social Studies 9.2.1, 9.2.4

Physical Geography 110: Geological emphasis
Unit 5G:

Canadian Geography 120: The Physical Basis of
Canadian Geography

Earth processes: eg. Volcanoes, Ice Age, subduction, glaciations, and continental drift

Geological periods present: Silurian, and Quaternary

Geological structures: Rolling hills are the roots of ancient volcanoes; river carved by glaciation and following the path of a fault.

Site specific hazards and risks:

- Traffic
- Railway
- Open water
- Walking paths may become icy in winter
- Ferry crossing: hazard of crossing on foot with cars, have plan for lining up, embarking and disembarking ferry if on foot

Mitigation measures:

- Park in a designated area
- Do not collect rocks or fossils
- Keep away from erosion areas of riverbanks
- Do not feed or disturb wildlife habitat
- Do not litter

Did you know: A characteristic of subduction zones is often a volcanic arc which forms at the surface and often results in lava flows, intrusions and extrusions as well as ash deposits from eruptions. About 435 million years ago, during the Silurian, this area was a volcanic arc above an active subduction zone. Volcanic action formed the rolling hills you can see today although these have been subject to millions of years of erosion and sculpted during the most recent period of glaciation. This ancient volcanic activity has become known as the Kingston Terrane Volcanics.

Topics to cover before visit: Rock cycle, plate tectonics, subduction, volcanoes, glaciation, terranes, fundy tides, fossils and fossil preservation and erosion

Keywords: Subduction, terrane, tectonic plates, margins, volcano, Silurian, Ordovician, Quaternary, lava, ash, plate margin, glaciation, isostatic rebound, erosion, river, hills, fish, cyathaspis, dacite, rhyolite, igneous, sculpture, black loyalists.

Rock types and geological processes observed Landscape vista of rolling Silurian volcanic hills (Kingston Peninsula). Saint John River follows fault line and empties into the Bay of Fundy through the Reversing Falls Rapids.



Fossil Fish: *Cyathaspis acadica* (Matthew)



Dacite



Rhyolite

Description:

- Fossilized fish discovered in Silurian age rock near Brundage Point. From the extinct Heterostracans family of jawless fish. The front of the body is covered with bony plates.
- George Matthew described this fossil specimen in 1886, the first of its kind known in North America
- Sedimentary inclusion in the volcanic formation

Description:

- Igneous intrusive (near-extrusive)
- Small grain size
- Greenish colour
- Mineral content similar to granite
- No fossils present

Description of:

- Igneous extrusive
- Small grain size
- Grey and pink colour
- Mineral content similar to granite
- No fossils present

Geological history:

The landscape at Brundage Point is comprised of volcanic rock, dacite and rhyolite, mostly grey to purple in colour, and some are 435 million years old from the Silurian age. These rocks contain volcanic ash and lava from volcanoes which formed above a subducting plate margin. It is common for volcanic arcs to develop above subduction zones and this ancient volcanic activity near Saint John has become known as the Kingston Terrane Volcanics.

Evidence of active earth movements and processes during the Silurian more than 400 million years ago suggest a period of mountain building (called an orogeny by geologists). As the Iapetus Ocean seafloor was subducted beneath the continent of Laurentia (ancient North America) the Caledonian-Appalachian mountain belt was formed resulting in the Appalachian Mountains in North America. The Appalachians were once a more rugged chain of mountains, but they have been shaped by millions of years of erosion and sculpted by the glaciers to produce the rolling hills seen today.

A younger example of mountain building that began only 40 to 50 million years ago resulted in the Himalayan Mountains. For millions of years the landmass of India has been colliding with Eurasia to form the high peaks of the Himalayas, including Mount Everest. Like the Appalachians, the Himalayas will eventually be worn down by erosion.

The Saint John and Kennebecasis river valleys follow major fault boundaries separating geological terranes. Stonehamper UNESCO Geopark is made of many terranes and has a complicated geological history.