

# A Jewel of a Park

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When I think of my favourite provincial parks, Taylor Head is high on my list. What makes this park so special? I think its location is quite remarkable and its rocks, landforms and beaches tell quite a story. It's easy to get there—just take Route 7. The park is on the Marine Drive 12 km (7.5 miles) east of Sheet Harbour.

Taylor Head is a narrow peninsula that juts out 7 km (4.3 miles) into the Atlantic Ocean. When you are at the south end of the park, there are no islands or other connections to the land. The next stop eastward is northern Spain. For a geologist, the park provides a marvelous exposure of the bedrock, abundant evidence of glaciation and a number of features that formed after the glaciers melted.

The rock story begins off the northern tip of an ancient continent called Gondwana about 500 million years ago. Parts of present day Africa, South America, Antarctica, Australia, and India were components of Gondwana. As the continent was worn down, large amounts of sand and mud (sediment) accumulated at the edge of the continental slope. The sediments were unstable and subject to underwater slides. Each slide was a catastrophic event that snuffed out all life with huge avalanches of sand. When you see a 1 m (3.28 ft) thick sandstone layer on the shore it seems hard to believe these layers were so full of energy. The sand avalanches traveled at speeds up to 100 km (62 miles) per hour and may have involved more than 5 km<sup>3</sup> (1.25 square miles) of

sand as it spread out over the deep ocean floor. Bottom currents often formed ripples on the surfaces of the sand avalanches. As the water-rich avalanches settled, the internal water was expelled and formed sand volcanoes on the surface of the layer. These miniature volcanoes erupted only water and sand.

The geological story continues near the present day. Ever since the end of the dinosaurs, about 65 million years ago, the earth has been in a cooling trend. Beginning about four million years ago, the cooling and snow accumulation reached a point where huge continental glaciers formed. In North America, these glaciers advanced and retreated four times over the past four million years. During the last advance of ice that began about 75 000 years ago, Taylor Head and all of Nova Scotia was covered by a mantle of ice several kilometres thick. Several large hills at the north end of the park are oval shaped structures called drumlins, which were formed by deposits of gravel and mud from the bottom of the glacier. Many rock exposures have sharply defined grooves and striations that were eroded by small and large stones at the base of the glacier. The peninsula itself stands as high ground because the glaciers eroded deeply on either side.

When the ice melted worldwide, sea levels began to rise. At first the ocean was far away, but slowly the sea filled in the deep valleys on either side



Aerial view toward NE. The salt pond is slowly being reduced in size. Storms have breached the barrier bar and pushed beach material into the pond.

The quartz-rich, fine sand is derived from the bedrock. Sand represents low energy conditions, while the cobbles further along the beach represent high energy conditions of formation. Waves of different sizes are the energy source.





The sand in this sandstone bed avalanched down the continental slope onto the deep ocean floor in water 1000 m or more in depth.

of Taylor Head and established the present day coastline. The beautiful sand beaches result from the breaking and crushing of the bedrock. Strong easterly storm winds blew the sand into dunes on the eastern side of the peninsula.

As sea levels continue to rise, storm waves push the gravel beaches into the coastal forests.

The rise in sea level changed the salt pond from fresh to salt water. When the sea level was much lower, peat accumulated here. The rise in sea level created pebble and cobble beaches that are continually being pushed inland, eroding the peat and reducing the size of the pond. Severe storms have actually breached the bar and opened the pond to the sea for a time.

Now you know why I like this park so much. Why not see for yourself. A drive of about 1.5 hours from either Antigonish or Halifax will put you at this jewel of a park.



Asymmetric ripple marks form whenever sand grains are moved by a current. Five hundred million years ago the deep ocean current moved across the top of an sand avalanche bed. Arrow shows direction.



Glacial erosion produced deep valleys on either side of Taylor Head that are now filled with sea water. Striations are delicate evidence of the power of glacial erosion.

### Time Lines for the Rocks at Taylor Head

<b>0 years</b>	The present day.
<b>5 000 years</b>	Coastline is approximately the present coastline.
<b>10 000 years</b>	End of the last major glacial period. During this time glaciers had advanced and retreated several times in Nova Scotia.
<b>75 000 years</b>	Beginning of the last glacial period. Extensive deposition and erosion by glaciers.
<b>350 million years</b>	Beginning of periodic weathering and erosion of Southern Nova Scotia that continues to this day.
<b>390 million years</b>	Mountain building period when the rocks of Gondwana collided with another small continent (Avalonia?). The collision formed the folds, tilted the layers of rock, and altered the rocks with heat and pressure (metamorphism) to form quartzite and slate.
<b>500 million years</b>	Sand and mud deposited in shallow to deep ocean water north of Gondwana. Large thicknesses of these sediments were hardened by pressure into rock called sandstone and shale.

Front Cover: Western side of Taylor Head.  
Rising sea level allows storms to push beach material into the forest.

Sand dunes along the eastern side of Taylor Head form as sand is blown off the beach.

