

Geologic Site of the Month
October, 2014

Shackford Head State Park, Eastport, Maine



44° 54' 19.88" N, 67° 00' 44.90" W

Text by
Robert A. Johnston



Introduction

Shackford Head State Park is a day-use park located on Moose Island in Eastport, Maine. The Park is close to the most eastern point in Maine and has beautiful views across Cobscook Bay to Canada. The Park has an interesting history and Shackford Head is a great place to explore Maine's varied geology.



Photo by R. A. Johnston

Figure 1. Looking south to Ship Point from the Shackford Head overlook, Shackford Head State Park, Eastport, Maine.



Trail Map

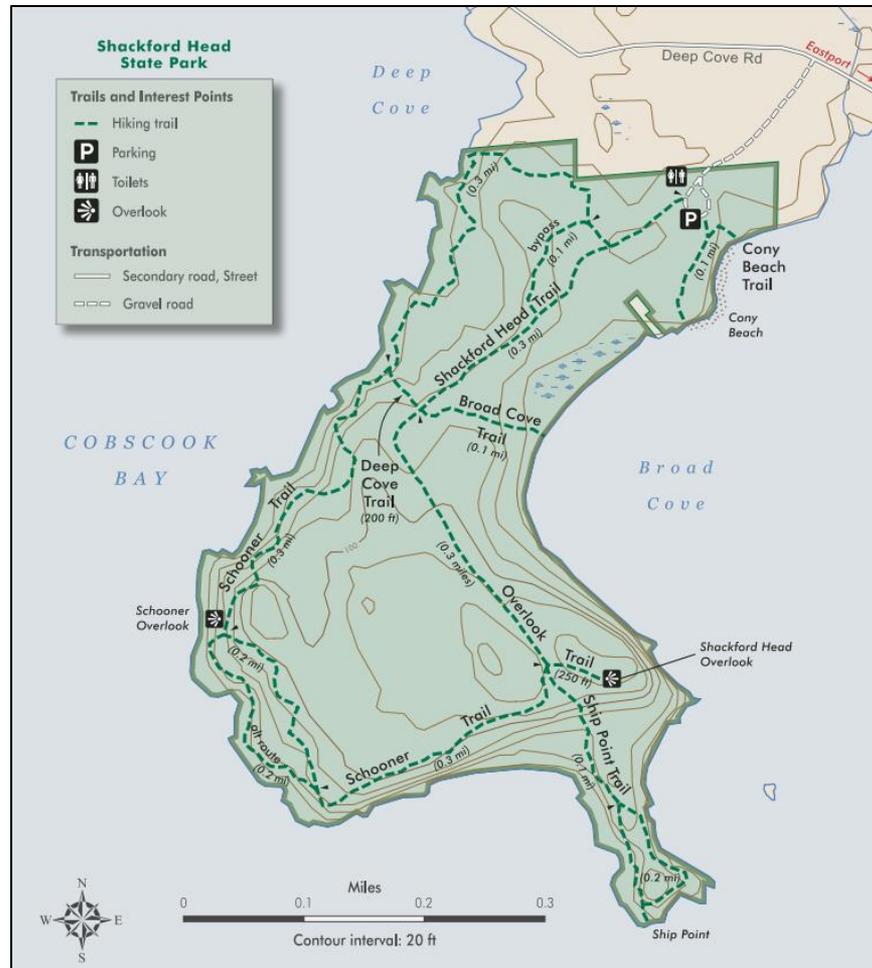


Figure 2. Maine Bureau of Parks and Lands Trail Map of Shackford Head. Also available on the [Find Parks web site](#).



Bedrock Geology Background

Shackford Head State Park is underlain by rocks of Maine's coastal volcanic belt which formed during the Paleozoic Era over 400 million years ago. These rocks of the Eastport Formation (so named by E. S. Bastin and H. S. Williams, 1914) were laid down in ancient times when volcanos were active in a shallow marine environment along the edge of a continental land mass. Eruptions of lavas and coarse pyroclastics alternated with eruptions of tuff-breccias, ash flows, volcanic domes and shallow intrusions (Gates, 1977). Materials were emplaced by lava flows into both the marine and subaerial environment. The Eastport Formation was deposited in a shallow, marine sea so units often contain marine fossils. Sedimentary rocks were deposited during quieter periods of volcanic activity. The siltstone and shale outcropping along the shore of Shackford Head (Des) were deposited during one of the quieter time periods and do contain marine fossils.

The Eastport area has long been an area of interest for geologists. Early visitors were commissioned to look for economic deposits for the newly incorporated State of Maine. C. T. Jackson, in his first geological survey of the State in 1836, toured the area by boat and collected a number of marine fossils along Broad Cove. In 1884 N. S. Shaler spent months studying the rocks of the area and also collecting fossils. He recognized the volcanic flows and tuffs in the area and mapped the diabase intrusions. Additional work by other geologists looked for metal and coal deposits which led to more detailed work by Bastin and Williams (1914) and then Gates (1977).



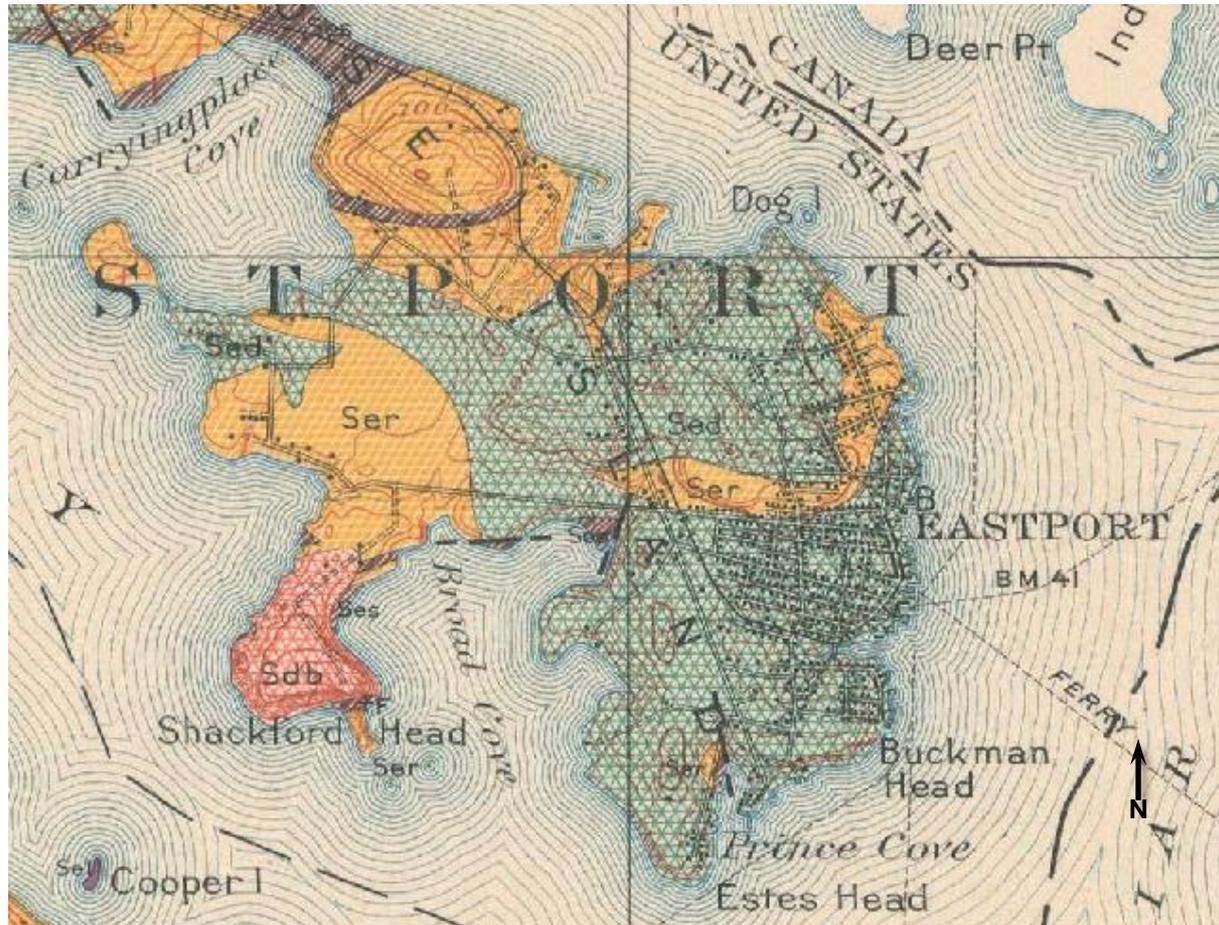
Bedrock Geology Mapping

Figure 3. A portion of the bedrock geologic map of the Eastport quadrangle (Bastin and Williams, 1914). The rocks at Shackford Head include diabase, gabbro, siltstone and volcanic tuff, tuff breccia and rhyolite.

Bedrock Geology Mapping

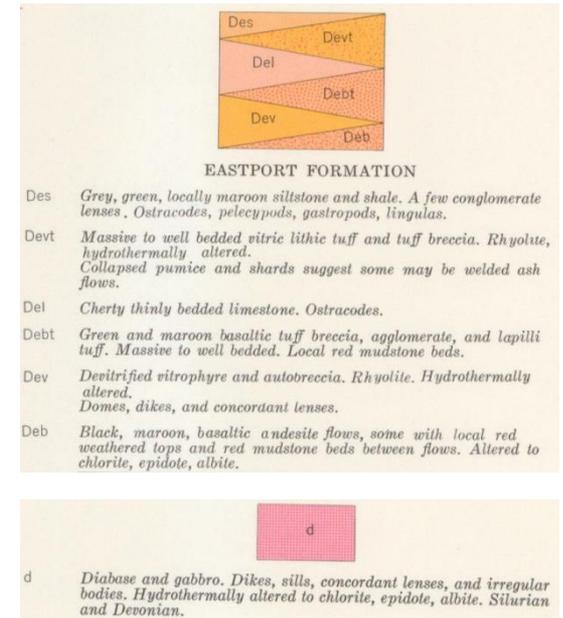
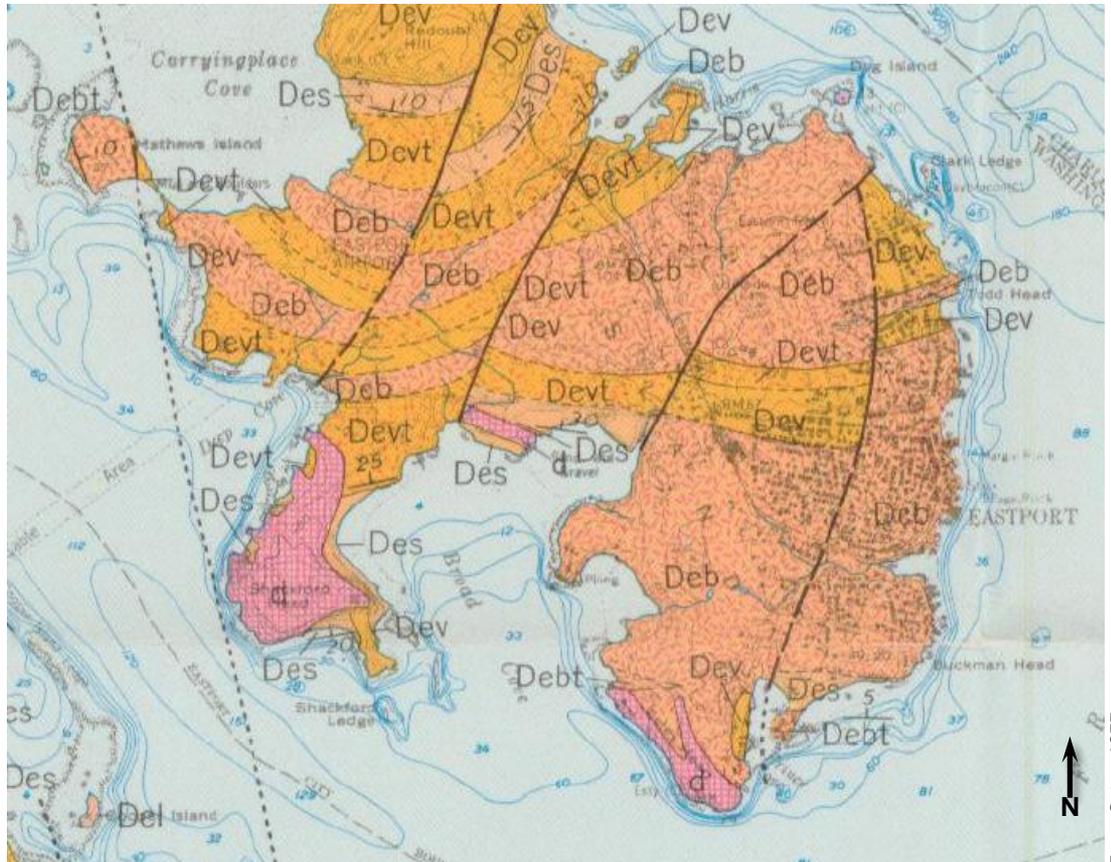


Figure 4. A portion of the bedrock geologic map of the Eastport quadrangle from Gates (1977). The change in scale from 1:62,500 (Bastin and Williams, 1914) to 1:48,000 (Gates, 1977) allowed Gates to map in a bit more detail.

Bedrock Geology



Figure 5. Diabase exposed at the Shackford Head overlook, Shackford Head State Park Eastport, Maine.

Bedrock Geology



Figure 6. Gray siltstone (Des) outcrop along the eastern shore of Shackford Head.

Surficial Geology Mapping

The surficial geology was first mapped by Bastin and Williams (1914). They noted the absence of thick till deposits in the area thinking the cause was due to severe glacial erosion. They certainly noted thick marine clay deposits (now called the Presumpscot Formation clay) and noted the abundant shells found in the clay.

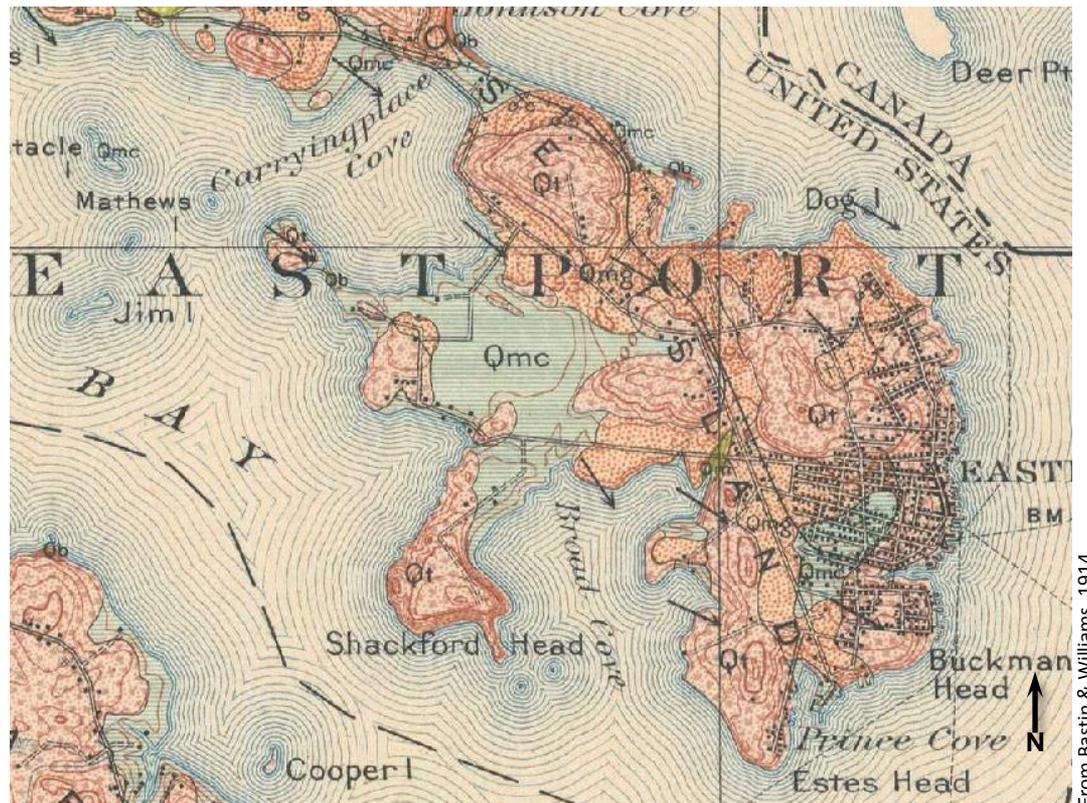


Figure 7. Moose Island section of the Surficial Geology of the Eastport quadrangle, Maine (Bastin & Williams, 1914). Qmc is marine clay, with Qt indicating glacial till.



Surficial Geology Mapping

Borns (1975) mapped the Eastport quadrangle (1:62,500 scale) and also noted the thin glacial till and thick marine clay deposits.

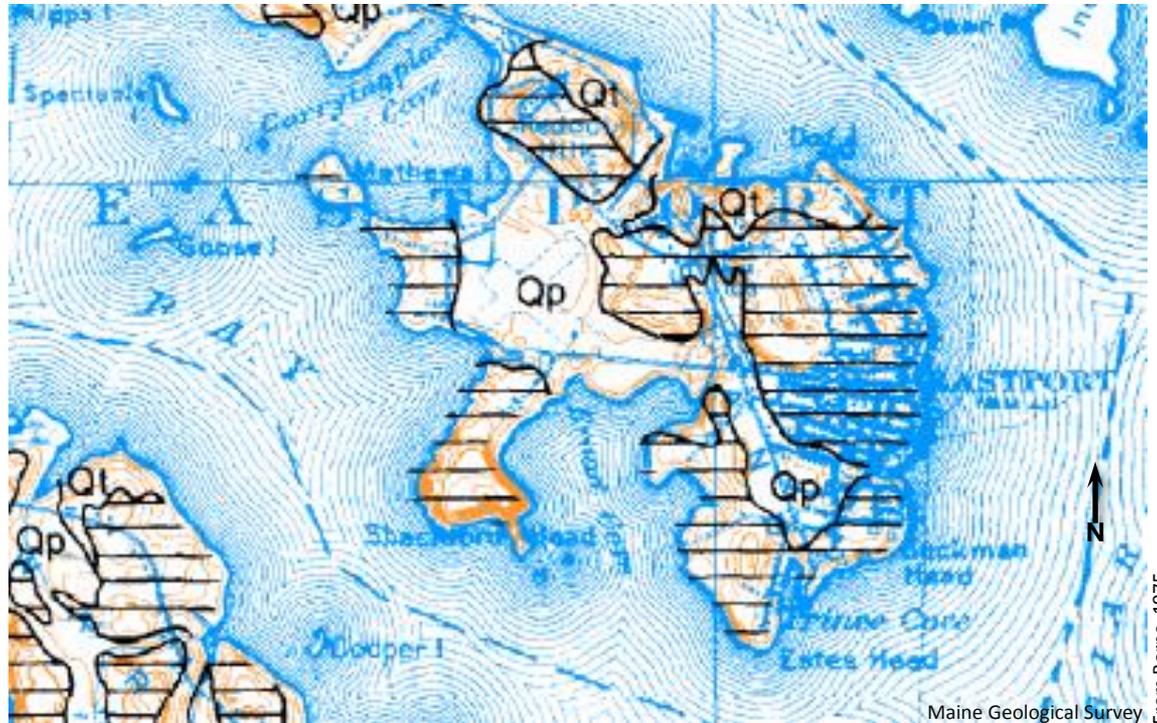


Figure 8. Moose Island section of the Reconnaissance surficial geology of the Eastport quadrangle, Maine (Borns, 1975). Qp is Presumpscot Formation silt and clay, with the ruled pattern indicating thin surficial deposits (generally less than 10 ft. thick)

Coastal Geology – Beaches



Photos by R. A. Johnston

Maine Geological Survey

Figure 9. A pocket beach borders Broad Cove on Shackford Head's eastern shore. The eighteen-foot tidal range in the area provides for an extensive beach at low tide.



Directions

Take Route 1 to Route 190 in Perry. Travel 7 miles, passing the Passamaquoddy Indian Reservation and a causeway. The causeway was part of an unfinished project started in the 1930s designed to be the world's largest tidal dam. Approaching the city of Eastport, the road bends to the left by a gas station. Take a hard right-hand turn onto Deep Cove Road and travel 0.8 miles to the entrance of Shackford Head State Park. The entrance is a gravel drive on your left just before the campus of the Maine State Marine Technology School, known locally as the "boat school". The main trailhead is just off the circular gravel drive to the left of the large brown sign beyond the interpretive panels.



References and Additional Information

Bastin, E. S. and Williams, H. S., 1914, Eastport folio, Maine: U. S. Geological Survey Folio 192, 15 p.

Borns, H. W., Jr., 1975, Reconnaissance surficial geology of the Eastport (15-minute) quadrangle, Maine: Maine Geological Survey, [Open-File Map 75-2 \(PDF, 3.31 Mb\)](#), scale 1:62,500.

Gates, Olcott, 1977, Geologic map and cross sections of the Eastport quadrangle, Maine; Maine Geological Survey (Department of Conservation), [Open-File Map GM-3 \(PDF, 5.7 Mb\)](#), scale 1:48,000.

Jackson, C. T., 1837, First report on the geology of the State of Maine.

Maine Bureau of Parks and Lands, Trail Map of Shackford Head. Web site: http://www.maine.gov/cgi-bin/online/doc/parksearch/details.pl?park_id=68

Shaler, N. S., 1886, Preliminary report on the geology of the Cobscook Bay district, Maine: American Journal of Science, 3rd series, vol. 32, pp. 35 – 60.

