

Geologic Site of the Month  
December, 2009

***Rockin' around Rockport Harbor, Maine***



44 11' 4.14" N, 69 4' 33.95" W

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## Introduction

Rockport village and its scenic waterfront are among the most popular tourist destinations on the Maine coast. The Maine Geological Survey has mapped the surficial geology of the Rockport area during the 2009 field season. This work, together with previous studies of the area's bedrock geology, has revealed sites of geologic interest in the vicinity of Rockport harbor. Several of these localities are publicly accessible thanks to a network of parks, trails, and conservation properties. The text and photos in this website will introduce you to places around the harbor where you can see highlights of the local bedrock, glacial, and economic geology.



**Figure 1.** Parking area for Rockport waterfront park.



### Lime Industry

A good place to start is the town park at the head of the harbor (Figure 1). The remains of several old lime kilns can be seen next to the parking lot (Figure 2). These structures are remnants of the lime industry that flourished around Rockport and neighboring towns during the 1800's.



Photo by W. B. Thompson

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**Figure 2.** Old stone lime kilns next to the park at Rockport harbor.



## Lime Industry

Limestone was quarried at numerous locations and then burned in the kilns to produce lime (calcium oxide) used in making plaster. Exhibits next to the Rockport kilns explain the process and its importance to the local economy (Figure 3).

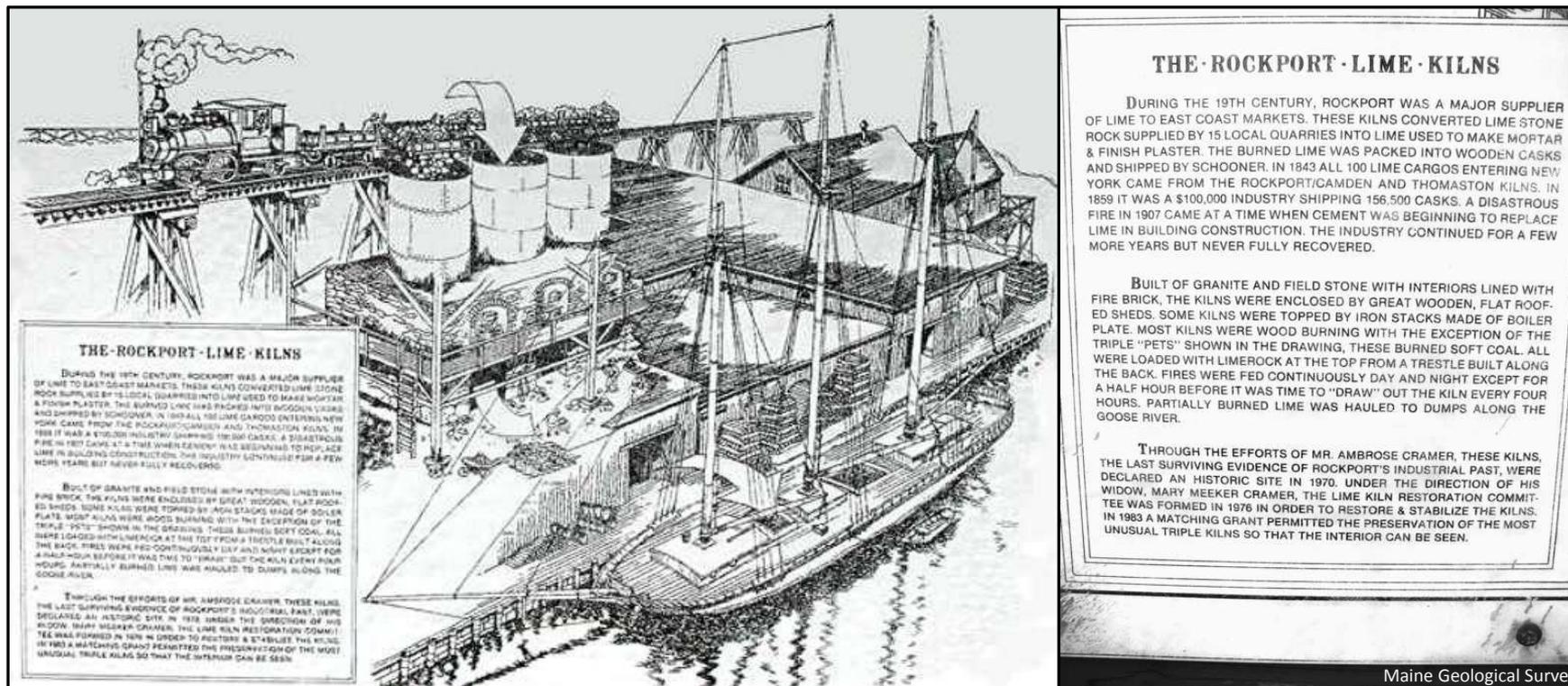


Figure 3. Exhibit sign describing the operation of lime kilns with enlarged view of the text.



Photo by W. B. Thompson

### Lime Industry

Much of the limestone that was burned here came from a nearby quarry on Wiley Road in Rockport, just northwest of Simonton Corners (Figure 4). The quarry is now part of the Simonton Corner Quarry Preserve owned by The Nature Conservancy. Waste rock from the burning operation was disposed in heaps on the waterfront and along the banks of Goose River.



**Figure 4.** One of the abandoned quarry pits near Simonton Corners.



### Lime Industry

You can visit Cramer Park (uphill and across the road from the harbor parking area), and walk along the tops of these large white piles next to the river (Figure 5). Much additional information on the history of the Maine lime industry is available in a book by Grindle (1971).



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**Figure 5.** Pile of waste rock in Cramer Park next to the Goose River.



Andre the Seal

Visitors to the harbor park will also want to see the marble statue of one of Rockport's most famous "seasonal residents" - Andre the Seal (Figure 6)!



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**Figure 6.** Statue of Andre the Seal at Rockport waterfront.



East side of Rockport harbor - Beauchamp Point Road

A series of well-exposed bedrock ledges (outcrops) can be accessed from Beauchamp Point Road. This gravel road follows the shoreline on the east side of the harbor. It may be closed to vehicles during the winter, but there is limited parking where the pavement ends, and foot traffic is welcome. The roadside ledges described here do not require permission to visit, but the shoreline is private farther south where the road curves away from the harbor.

As you follow the road south, two very short paths will bring you down to shoreline outcrops with nice views of the harbor and Indian Island lighthouse in the distance.



East side of Rockport harbor - Beauchamp Point Road

Figure 7 and Figure 8 show the first outcrop, which has been sculpted and grooved by overriding glacial ice. This abrasion resulted from the grinding action of rock debris carried in the bottom part of the most recent continental ice sheet that covered New England.



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**Figure 7.** Overview of glacially striated bedrock on shoreline next to Beauchamp Point Rd. A close-up of the striations is shown in Figure 8.



East side of Rockport harbor - Beauchamp Point Road

Similar abraded rock surfaces are exposed in many places along the Maine coast, where the sediment cover has been eroded away by rising sea level. The glacial grooves seen here indicate ice flow in a generally south-southeast direction.



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**Figure 8.** Close-up of glacially striated bedrock on shoreline next to Beauchamp Point Rd.



East side of Rockport harbor - Beauchamp Point Road

A short distance farther down the road, there is a broad ledge on a point where the shoreline is indented (Figure 9). The eastern side of the point has a rock surface showing sets of glacial grooves trending in two directions.



Photo by W. B. Thompson

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**Figure 9.** Large expanse of glacially striated bedrock (foreground) accessible from Beauchamp Point Rd.



East side of Rockport harbor - Beauchamp Point Road

The dominant set trends  $163^\circ$  (SSE), and is indicated by the red pencil in Figure 10. The pencil points in the direction of ice flow. The blue pen is parallel to the other set, which trends  $137^\circ$  (SE). The latter grooves are inferred to be older, because they are in a small shallow depression on the ledge surface and thus protected from the later onslaught of the ice flow that engraved the  $163^\circ$  set.



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**Figure 10.** Part of ledge seen in Figure 9, showing two sets of glacial grooves aligned with the red and blue pens.



East side of Rockport harbor - Beauchamp Point Road

Continuing along the road, you will notice one of several outcrops of prominently layered rock on the east side of the street (Figure 11-12). This is the Coombs Limestone - the same rock formation which was quarried in Rockport and burned in the waterfront lime kilns. Unlike many of the metamorphosed and scrambled rock formations in southern Maine, this one clearly shows the original sedimentary stratification from having been deposited on an ancient sea floor. Here the strata have been dramatically folded by stresses in the Earth's crust.



Photo by W. B. Thompson

**Figure 11.** Bedrock exposure of folded strata in Coombs Limestone, east side of Beauchamp Rd. Figure 12 shows an enlarged view of the outcrop.



East side of Rockport harbor - Beauchamp Point Road

The close-up view (Figure 12) shows how weathering of the outcrop surface has revealed thin ribs of resistant material parallel to the axis of the fold (parallel to blue pen in photo). These are layers of harder, silica-rich mineralization that formed along cracks in the rock produced by deformation of the limestone (Osberg et al., 1995).



Photo by W. B. Thompson

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**Figure 12.** Part of ledge seen in Figure 9, showing two sets of glacial grooves.



East side of Rockport harbor - Beauchamp Point Road

These and other bedrock exposures along the shore of Rockport harbor have been studied by geologists for many years (e. g. Hitchcock, 1862; Osberg et al., 1995). A geologic map and summary of recent work in the Camden-Rockport area is provided by Berry and Osberg (2000). The Coombs Limestone is tentatively thought to be of Precambrian age. It is part of a stack of rock formations called the Rockport Sequence.

This and other rock sequences in the area are bounded by faults, and their relation to the broader history of shifting plates of the Earth's crust (terrane) has yet to be fully understood.



References and Additional Information

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