



Glacial Features of the Exotic Terrane *Region 4*

Glacial Scouring

The most evident glacial scour features in the Exotic Terrane region are ***cirques***, scoop-shape bowls where valley glaciers have originated at high altitudes. At Mt. Washington in New Hampshire, and Sugarloaf Mountain, Mt. Katahdin and other Baxter Park peaks in Maine, cirques are visible today. The intense erosion by the glaciers removed many meters of bedrock from the New England mountains.

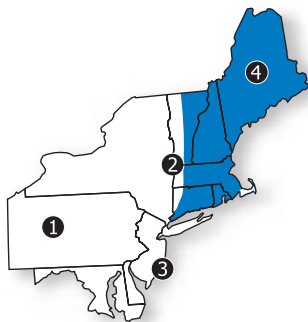
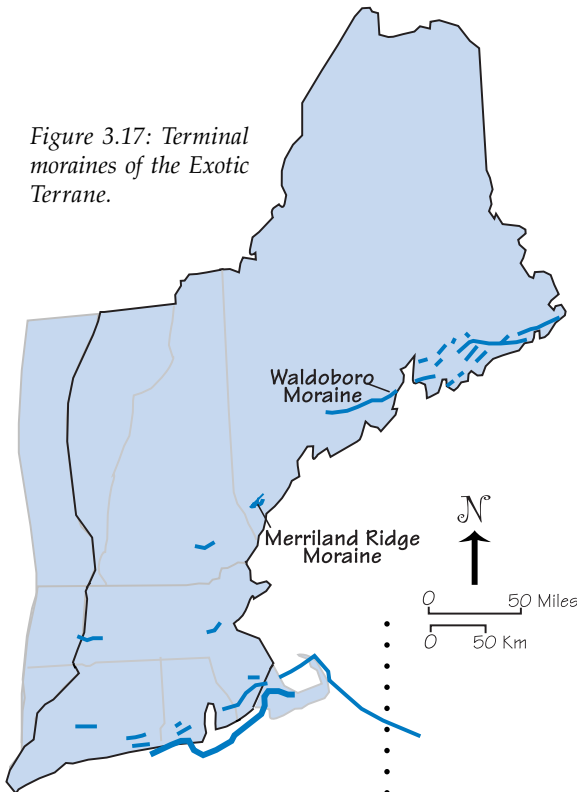
Glacial Deposits

On average, the moraines found in the Exotic Terrane region show approximately 30 meters of relief. Southeastern Maine in particular has hundreds of moraines formed where the ice sheet met the Atlantic Ocean (Figure 3.17). The Connecticut Valley became a lake when an end moraine dammed the valley and blocked drainage. When the moraine-dam was broken, the 160-mile long lake drained away. The lake bottom sediments dried up and blew around, forming thick dune deposits of blown sand. Eventually these wind-blown deposits became vegetated to form the floor of the valley.

Common throughout the Northeast are kettle lakes or the lakebed deposits of kettle lakes. Thoreau's Walden Pond in Cambridge, Massachusetts is actually a kettle pond, formed when a buried block of glacial ice melted and overlying sediments collapsed to form a depression that filled with lake water.

An enormous field of drumlins is found in southern New Hampshire and northern Massachusetts. These elongated, glacially sculpted hills of till were formed as the ice sheet moved over mounds of glacial sand and gravel. The orientation of drumlins is an excellent clue in deciphering the direction in which the ice sheet flowed. Also common in the Exotic Terrane region, particularly in Maine, are eskers. These features were deposited by streams of meltwater flowing under the glacier. Well-sorted sand and gravel were left behind as sinuous ridges, or eskers, when the ice sheet receded. The abundance

Figure 3.17: Terminal moraines of the Exotic Terrane.





of sand and gravel that forms eskers has made them an easy target for mining. Many eskers no longer exist because the sand and gravel has been removed and sold. As it turns out, Maine has the longest eskers in the world.

Sea level rise due to the melting ice sheet greatly affected the Exotic Terrane region. As the ice sheet began to retreat northwards, sea level rose faster than the crust was able to rebound from the weight of the glaciers. The result was a dramatic change in the shoreline of the Northeast, from one in which the continental shelf was exposed or ice covered to one in which the shelf was under water, with the coast even more covered by sea water in some places than it is presently. Coastal river valleys, such as Rhode Island's Narragansett Bay. The whole coast of Maine, however, was flooded beyond its present shoreline, leaving a blanket of clay deposited by the ocean waters inland and along the present day coast. The clays are known as the Presumpscot Formation, filled with a variety of *fossil* marine organisms that are clear evidence of the marine submergence.

see *Non-Mineral Resources*, p.167, for more on glacial deposit resources.



see *Fossils*, p.98, for more on ice age fossils.

