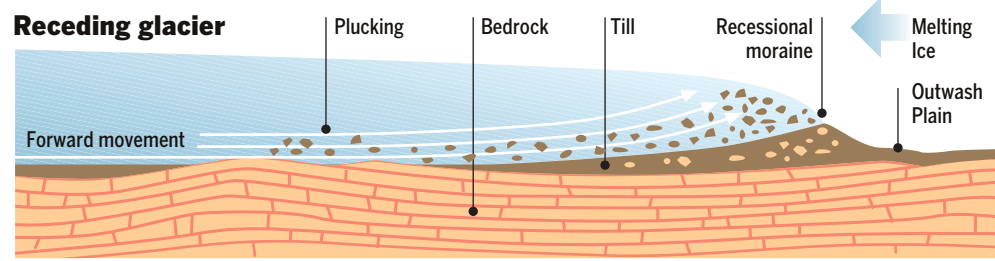


Block Island, a jewel 40,000 years in the making

How Block Island was shaped by the forces of ice, wind and tides.



A glacier works like an upside down conveyor belt. The bottom surface is pushed forward from its source, scraping and moving rocks and soil toward the margin while the exposed outer surface is continually melted back. In this way the ice sheet creeps forward from the bottom up.

When climate changes cause the ice surface to melt faster than it can replenish itself, the sheet recedes. Sometimes the receding ice will pause in one place for a long period of time. As it sits, the conveyor belt continues to churn and deposit large amounts of debris at the terminal edge, creating a recessional moraine or pile of boulders. This is how the coastline of Southern New England was formed.

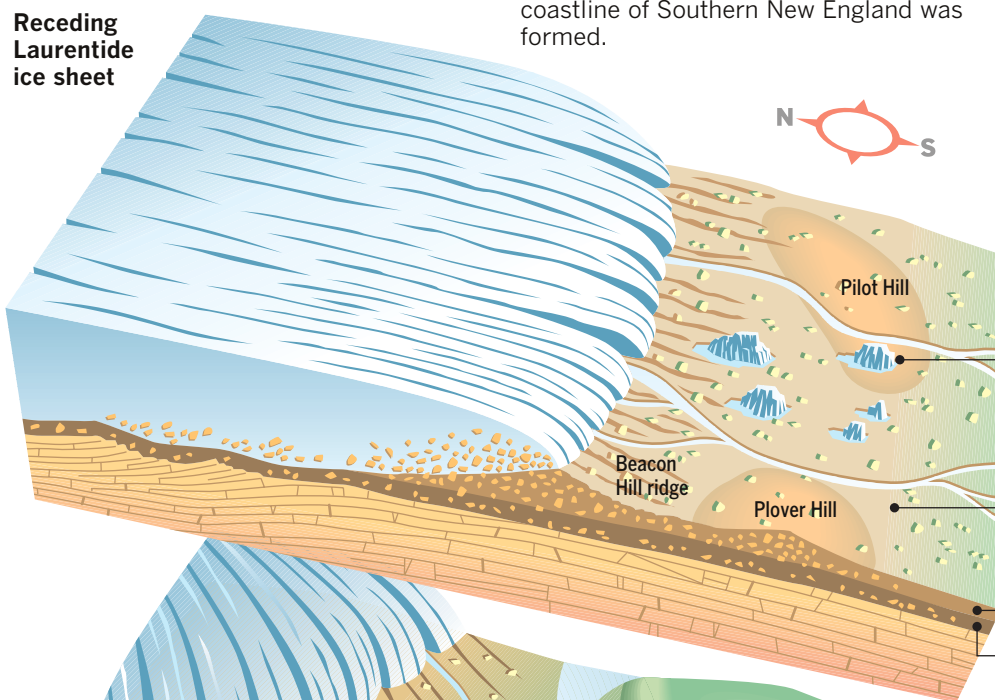
Recessional moraines of Southern New England

Glaciers progress and spread out in great lobes or fingers of ice that move at different speeds and directions. Sometimes moraines are formed where two lobes meet such as the outer coastline of Cape Cod.



The Island chain of Southern New England was formed by the deposits of two separate receding ice sheets, the Wisconsinan and the Laurentide, each making unique contributions to the shape and makeup of the soil.

Receding Laurentide ice sheet



Shoreline of Atlantic Ocean is about 70 miles to the south.

Chunks of ice break off receding edge and lie buried in the till. They melt, leaving deep pools called kettle lakes.

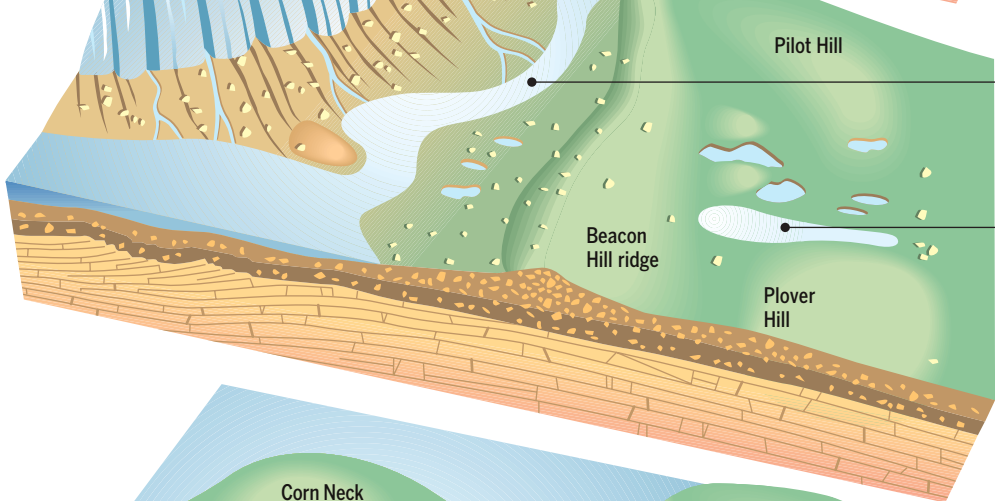
The layer of sediment left after the ice has melted is called the drift sheet.

Laurentide drift sheet.

Wisconsinan drift sheet.

40,000 years ago

The older Wisconsinan glacier left a layer of dark, compacted till that is impermeable to surface water. Basically, it is the reason the Island is able to hold its groundwater, which fills the many ponds on its surface.



Meltwater accumulates to form a lake between the ice margin and Beacon Hill.

Rodman's Hollow begins to take shape where a former meltwater stream carved a low area through the outwash plain.

20,000 years ago

The Laurentide glacier reached its full extent about 22,000 years ago. In its retreat, it paused long enough to form a ridge of glacial deposit that would later be known as the Beacon Hill moraine. It would pause again, forming the moraine at Corn Neck on the northern end of the island.

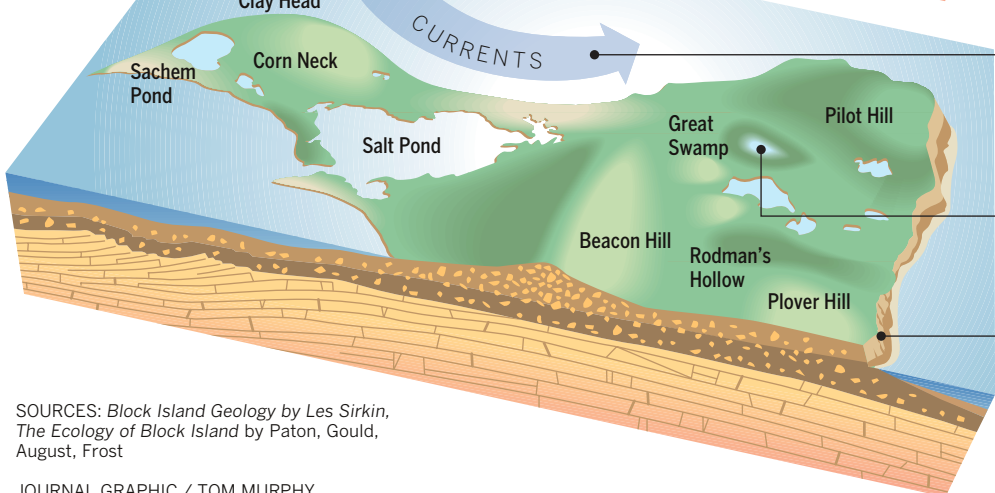


Chains like Fresh Pond, Peckham Pond and Mitchell Pond are a common sight in an outwash plain where a meltwater channel is blocked by a rise.

Deep kettle ice may have cut through the compact lower drift sheet beneath the ground at Rodman's Hollow causing it to drain dry.

6,000 years ago

Recession of the ice from its terminal and across what would be Block Island probably took about 2,000 years. By the time it paused once more to form the southern coast of the mainland, the sea had risen about 350 feet, close to its present level, separating the high points of Beacon Hill ridge and Corn Neck.



Ocean currents steal sediments from the loosely packed sand of Corn Neck bluffs to bridge the cut between the islands.

A rising water table produces wetland areas such as the Great Swamp.

Erosion has eaten away at the southern bluffs, exposing distinct layers of upper and lower glacial drift sheets.

Today

There are no streams on Block Island, but there are 381 freshwater ponds. They are supplied by a single aquifer whose only source is rainfall. The dominant soil is a very stony, sandy loam. Glacial clay can be found at the base of some cliffs as well as many large boulders, called erratics, which were carried here by the glaciers and dropped from the sandy bluffs as they eroded.

SOURCES: *Block Island Geology* by Les Sirkin, *The Ecology of Block Island* by Paton, Gould, August, Frost

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