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Glacial Geology of Maine's Blueberry Barrens

Harold W. Borns Jr. *Professor Emeritus of Glacial and Ice Geology, University of Maine*

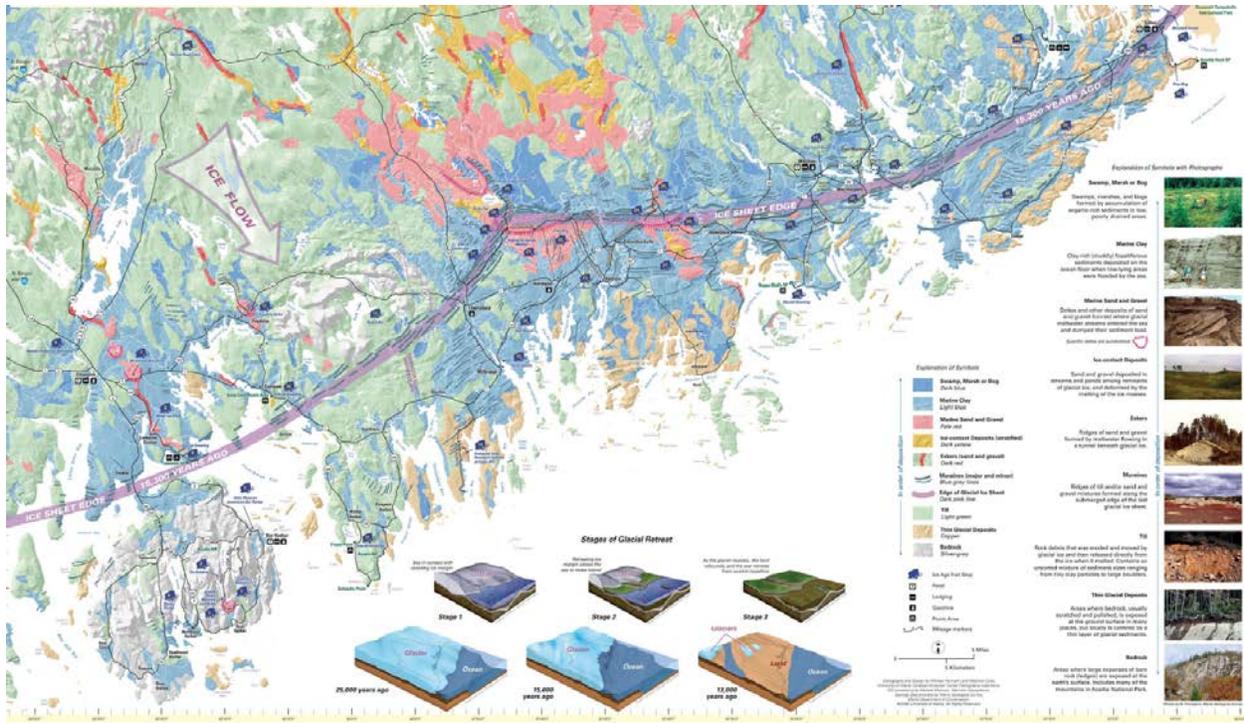
As in other parts of the world, each successive advance of the continental ice sheets modified or obliterated the record of earlier glaciations. In many places, older glacial features were either buried by the sedimentary deposits of younger ice sheets or they were eroded away by the flowing ice. The Laurentide Ice Sheet flowed southeast across Maine and terminated on Georges Bank in the Gulf of Maine about 25,000 years ago. At that time, the ice sheet covered all of Maine to a depth of at least 1.5 miles. The weight pushed the Earth's crust downward over 500 feet.

With rapidly rising global temperatures, the southern margin of the Laurentide Ice Sheet began to retreat across the Gulf of Maine shortly before 21,000 years ago. Global sea level had been about 300 feet lower than present during the greatest extent of the ice, but the land remained depressed for a time as the ice sheet retreated. This lingering depression enabled an arctic sea to flood low areas in coastal Maine starting around 17,000 years ago as the ice margin retreated. The landforms created during the marine submergence, including deltas and shorelines, are among the most distinctive features of the Ice Age Trail.

Eventually the rebound of the Earth's crust exceeded the rate of global sea-level rise, so the ocean began to recede and the ocean bottom emerged even as the ice was still disappearing. About 12,900 years ago the shoreline fell to around 180 feet below present level. Subsequently, the continual rise of global sea level brought the ocean close to its present position about 3,000 years ago.

Just after the glacial retreat, much of Maine was a treeless tundra that supported large animals, such as woolly mammoths. Warming of the climate allowed the northward migration of a cold northern forest, which in turn was replaced by the forest of today. The nomadic Paleoindians (the earliest human occupants of North America), arrived in Maine between about 13,000 and 11,000 years ago during an extremely cold time when residual masses of glacial ice were still melting in parts of northern Maine.

As research progresses, it is becoming clear that the glacial record in Down East Maine reflects drastic and abrupt atmospheric temperature and oceanic changes that brought the world into its present condition. It can now be demonstrated that this chronological record is the same as those from other North Atlantic regions, including Greenland and northwestern Europe. This record is one of the keys in developing an understanding of the causes of global ice ages and predictive models of future climate change.



Ice Age Trail Map

Additional Resources

Maine Ice Age Trail – Woodrow Thompson, Maine Geological Survey and Harold Borns

https://digitalmaine.com/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1413&context=mgs_publications

Harold Borns Maine Ice Age Trail Talk

<https://www.youtube.com/watch?v=SV45pe3mHRU>

Maine Ice Age Trail Map

<http://iceagetrail.umaine.edu/images/mapside.pdf>

Maine Ice Age Trail Stops

<http://iceagetrail.umaine.edu/trail.htm>

Maine Ice Age Trail free iPad APP

<http://iceagetrail.umaine.edu/>