

Glacial Geology of Snow's Cove

by Fred Beck

Did you know that Sedgwick has dozens of well-developed glacial moraines which include some of the largest glacial erratic boulders in Maine? A moraine is an accumulation of boulders, stones, or other debris pushed along by the glacier and left behind as it began melting about 20,000 years ago. Erratics are rocks torn loose from the bedrock and moved by a glacier to a new position sometimes a great distance from their source.

Recently a group of more than 30 participants joined me in Sedgwick for a glacial geology program sponsored by Blue Hill Heritage Trust. After examining LIDAR aerial photos of the area, we walked over some well-developed and preserved end moraines at the Trust's Snow's Cove Preserve on Rt. 15 in Sedgwick. LIDAR photos are a fairly recent method of aerial mapping which can give a high resolution view of the earth's surface without the distraction of vegetation.

There are two types of end moraines, terminal and recessional. Terminal end moraines are the rocks and soil pushed and deposited at the farthest advance of a glacier. In the case of the last glacier covering Maine, called the Laurentide Ice Sheet, the terminal moraine was probably well off shore at Georges Bank. Recessional end moraines are the moraines left as a glacier recedes. These are built during pauses in the glacier's retreat. They have the shape of the glacier's "snout," which could be very straight but more likely fairly irregular. The snout or nose of the receding glacier was in the Snow's Cove area about 15.9 thousand years ago according to studies published by the Maine Geological Survey. Many geologists believe that the repetitive and parallel occurrences of end moraines in this area represent annual retreat rates in the same way that tree rings represent annual growth rates in trees.

The Laurentide Ice Sheet was reportedly up to a mile thick and so heavy that it depressed the earth's surface about 200 feet. To say that the glacier "retreated" seems to imply that it moved back toward the northwest where it had originated. The glacier didn't really reverse its southerly movement! As melting was taking place, the glacier's inertia kept it moving southerly, but melting and calving at the face exceeded the forward movement of the ice sheet and the face of the glacier receded northerly. There was likely a pause in the melting each winter, and the forward advance of the glacier would exceed the melt rate. In the summer, melting and calving would exceed the forward inertia of the ice sheet. If this was the case, then in the Sedgwick area the annual retreat of the face of the ice was about 200 to 300 feet.

The recessional moraines at Snow's Cove Preserve contain an unusually large number of glacial large boulders, sometimes referred to as erratics. Most are of granite, but some are metamorphic rocks from the Ellsworth Formation. There are large areas of

granite as well as Ellsworth Formation metamorphic bedrock north of Snow's Cove. With detailed study of these erratics and comparing them to different granite bodies to the north, it may be possible to determine the distance and direction many of these big boulders have been transported.

Several years ago, one of the glacial erratics across the road from Snow's Cove Preserve and just down the slope from the Maine DOT maintenance yard was considered the largest erratic in Maine. That distinction now goes to an erratic in Phillips, Maine, called Daggett Rock (it measures 80 feet long, 30 feet wide, and 25 feet high). On Blue Hill Heritage Trust's trail near the shore of Snow's Cove there is a very large glacial boulder which would likely qualify as one of the largest in Maine. Snow's Cove Preserve contains perhaps the biggest collection of very large glacial boulders associated with glacial end moraines in Maine.

For more info about Blue Hill Heritage Trust trails and their upcoming programs, call 374-5118, e-mail info@bluehillheritagetrust.org, or visit bluehillheritagetrust.org.

A nationally accredited, member-supported local nonprofit, Blue Hill Heritage Trust has conserved over 6,000 acres on the Blue Hill Peninsula since 1985. BHHT also maintains 14 miles of public access hiking trails.

Fred Beck received his BS and MA degrees in geology from University of Wyoming and has been a professional Exploration Geologist in the West and in Maine. He was an Assistant State Geologist for Maine, Chief Geologist for Callahan Mining Corporation, and a mountain climbing and ski instructor in the U. S. Army. A consulting geologist headquartered in Yarmouth, Maine since 1978, Beck is also the founder and owner of Maine Environmental Laboratory. A former Brooksville resident, Fred and his wife own a three-season home on Cape Rosier. He is a member and volunteer of Blue Hill Heritage Trust.

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BHHT Contact:

Eileen Mielenhausen, Membership Coordinator
Blue Hill Heritage Trust
PO Box 222, Blue Hill, Maine 04614
Tel. 374-5118
Email: eileen@bluehillheritagetrust.org