

Geologic Site of the Month
February, 1998

Tracy Corners Gravel Pit, Addison, Maine



44 37' 25.80" N, 67 42' 51.61" W

Text by
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Introduction

The gravel pit exposure at Tracy Corners in southeastern Maine, approximately 1.8 miles south of the junction U.S. Route 1 and State Route 187 in Addison, is a well known field trip stop for students of glacial geology. It has been the subject of detailed geological study (Ashley, Boothroyd, and Borns, 1991), and is featured in the cover photograph of the Studies in Maine Geology, Volume 6: Quaternary Geology published by the Maine Geological Survey. It can be located on the Columbia Falls 7.5-minute USGS topographic quadrangle.



Figure 1. Aerial photo showing the morphology of the Tracy Corners moraine and location of gravel pit. The ice margin stood along the steep left (north) side of the bouldery ridge which trends from upper left to lower center of photo. Cemetery in center of photo is on the southerly, less steep slope of moraine which faced away from the ice.

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The pit is excavated into a landform known as a moraine. A moraine is a ridge of sediment formed at the front of a glacier, and can be formed by deposition of sediment from the melting ice margin, or by pushing of the sediment by the glacier as it moves forward. In this exposure there is evidence for both types of moraine-forming activity.

The landform in Addison is part of a greater moraine complex in eastern Maine, the larger components of which are termed the Pond Ridge moraine (east of Addison) and the Pineo Ridge moraine system (north of Addison) (Kaplan, 1994). Both of these larger moraine systems, as well as the smaller moraines like the one at Addison formed as the ice margin retreated in contact with the ocean between about 16,800 and 16,000 calendar years ago. The ice margin was grounded in the sea, and each moraine represents a "grounding-line position," that is, a place where the ice front stood long enough for a moraine to form. The moraines have cross-cutting and parallel orientations with respect to each other. This change in sediment deposition suggests that the ice margin was moving, to readvance or overlap its former position. On a regional scale in southeastern Maine, these landforms clearly reflect the shape of the ice margin at that time as a lobate form with embayments in the lowlands.

Along coastal Maine, radiocarbon ages on marine fossil shells imply that ice in coastal eastern Maine was separated from ice in coastal western Maine by a major marine embayment in the Penobscot River valley which was extant as far inland as Medway at about the time the moraine at Addison formed. During this phase of deglaciation, did the eastern Maine ice behave as a completely separate ice mass from the ice in western Maine?



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Figure 2 is a northwest-southeast oriented face of the moraine. Stratified sand and gravel layers are tilted to right (south) in lower right of the photo and represent deposition of coalesced glaciomarine fans at the ice-margin. Subsequent overriding by the glacier is recorded by the folded and offset rusty layers in photo center, overlain by boulders and gravel. Thrust faults and folds in these sediments were formed when the ice moved over the top from north to south. After the ice melted, the Maine coast gradually rose back to its original elevation and the landform emerged from the glaciomarine sea. As the moraine passed through wave-base, nearshore deposits formed on its top surface by reworking of the moraine sediments, and are represented by the upper meter of sand and gravelly sand.



Photo by Dorothy Tepper

Maine Geological Survey

Figure 2. Composition and structure in the Tracy Corners moraine; ~15 meters high, looking northeast.



References and Additional Information

Ashley, G.M., Boothroyd, J.C., and Borns, H. W., Jr., 1991, Sedimentology of late Pleistocene (Laurentide) deglacial-phase deposits, eastern Maine; an example of a temperate marine grounded ice-sheet margin, in Anderson, J. B., and Ashley, G. M. (editors), Glacial marine sedimentation; paleoclimatic significance: Boulder, Colorado, Geological Society of America, Special Paper 261, p. 107-125.

Kaplan, M.R., 1994, The deglaciation of southeastern Maine: M.S. thesis, University of Maine, Orono, 112 p.

