FORMATTING GUIDELINES FOR NEIGC GUIDEBOOK CHAPTERS

General

- 1" margins all around
- 10 point Times
- single spaced with extra line between ¶s
- Other details can be seen in the following pages copied from the 2013 Guidebook:

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Header includes: Italicized authors names

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GEOLOGY OF THE SOUTH BRANCH POND AND NORTH TRAVELER MOUNTAIN AREA, BAXTER STATE PARK, MAINE

By

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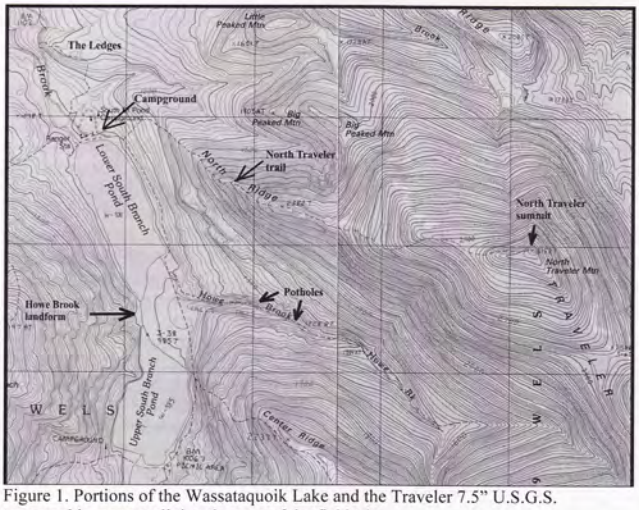
INTRODUCTION

This field trip is a moderate day-long hike to observe bedrock and glacial features in the South Branch Pond and North Traveler Mountain areas of Baxter State Park, Maine. This area is described as a complex landscape controlled by a variety of geologic factors (Rankin and Caldwell, 2010). Stops on our trip include outcrops of Traveler Rhyolite, the summit of North Traveler Mountain (3,150 ft.), the Howe Brook landform, and potholes along Howe Brook. If time permits, outcrops of the Trout Brook Formation along South Branch Pond Brook will be visited. This fieldtrip highlights the work of Douglas W. Rankin (USGS retired) who has spent over sixty years in Baxter State Park and has provided us with a great story to tell. In 2010, Rankin and Caldwell (deceased) authored "A Guide to the Geology of Baxter State Park and Katahdin", published by the Maine Geological Survey. The geology on this fieldtrip is based on this book.



Figures & captions within 1" margins

Figure 1. Portions of the Wassataquoik Lake and the Traveler 7.5" U.S.G.S. topographic maps outlining the area of the field trip.

GENERAL GEOLOGY

The South Branch Pond and Traveler Mountain area of Baxter State Park is dominated by exposures of the volcanic Traveler Rhyolite. The unit covers an area approximately six by ten miles across the northern part of Baxter Park. Estimates are that it is about 10,500 feet thick (Rankin and Hon, 1987). This extrusive, volcanic rock varies in color from a dark green to bluish-gray color. It is fine-grained and when broken creates sharp fractures

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Issues illustrated by subsequent pages:

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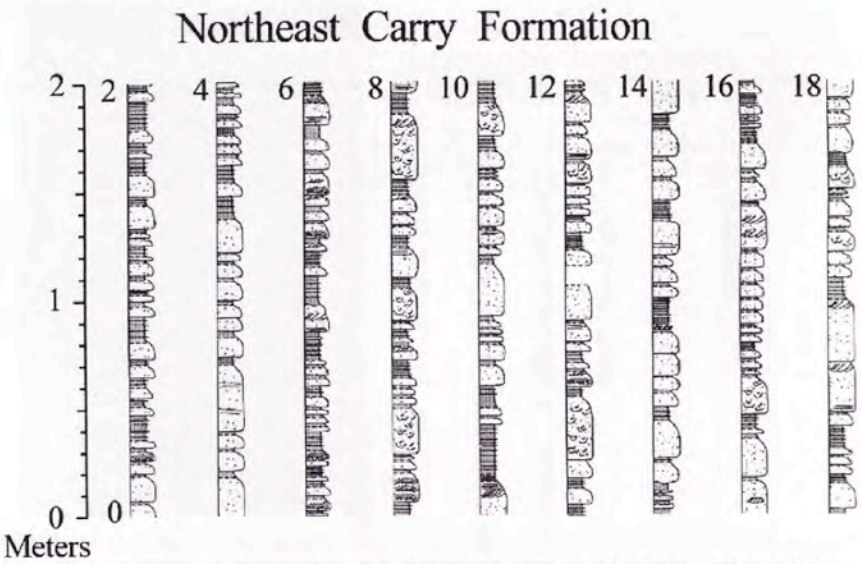

Figure 13. Measured section of the Northeast Carry Formation at Stop 1 immediately below Seboomook Dam showing the multitude of sedimentary structures found in beds of the formation. Almost all beds are well graded.

2nd header

3rd header

Intrusive rocks

Mafic intrusions. Highly altered, medium green to mottled dark green and buff mafic sills and dikes intrude the Frontenac Formation, primarily, although some intrude younger units. These crop out from northern New Hampshire to western Maine. Marleau (1968) and Cheve (1978, 1990) mapped numerous sills in the Quebec portion of the belt; Albee and Boudette (1972) mapped these as hornblende diorite in adjacent Maine areas. Toward Caucomgomoc Lake the incidence of these intrusions decreases. Boucot and Heath (1969) do not recognize these sills in the rocks of the Moose River Synclinorium to the south. They note, however, a large body of diabase, which intrudes a much higher part of the section and is probably unrelated to mafic sills in the Frontenac Formation.

While most common in the lower calcareous section of the Frontenac Formation, mafic sills and dikes also intrude the non-calcareous section as well as the Ironbound Mountain Formation. The intrusions are also more common in the vicinity of lenses of basalt. A particularly large swarm of sills at Boundary Bald Mountain (Figure 14) elevates slightly the metamorphic grade of the wackes, increasing the chlorite content of the rock, imparting a green color, and resulting in higher resistance to erosion, and thus the locally higher relief.

Mafic sills and dikes range from a few centimeters to more than 3 meters in thickness. Where closely constrained, the contacts with country rocks are usually concordant; in at least one outcrop a dike clearly cuts across bedding in the Frontenac Formation. Contacts with country rocks are usually sharp and planar. Chill margins of the intrusions are finer grained and more strongly foliated than the intrusion centers. The intrusions most commonly have an interlocking bladed texture consisting or randomly oriented laths of plagioclase and altered hornblende. In coarser grained sections, the mafic components may be gregaritic. Chemically these rocks are similar to the volcanic rocks of the Frontenac Formation and Cheve (1990) suggested that the intrusions and volcanics were derived from the same magma.

dated as Early or Late Silurian (late Llandoverian or Wenlockian) age; others are more certainly Late Silurian (Wenlock or early Ludlow) age. Probable minimum thickness is 150 m (500 ft).

Unnamed Upper Silurian mafic volcanic rocks (apparently a thick volcanic equivalent of the calcareous siltstone sequence described above). Massive metamorphosed mafic volcanic rocks including pyroclastics, interlayered with green tuffaceous slate and siltstone, conglomerate with red and green matrix, and muddy sandstone; also minor amounts of reef limestone, some containing basaltic clasts. Scattered fossils in green tuffaceous slate, green matrix conglomerate, reefal limestone and debris derived there from; some assemblages dated as Late Silurian (early Ludlovian), others dated no more precisely than Silurian or Devonian. Some pre-Silurian rocks may be included. Thickness is approximately a thousand meters or more (several thousand feet).

Devonian or Silurian mafic volcanic rocks: Tuff, breccia with scoriaceous fragments, and probably some flow; possibly the same as the Upper Silurian volcanic unit, but lacks fossils.

Undifferentiated Seboomook Group (Pollock, 1987). Graded beds of fine-grained, cross-bedded sandstone, dark-gray siltstone, slate, and a few thick beds of fine-grained feldspathic sandstone like that of the Matagamon Sandstone. One exposure of gray sandy siltstone at the base contains a few Early Devonian brachiopods. Primarily a submarine-slope and prodelta deposit, according to Hall and Stanley (1973, p. 2101). Thickness is variable: 1,200 m (4,000 ft) on East Branch of the Penobscot River.

Matagamon Sandstone (Rankin, 1965). Thick-bedded, fine- to- medium-grained feldspathic sandstone and subordinate amounts of siltstone and slate similar to those lithologies in the Seboomook Group. Thick-bedded sandstone interpreted as delta front deposits is commonly well laminated. Medium to large scale cross-bedded sandstone is interpreted as delta top deposits. The Matagamon is the proximal, shallow water sandstone facies of the Seboomook. Fossils are generally scarce except in occasional shell beds where Early Devonian (Praghian) brachiopods are abundant. Primarily delta-top and delta-front deposits of a westerly prograded delta (Hall, Pollock and Dolan, 1976; Pollock, et al, 1989; Pollock, 1990). Thickness, is 1,200 to 1,500 m (4,000 to 5,000 ft).

Road log format

ROAD LOG

Assemble at Shin Pond Village along Maine Route 159, 10 miles northwest of Patten. Shin Pond Village is on the west side of the flowage between upper and lower Shin Pond. Departure time is 8:30. Roads on this trip, as of August, 2013 are in reasonably good condition. Roads at this time will accommodate 2-wheel drive, standard clearance vehicles. However, please be sure that your vehicle is in safe operable condition with a good usable spare tire, a working jack, dependable battery and well attached exhaust system.

The topographic quadrangle maps used in this trip are the 7.5' Bowlin Pond, Hay Brook Mountain, Hay Lake, and Shin Pond. Map 51 in Delorme's Maine Atlas and Gazetteer is also relevant.

Mileage

0.0	Shin Pond Village
0.4	Large roadside outcrop of Grand Pitch Formation
2.5	Turn left onto secondary road (UTM 5108880N 532418W). Crommet Spring will be on your right. The1994 NEIGC required vehicles to park on the main road and walk to the stream as there was no bridge in 1994. The road down to Shin Brook is easily passable with 2 wheel drive vehicles to the brook.
2.75	Parking area on left. We will retrace our route back to Maine Route 159.

STOP 1: TYPE SECTION OF THE SHIN BROOK FORMATION.
(Stop 1 of Neuman, 1966, 1980, 1994). (UTM 5108958N 532002W)

Exposures on the east bank of brook are Grand Pitch Formation. Rock types include medium- to dark-gray slate and thin-bedded, laminated, fine-grained light-gray quartzite, some cross bedded. Neuman (1964, p. E4) stated:

"Although the section is faulted and much of the rock exposed is strongly deformed, part of it is suitable for stratigraphic measurement, and the remainder contains rock that is characteristic

Reference format

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