

## **CELEBRATING PLACE: 30th Anniversary Notes from Blue Hill Heritage Trust**

### **Faults, Rocks, and Ice (A few of my favorite things): The Stuff that Made our Terrain**

By George Fields, Associate Director, Blue Hill Heritage Trust

My wife and I just returned from a geology trip to Nova Scotia and Newfoundland where we saw some incredible geologic features. We saw a former fjord, a glacial hanging valley, a portion of the mantle, and the uninterrupted geologic section of interbedded shale and limestone that spanned the Cambrian and Ordovician geologic periods (525-475 million years ago). For us, (both trained geologists), this was an awesome adventure.

However, our Peninsula has some awesome geologic features as well! The colors and shapes of the Sedgwick, Long Island, Lucerne, Wallamatogus and Blue Hill granites, the Ellsworth schist, and the other rock masses provide the foundation for our varying coastline, rounded hills, mountains, and wildlife habitats. Past geologic faulting moved massive slices of rocks in vertical or horizontal directions; then glaciers transported and deposited boulders, sand, and clay, sculpting most of the terrain we see today.

Our Trust's John B. Mountain preserve in Brooksville is a fantastic place to see deposits of rhyolite, a very dense rock composed mostly of micro-scopic silica and feldspar formed from ash and other material during volcanic eruptions, that's right, from volcanoes! Part of what is called "the Castine Formation" these rocks were deposited in a volcanic island-arc setting, similar to that of present day Japan or the Aleutian Islands, that extends from Butter Island northeast to Little Deer Isle and north from Cape Rosier to Perkins Hill.

John B has two trails to the summit, where you can see exposed areas of rhyolite. A fresh un-weathered sample is often dark in color, due to chemical impurities in the rock, whereas a weathered sample will often appear light to moderate gray in color, as chemical weathering has removed or altered some of the rock's minerals. When at the summit look closely at the rock under your feet and you will see near-vertical cracks in the rock, this is because the Castine Formation was uplifted, folded and contorted after deposition.

Another of my favorite geologic sites is Caterpillar Hill. The blueberry fields on our Trust's Cooper Farm property are comprised of the sand, silt and gravel (referred to as glacial till) brought-in by the great conveyor belts of ice some 13,000 to 15,000 years ago. The wooded section of the Cooper Farm preserve reveals more evidence of our glacial past, boulders of varying sizes and granitic locales dot the forest floor. These glacial erratics may include transplants from north of Blue Hill.

I have all kinds of favorites, but one igneous rock that checks that list is the Lucerne granite. It comprises the northern and eastern flanks of Blue Hill Mountain and is the second youngest granite body on our Peninsula (only slightly older than the Oak Point granite of Brooklin and Deer Isle). What makes the Lucerne especially interesting to a geologist is its three major minerals (quartz and two types of feldspar) are all light in color, varying from grayish-white to

translucent and in relatively equal proportions. Other granites typically have feldspar that is pink in color and a higher proportion of feldspar to quartz.

If you hike our Becton Trail to the summit of Blue Hill Mountain you will cross the contact between the Lucerne granite and the Ellsworth schist. The schist is Cambrian in age (approximately 120-130 million years older than the Lucerne) and is intruded by nearly all of the granitic masses on the peninsula. The mountain summit has incredible folded and crenulated sections of schist. The deposits that formed these rocks were laid down similarly to the rhyolite at John B. Mountain, but due to increased metamorphism (heat and pressure), the Ellsworth schists were squeezed and folded to a higher degree. An excellent example of this is near our *Passport to the Trails* letterbox at the summit.

I invite you to get out on any of our Trust's 25-plus miles of trails and enjoy the geologic features of our landscape. See the stuff that makes this place "Rock-On Awesome"!



*Caption for photo:* A hike up John B. Mountain in Brooksville rewards you with both an interesting geologic feature and a great view over East Penobscot Bay.