Geologic Site of the Month

April, 2012

Orris Falls Conservation Area and the Great Balancing Rock of Tatnic

43 16‘ 22.53“ N, 70 42‘ 34.69“ W

Text by
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Introduction

In her volume "Indian Place-Names of the Penobscot Valley and the Maine Coast," Fannie Hardy Eckstorm, folklorist and linguist of Maine Indian dialects, attempts to define the Indian words Tatnock or Totnock, found in colonial York Deeds; "In 1659, certain marshes (commonly called Tottnocke Marshes) near the town line of Kittery and Wells are mentioned. These most likely were fresh marshes, notable in a region of salt grass, but perhaps they were 'shaking meadow.' The root seems to be tatagou, 'shake.' The Chippewa has tatogana, for a trembling piece of ground in a marsh." Hardy leaves it at that, but her reference to the Kittery and Wells town line is no doubt referring to the colonial boundaries of Kittery and Wells.

Introduction

Colonial Kittery included the modern towns of Eliot and the Berwicks, and colonial Wells included modern Kennebunk and the village of Ogunquit, and that colonial town line today does run through the Tatnic Hills region near the wetlands, as she noted.

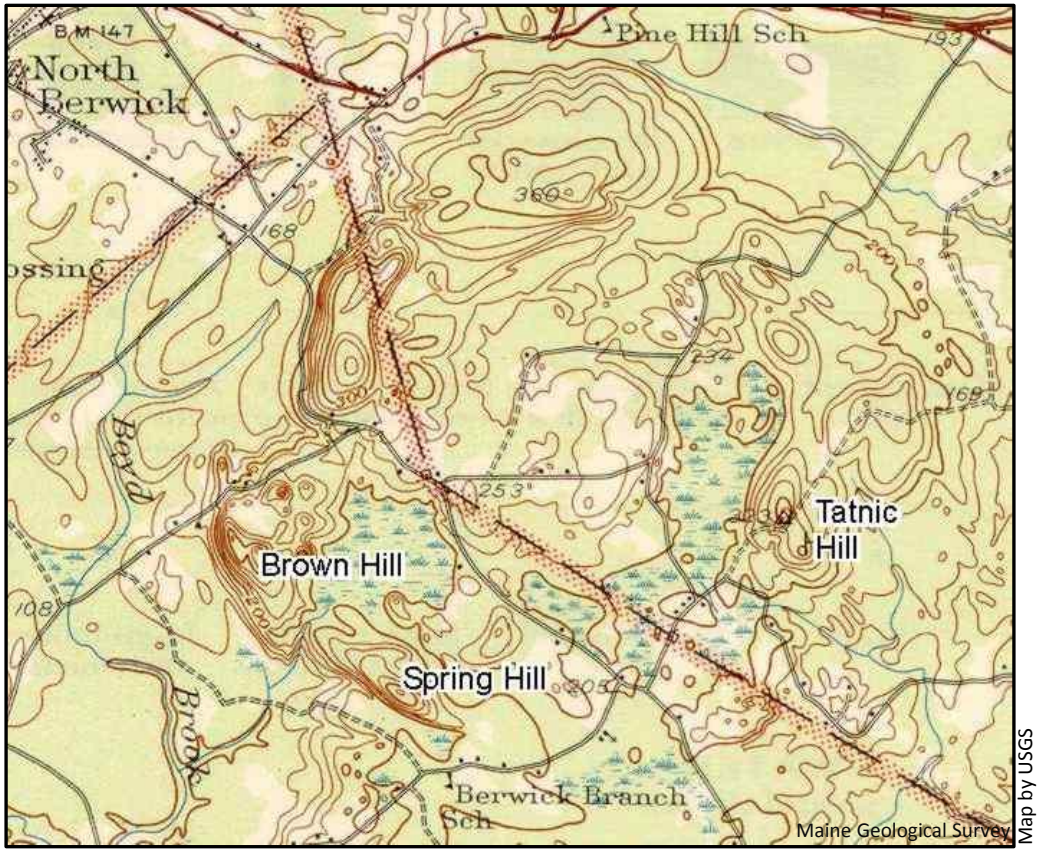

Figure 1. Map of the Tatnic Hills region.

Introduction

So what does all this oral history have to do with the Indian word "Totnock"? Not so much, other than as an introduction to a wonderful hike in a parcel of property managed by the Great Works Regional Land Trust, the Orris Falls Conservation Area, in the area known today as the Tatnic Hills. Follow the directions to the Thurrell Road parking area and trailhead to begin your hike. There is more to see than just the geology.

CAUTION: Please note that in places there are steep drop offs and slopes along the trails and overlooks. Make sure your children stay near you when at ledges and cliffs.

Orris Falls Conservation Area

The path from the trailhead to the first stop is about a half-mile, where on your left will be the Littlefield family cemetery (Figure 2) and shortly after it the trail splits.

Figure 2. Headstone in Littlefield Family Cemetery.

Orris Falls Conservation Area

To the left will take you to Big Bump and Lachance Point, where you will find views overlooking the wetlands in the preserve and of Mount Agamenticus. As you access the path you will notice the foundations of the Littlefield family home and barn (Figure 3).

Figure 3. Foundation at Littlefield home site.

Orris Falls Conservation Area

A downed tree that fell across the path has been sawed, exposing the tree rings; if you have kids with you, ask them if they can count the rings, if you have the time to do so (Figure 4).

Photo by Thomas Weddle

Figure 4. Sawed tree near the path and a close-up of tree rings.

Orris Falls Conservation Area

The outcrops of rock (Figure 5) at Big Bump and Lachance Point are part of a complex of igneous rocks found in the Tatnic Hills (parts of which may be featured in a future geological site of the month).

Figure 5. Outcrops of igneous rock and overlook from Big Bump/Lachance Point, with view of stonewall boundary line. Note steep slope here!!

Orris Falls Conservation Area

Return to the main path and turn left, travel a short distance to where a boardwalk crosses a tributary of the Great Works River, and there will be a side trail on the right if you want to view Orris Falls (Figure 6).

Figure 6. Orris Falls, named for Orris Littlefield. Falls stream is a tributary to Boyd Brook and the Great Works River. Note steep slope here!!

Orris Falls Conservation Area

Return back to the footbridge, and cross it to continue on to the Balancing Rock site. Along this part of the trail, there are exposures of dark-gray fine-grained volcanic rock that cuts into the older igneous rocks of the Tatnic Hills (Figure 7).

Figure 7. Dark gray fine-grained rock with pen sitting on it has intruded into the adjacent coarse-grained, light-colored rock; on either side of the dark rock.

Orris Falls Conservation Area

The next non-geological feature you will reach is a beaver-dammed pond, with a beaver lodge in the pond (Figure 8). The pond may be part of the marsh areas noted by Hardy, but are now flooded.

Figure 8. Beaver lodge in dammed pond in area of "Tottnocke Marsh" of Eckstorm.

Orris Falls Conservation Area

Keep to the right where the trail splits over Spring Hill. The trail over Spring Hill leads to the Tatnic Ledges Lookout (Figure 9).

Figure 9. Tatnic Ledges Lookout. Note steep slope here!!

Orris Falls Conservation Area

One can get a partially obscured view of Mount Agamenticus in the fall and winter (Figure 10), but it is probably obscured by leafed trees in early spring, summer, and early fall.

Figure 10. View from Tatnic Ledges Lookout. One can view Mount Agamenticus, partially obscured by trees. Note steep slope here!!

Orris Falls Conservation Area

There are several trees at the lookout which have woodpecker nests drilled into the dead tree trunks (Figure 11).

Figure 11. Note woodpecker holes drilled into dead trees at edge of Tatnic Ledges Lookout.

Balancing Rock

Continuing from the lookout, there are signs for Balancing Rock, and along this part of the trail and beyond Balancing Rock, there are areas of numerous large stones and boulders, most of them derived locally when the last Ice Age glacier covered this region (Figure 12). The boulders were plucked from the bedrock and were transported by the great glacier, some of them incorporated in the debris at the base of the ice, and others being transported in or on the ice as it flowed. As the glacier began to retreat due to warming at the end of the ice age, the boulders within the ice were let down onto the soil debris at the base of the ice, while others were let down onto other boulders, perched there on stone pedestals as a testament to their glacial transport origin.

Figure 12. Natural boulder piles.

Balancing Rock

Balancing Rock is one of the latter, a perched boulder (Figure 13).

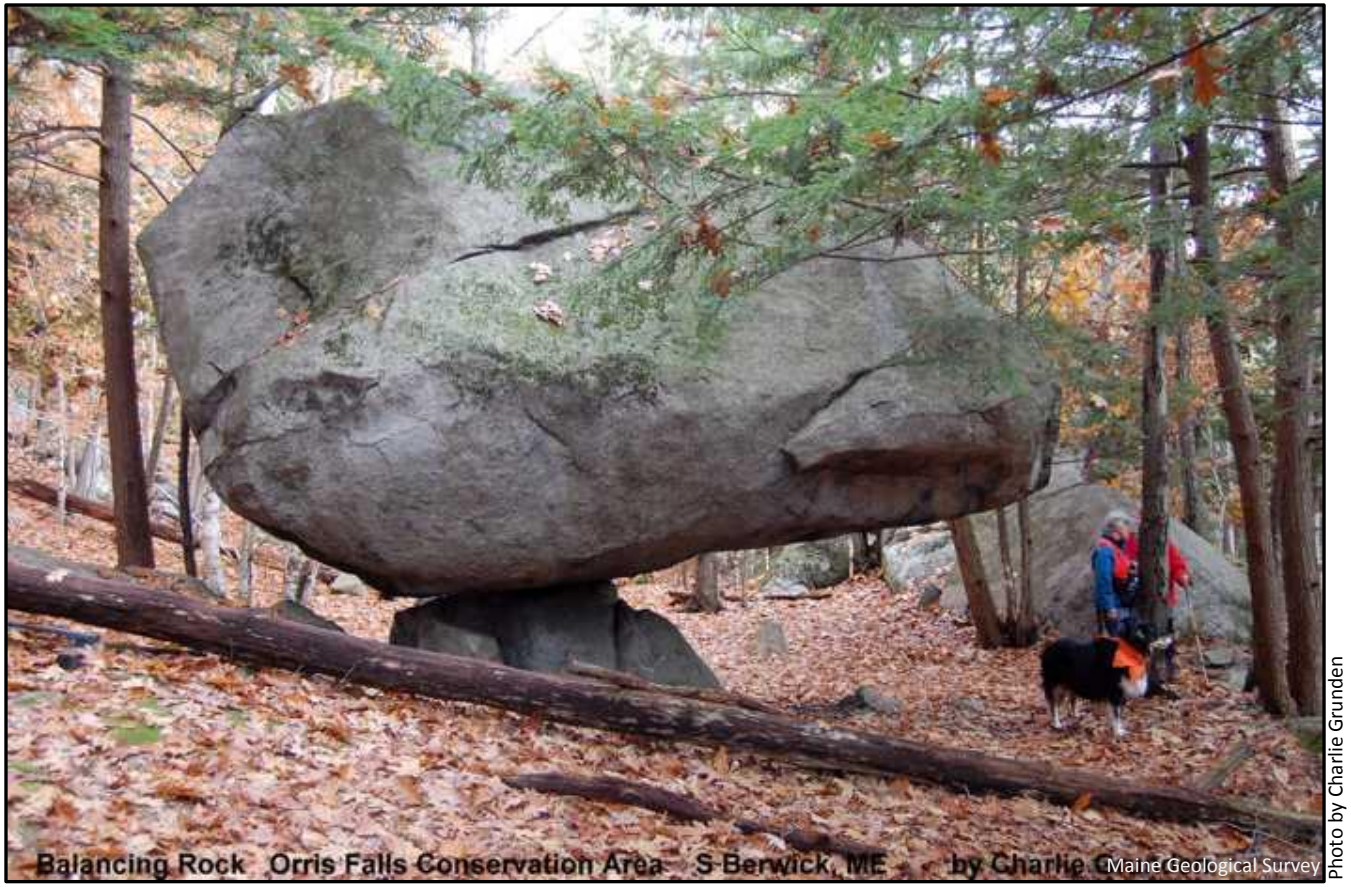

Figure 13. Balancing Rock, South Berwick, Maine, is a glacially transported boulder known as a "perched boulder" because it was deposited by the ice onto another boulder which holds the larger stone above the ground surface.

Balancing Rock

There are several well known glacial boulders in Maine, including Daggett Rock (believed to be the largest in Maine) and Bubble Rock on Mount Desert Island in Acadia National Park (Figure 14).

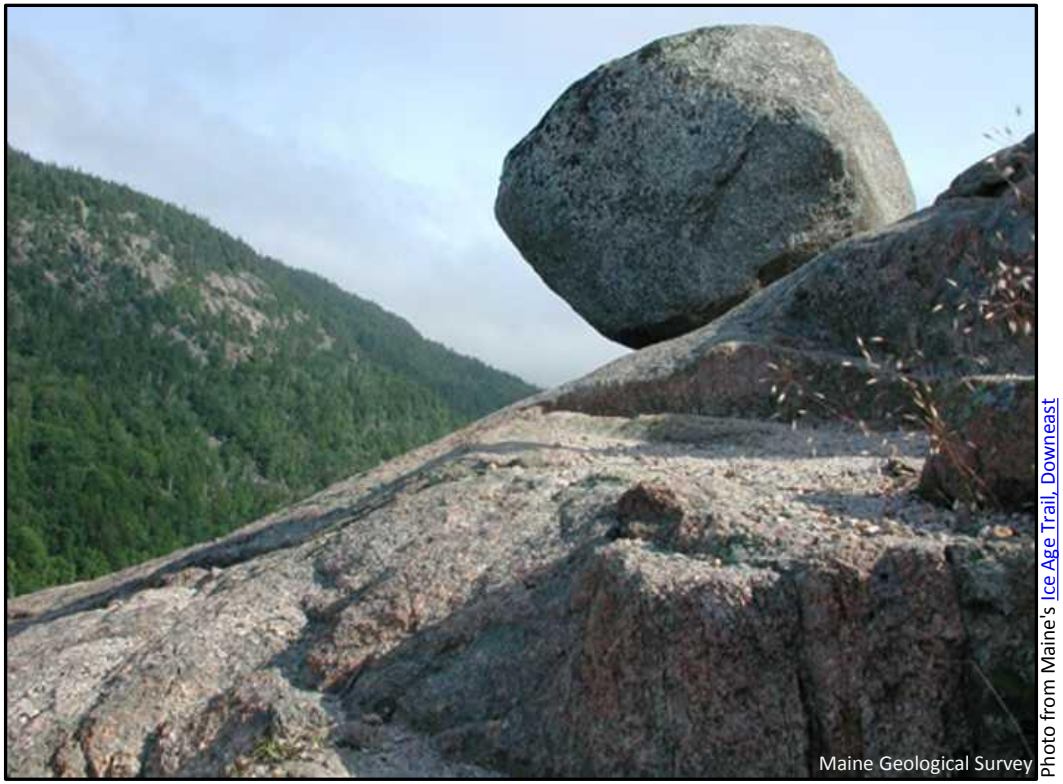

Figure 14. Bubble Rock is clearly different from the rocks on which it sits; it is a white granite rather than the pink granite that makes up the Bubbles and the surrounding mountains. It is an example of a glacial erratic, a rock fragment or stone transported by a glacier and deposited at some distance from the source outcrop from where it was derived, and generally, though not necessarily resting on bedrock of a different rock type (Bates and Jackson, 1980).

Balancing Rock

Balancing Rock is noteworthy for several reasons; it is a large stone (20x12x15 feet in dimensions) and it is a perched boulder. Also, its shape is distinctive; glacial geologists would call it a "bullet stone" in reference to its shape. It is believed that as the bullet stone is transported in the ice, the ice flowed from the smooth, narrow end toward the thicker blunt end. The deposition of the stone from the ice occurred later, when the ice in the region was wasting away. The final resting position of the stone may have had less to do with ice flow, and more likely was controlled by local ice-stagnation and down wasting at the glacier margin when the front of the ice sheet was positioned at the southern edge of the Tatnic Hills, about 15,500 years ago.

References and Additional Information

Bates, R. L., and Jackson, J. A., 1980, Glossary of Geology: American Geological Institute, Falls Church, Virginia, 751 p.

Eckstorm, Fannie H., 1941, Indian Place-Names of the Penobscot Valley and the Maine coast: University Press, Orono, Maine, 272 p.

Hussey, A. M., II, 1961, Petrology and structure of three basic igneous complexes, southwestern Maine: Doctoral dissertation, The University of Illinois, Urbana, Illinois, 119 p.