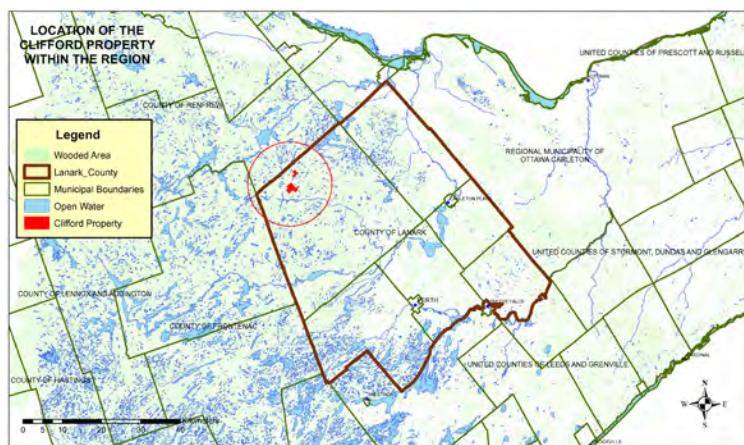


Blueberry Mountain: Some Botany & Ecology

By Dr. Paul Keddy

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Ten thousand years ago, the vast ice sheet covering Lanark County had just melted, leaving an extensive landscape of rocky hills interspersed with sand and gravel. Since trees had not yet returned north, the landscape of the county was much more like the arctic, with mostly herbaceous plants and small shrubs. It probably looked somewhat like Baffin Island does today. Slowly, the trees that had survived the ice age further south, returned north. For a short period, Lanark County had mostly coniferous trees, but eventually even maple, beech and oak returned north, producing our modern mixture of tree species.



The northward invasion of trees has been studied in some detail. As the ice melted, it left thousands of small lakes, each of which slowly began to fill with sediment. By removing cores of sediment in the bottom of such lakes, and studying them under a microscope, it is possible to count the pollen grains trapped in the sediment, and determine which kinds of plants occurred at which times in the past. Hundreds of lakes in eastern North America have now been cored in this way, and plant ecologists can actually make maps of how each species of tree migrated north after the ice age. So, we know the broad scale patterns, and in the case of Blueberry Mountain, we also know quite a bit of detail. Here is the reason: a sediment core was taken not far away, from Flower Round Lake in Lavant Township, and studied in the early 1990s at Queen's University. The data from this core show that the lake formed 9,500 years ago, that the first trees to arrive formed pine and spruce forests, and that by 7,500 years ago, deciduous trees like maple, beech and oak arrived.

Here is how tree migration matters to Blueberry Mountain. As the trees arrived, they replaced the smaller plants typical of post-glacial landscapes, turning open barrens into forests. The original plants survived only where trees could not grow. Hence, a clue as to what Lanark County looked like after the ice age, and before the trees, comes from looking at modern day environments where trees have not established, particularly cliffs and rock barrens of various types. When we climb to the top of Blueberry Mountain (or other large, high ridges in Lanark County) we can see plants that still live in areas not shaded by trees. On the top of Blueberry Mountain, for example, there are indeed blueberry plants (*Vaccinium angustifolium*), plants well-known to be intolerant of shade from trees. (For the same reason,

blueberry plants also benefit from fires that kill trees -- but that is another story). If you look more closely near the blueberry shrubs, other cliff and rock barren plants can be seen. Here are just a few examples. One of the most conspicuous is a low-growing evergreen shrub, Bearberry (*Arctostaphylos uva-ursi*). Closer to the edge of the cliff, and even growing out of cracks, is Bristly Sarsaparilla (*Aralia hispida*). There is quite a special fern, Rusty Woodsia (*Woodsia ilvensis*). Less conspicuous plants include Bastard Toadflax (*Comandra umbellata*), Pinweed (*Lechea intermedia*) and Cow-wheat (*Melampyrum lineare*). There is even a wild orchid, Slender Ladies' Tresses (*Spiranthes lacera*). Taken together, these plants are part of a special ecological community that is mostly found on cliff tops and rock barrens, where trees cannot produce dense shade.

So, from one point of view, walking to the top of the Blueberry Mountain is somewhat like walking back in time, to a landscape without forest.



To put this in a larger context, let us compare Blueberry Mountain to two other areas in Lanark County that have rock barrens, and are protected areas. The Keddy Nature Sanctuary, south and east of Blueberry Mountain, has a similar bedrock, and even some small steep rock slopes, but the plants above mostly do not occur. There is only one patch of blueberries, while Slender Ladies' Tresses occur in several rocky clearings. The

explanation for this difference is likely simple: the landscape at Keddy Nature Sanctuary being flatter, was once completely forested, and most rock barren species were shaded out, likely thousands of years in the past. Some of the rocky open areas at Keddy Nature Sanctuary today may look superficially like areas of Blueberry Mountain, but they likely formed recently when logging, followed by grazing, created openings in the forest. Now to another cliff face: Foley Mountain. This cliff is a little further south, and perhaps more importantly, faces more directly south, with the result that summer sun creates an even warmer (and possibly drier) microclimate. Here we find some of the Blueberry Mountain plants, but also new ones, such as another species of Woodsia, Blunt-lobed Woodsia (*Woodsia obtusa*). This fern is so rare as to be officially designated as threatened in Canada and endangered in Ontario. Foley Mountain is also different from Blueberry Mountain in having areas of calcareous rock, unlike the gneiss at Blueberry Mountain and Keddy Nature Sanctuary. Each mountain, or rock barren, then, can be thought of as a kind of sunny island in the treed landscape, with small groups of plants that grow in full sunlight.



Further to the west of Lanark County, there are more extensive landscapes with rather few trees, and rock ridges alternating with ponds. These areas, known as rock barrens, have the same species you can see at the top of Blueberry Mountain. One fine example is protected in the Mellon Lake Conservation Reserve, 8656 hectares south of Highway 7 near Kaladar.

Blueberry Mountain then, apart from providing a lovely view, also provides an opportunity to see some special plants that were once much more common in our landscape. It also reminds us that our protected areas fit together, with each area protecting different kinds of environments, and hence different species.

Finally, a word to visitors. Since these plants are considered uncommon in Lanark County, and since they are confined to quite a narrow strip of land on the edge of the cliff, they are actually rather vulnerable to human activities. It would be better if you stayed carefully on the trail, did not stomp around with large hiking boots on the very edge of the cliff, did not sprawl in the plants for lunch, and did not bring large jumpy dogs to run back and forth along the trail. The dry conditions here cause plants to grow very slowly, and while these ones have survived for thousands of years, to survive into the future

they need to be treated gently and with respect.

More reading

Catling, P.M and V.R. Brownell. 1999. The flora and ecology of southern Ontario granite barrens. Pages 392-405 in Anderson, R.C., J.S. Fralish, and J.M. Baskin (eds). *Savannas, Barrens, and Rock Outcrop Plant Communities of North America*. Cambridge University Press, Cambridge. (a fine overview of rock outcrop vegetation. Table 24.2 gives a list of rare species found in these barrens. While that much of Lanark County is gneiss, rather than granite, this book chapter seems to describe our gneiss landscape rather well.)

Keddy, P.A. 2008. *Earth, Water, Fire: An Ecological Profile of Lanark County*. Motion Creative Printing, Carleton Place, ON. 73 p. (an overview of the natural environment of Lanark County, including a list of significant natural areas in the county, available at many local bookstores, and the Mississippi Valley Field-Naturalists)

Keddy, P.A. *The Scientific Foundations for Conservation in the Ottawa Valley*. <http://www.drpaulkeddy.com/ottawavalleyscience.html> (an introduction to the ecology of the Ottawa Valley, with a list of articles to read)

Keddy, C.J. 1994. *Forest History of Eastern Ontario*. Information Report No. 1. Eastern Ontario Model Forest, Kemptville, Ontario. (an overview of the history of Lanark County forests since the last Ice Age)

White, D. J. 2016. *Plants of Lanark County*. <http://www.lanarkflora.com/> (a complete list of the plants of Lanark County, along with other information including significant natural areas.)

