

Recent bedrock geomorphology of the Niagara Escarpment, Niagara, Ontario

R.E. Stenson

Department of Geography, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada

Within the study area, the Niagara Escarpment is an east-west ridge of rock which acted as an obstacle to advancing Wisconsinan glaciers, a shoreline for short-lived impounded lakes, a high energy section for northward flowing streams and a north facing slope on which a number of mechanical and chemical landscape processes could act. This variety of processes, occurring separately or concurrently, has resulted in a unique landform assemblage with many features representing controversial processes of formation. Sculpted forms with dimension under one meter, to headlands of similar shape and dimension ratios which exist at a scale 100 times greater, are remnant from the last glaciation. The escarpment top exhibits dense karst pavements which deliver water to the subsurface. Pop-ups exist in some quarry areas. The face of

the escarpment has numerous waterfalls, springs, caves, collapse zones, zones of freeze/thaw and wet/dry weathering, all of which take advantage of a complex stratigraphy. Work performed along this section of the escarpment has resulted in a clearer understanding of the bedrock geomorphology, the processes which have formed them and the dynamics of the modern systems affecting the escarpment. Two processes which have been accepted as correct for more than fifty years can be debunked within the context of the work performed to date. Waterfall recession does not result from the falling stream undercutting at the base and sapping overlying rocks; and sculpted forms present along the escarpment are not ice molded, but rather the result of subglacial meltwater processes.