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The Symbolic Landscape of the Oak Ridges Moraine: Its Influence on Conservation in Ontario, Canada

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Over the past several centuries, the landscape of the Oak Ridges Interlobate Moraine has emerged as the product of a continuous dialogue between its "objective" definition and the "subjective" cultural baggage that people have brought to its perception and use. The Oak Ridges Moraine is one of the most significant physiographic units in south-central Ontario. About 160 kilometers long and up to 13 kilometers wide, this 300-meter-high ridge forms the headwaters for many of the watersheds flowing towards Lake Ontario in the south or towards Lake Simcoe, Georgian Bay, Lake Scugog, and the Kawartha Lakes in the north (see Figure 1).

The purpose of this paper is to offer both an historical interpretation of the Oak Ridges Moraine and a commentary on its role in the evolution of the Ontario conservation movement. The organization of this paper is based on MacKaya, [1928] who argued that the environments of northeastern North American have been subjected to three invasions. Applied to the Moraine, the first of these invasions was the advance and final retreat of the Wisconsin glacier approximately 12,000 years ago which produced, or at the very least, drastically altered, the formal structure of the Moraine. The second was the invasion of European ideology and settlers, first along the north shore of Lake Ontario and then up the south slope onto the Moraine itself. The third, "metropolitan" invasion, is currently the driving force behind much environmental conflict in the area today.

The First Invasion

The first invasion was natural in its origins and was by far the most powerful in that it clearly established the context for subsequent invasions. A general understanding of how the Moraine was formed, and its resulting physical attributes, is necessary to comprehend its ecological functions and the constraints it has posed to human settlement.

During the phase of the Pleistocene glaciation, vast ice masses, up to 3 kilometers thick, slowly advanced and retreated four times over what is now Canada and large areas of the northern United States. These ice advances, and the incredible volumes of melt water associated with their retreat, were responsible for removing and re-depositing entire land forms.

An important feature of the ice advance during the final Wisconsin stage was that there were two lobes in the area, one approaching from the north-east (known as the Lake Simcoe lobe) and another from the south-east (the Lake Ontario lobe). The material transported by these two lobes accumulated where the ice came together and formed what we know today as the Oak Ridges Interlobate Moraine. As this material was deposited into water, it was sorted into layers of silt, sand and gravel. In some areas, this overburden is up to 203 meters thick [Chapman and Putnam, 1984].

According to current geological studies, the final re-advance of the Wisconsin ice sheet, although relatively short-lived, was sufficiently thick to override the Moraine, destroying many of its previously dramatic features and leaving a new cap of till deposits. There is evidence that this last advance came from the south-eastern Lake Ontario lobe [Adams and Taylor, 1985]. The characteristic vegetation which grew up in the aftermath of the last Ice Age formed the basis for the specific hunting and gathering (and horticultural) way of life of the native populations occupying the Great Lakes Lowlands.

Evidence from an archaeological dig of a hunting camp at Dawson Creek on the south-western shore of Rice Lake indicates that the Moraine uplands were primarily used as a hunting and gathering ground for the several cultures making use of this site from 170 BC to 1690 AD. The published data for this site offers impressive insight into the natural conditions which surrounded it over a period of 4000 years. The primary species hunted from this particular camp were large cervids (deer) with high meat yields, and aquatic species from the shores of Rice Lake. There was also some reliance on locally available plant foods, and charcoal analysis indicates that tree species such as white and red oak, ash, maple, elm, hickory and beech were relied upon for firewood [Fisher, 1990].

The European-introduced fur trade greatly intensified inter-tribal warfare between the Huron and the Iroquois which restricted settlement on, or around the Moraine's flanks. In his journal of 1615, Champlain noted the desertion of the Trent Valley and, between 1550 and 1650, the entire area was abandoned as a result of periodic Iroquois invasions which drove the Hurons of this district to join those living near Georgian Bay. After the demise of the Huron nation around 1650, the Cayuga tribe established the village of Ganaraska in 1666 at the mouth of the Ganaraska River, but were soon displaced by thesouthward push of the Mississaugas about 1700. During this period of inter-tribal tensions and warfare, the Oak Ridges Moraine was deserted of any permanent settlement and was principally perceived as a hunting and gathering area [Jackson, 1988]. It is estimated that the Moraine was criss-crossed by at least five major trail systems [Frost, 1973], and reference is also made to a trail along the crest of the Moraine [Mcllwraith, 1990].

One important attribute strongly influenced by the highly permeable nature of the Moraine's glacial deposits is the lack of any streams or rivers actually flowing on the Moraine itself, with the exception of the Humber River. Most of the precipitation falling onto the Moraine immediately seeps vertically through the overburden until it encounters bedrock or less permeable layers.
where it then flows horizontally, emerging as springs and cold water seepage on the Moraine's north and south flanks. This seepage is more pronounced on the south slope given its relatively steep drop in elevation.

The hydrological regime of the Oak Ridges Moraine has influenced the utilitarian concerns of the rural and urban residents living there. It is estimated that ground water seepage on the southern flank accounts for 20 to 60 percent of the base flow of streams and rivers, creating an important cold water fishery resource [Ministry of Natural Resources, 1984]. In addition, as one of the largest overburden aquifers in Ontario, the Oak Ridges Moraine is also seen as a reliable drinking source of quality ground water for communities such as Caledon East, Inglewood, Mono Mills, Palgrave, Uxbridge, King City, Stouffville, Aurora, Newmarket, and Oak Ridges. According to 1975 data, communities such as Newmarket and Aurora were withdrawing a minimum of 7.5 thousand cubic meters per day of ground water for municipal usage [Ontario Ministry of Natural Resources, 1984].

The Second Invasion
The second invasion of the Oak Ridges Moraine was a cultural one as it involved the importation of European settlers, their techniques and technologies, and their ideologies into what was at that time the pristine environment of Ontario. In the beginning, an ethos of subduing the land in order to reap the harvests of an agricultural economy was prevalent. A policy of free land grants to prospective settlers within Upper Canada (Ontario) was maintained until the 1820s when the “New South Wales System” promoted by Edward Gibbon Wakefield began to take effect. This new system called for the outright sale of public lands to settlers who possessed enough capital to develop their holdings. Between 1830 and 1833, the population of the province increased by fifty percent. The pressures were so intense for land that a new policy was adopted against the advice of the Colonial Office. This new policy established that settlers would be able to put down a ten percent deposit on land and pay off the balance in installments. Many of the settlers, lacking the necessary capital, bought the land and, rather than suffer forfeiture, either sold it to land speculators or stripped the land of its timber before abandoning the parcel [Lambert and Pross, 1967].

During this time a myth existed which greatly influenced land use on the Oak Ridges Moraine. According to European lore, good potential farm land was usually

![Legend](image)

Figure 1: Oak Ridges Moraine Bioregion, The Niagara Escarpment, and local watershed boundaries, map by J. Fisher.
associated with forest cover and, at the outset, all land policies were geared towards clearing the land as quickly as possible in order that the settlers could convert it into productive farmland. In many cases this practice encouraged settlement in areas that could accommodate only marginal farms at best.

Effectively, this led to desertification, as the removal of forest cover in conjunction with poor agricultural practices, resulted in the formation of blow sand and shifting sand dunes. As early as the 1870s, foresters were calling for extensive replanting of such areas. Because of their marginal productivity, lands on the Moraine were cheap, but the provincial government was unwilling to assume the cost [Kelly, 1990]. Eventually, priority areas identified in E. J. Zavitz' 1909 report, *Reforestation of Waste Lands in Southern Ontario*, were acquired and planted as county "agreement forests" in the 1920s [Ministry of Natural Resources, 1986]. With the exception of a small study, conducted in King Township by members of the Federation of Ontario Naturalists (FON) [Mayall, 1938], the next major call for reforestation on the Moraine came in the *Report on the Ganaraska Watershed*, produced in the early 1940s [Richardson, 1944].

It was as a result of the efforts of the FON, formed in 1931, and the Ontario Conservation and Reforestation Association (OCRA), that a meeting was convened at the Ontario Agricultural College in Guelph, on 25 April, 1941, to discuss the future of conservation in Ontario and its relationship to manpower demobilization at the end of the war [Richardson, 1974]. This meeting is known today as the "Guelph Conference". One of its results was the proposal that a demonstration survey be initiated that could serve as a special example of conservation research and rehabilitation. In May of 1942 the Ganaraska Watershed, which has the Oak Ridges Moraine as its headwaters, was selected as the area for the survey [Richardson, 1974]. The resulting landmark study, published in 1944, was instrumental in not only encouraging conservation on a watershed basis, but also in establishing the basis for the formation of conservation authorities across southern Ontario. The Ganaraska report became the model upon which conservation surveys for other areas in the province were to be based, with the report from each survey becoming a working plan for conservation efforts in the future. With the Ganaraska survey, conservation was beginning to move from a single resource focus towards one of integrated resource management:

Natural resources form a delicate balanced system in which all parts are interdependent and they cannot be successfully handled piecemeal. The present situation requires the development of a comprehensive plan for treating natural resources on a public basis. [A. F. Coventry, quoted in Richardson, 1974:13]

Conditions on the Moraine, and the subsequent hydrological effects in the populated watersheds, played a vital role in promoting this advance.

Unfortunately, the development of the conservation movement in Ontario is often mainly attributed to information and political exchanges between Canada and the United States. Too little attention has been given to the role of nature in forcing a recognition of the inappropriateness of certain land use practices. The slow desiccation of the Oak Ridges Moraine and the resulting flooding and drought, and the effects of Hurricane Hazel, which struck southern Ontario in 1954, were in fact two of the biggest factors affecting conservation policy in the southern portion of the province [Richardson, 1974; Higgs, 1976]. The greatest flood damage from Hurricane Hazel occurred in the populated Humber and Etobicoke watersheds, both of which have their origins on the Oak Ridges Moraine. This damage, and the associated loss of human lives, gave an enormous impetus to conservation efforts:

Hazel brought important advances in conservation. The most important was the public recognition that flood control and water conservation are but two sides of the same coin; a river system must be dealt with as a single unit, with a coordinated plan put into effect over a number of years. [Richardson, 1974:36]

The Third Invasion

The third invasion was technological in origin, being spawned by the invention of the motor car. A quote from Coleman in *The Toronto Star Weekly* [1924/5/2] illustrates this well:

Motoring north from Toronto one soon comes to hills, the tumbled oak ridges... where the wooded knobs and kettle-shaped basins make a fine contrast with the flat or gently rolling surface to the south.

The reforestation of the Moraine, and the abandonment of farms, was occurring at a time when people were beginning to react to the *disbenefits* of urban life, and were seeking the peace and quiet of the countryside. Initially, this involved the acquisition of farms, the occupation of existing farmhouses, as well as the building of some new dwellings. By and large, however, the countryside was left unharmed. Indeed, the new residents often contributed to reforestation efforts.

Today, however, the trickle of immigration is fast becoming a flood. Whole new subdivisions, along with malls and industrial parts, are springing up on the Moraine, threatening not only the scenic beauty of the area, but the quality and quantity of both surface and ground water. Wood lots, which once sheltered wildlife and recharged streams, have fallen to the chain saw, and concrete is replacing permeable surfaces.

This has provoked a response, not only from those who moved to the Moraine to seek peace and quiet, but from conservationists who fear that the irreplaceable natural heritage of the Moraine will be lost forever. Organizations like Save the Oak Ridges Moraine (STORM) Coalition have sprung up, and public pressure has forced a variety of government commissions and studies to address the issue [Oak Ridges Moraine Technical Working Committee created in 1991, Kanter,

Planning for Linear Corridors
As a linear corridor, and as a headwaters area, the Moraine poses some interesting planning challenges. Other experiences in the province with linear planning units (for instance, the Niagara River parks systems, the Niagara Escarpment, and the Trent-Severn and Rideau canal systems) remain to be fully assimilated. At root is the issue of whether a feature, divided by the fragmented jurisdictional regime of municipalities, can be effectively managed without a "special purpose" body.

At present, it would appear that the answer is no. However, there is hope. Some have suggested that watershed planning might constitute the "skeleton" of a land use/conservation planning framework, with the linear corridors serving as the "sinews" binding the whole together. With the current ferment over the Oak Ridges Moraine raising questions about the utility of current planning in general, it would appear that the dialogue between nature and humanity on the Oak Ridges Moraine may yet produce new breakthroughs in natural resources management.

Endnotes
1 J. D. Wood [1975:109], writing about the early pioneer period, has said that the:

ridge was... a watershed in the 1830s in terms of man's invasion of the forest: if viewed from the air, the townships south of the ridge would have been pock-marked by clearings, whereas those to the north would have displayed nearly unbroken forest. That ridge has served as a barrier to movement and settlement through all time, and is still readily visible in the human patterns on the landscape.

2 An account of the settlers' perceptions of clearing the forests on the moraine in the expectation of finding productive farm land may be found in Trill [1892:22].

3 More experienced homesteaders avoided the moraine, and those who did not know better often abandoned their farms in the first few years [Kelly, 1990]. Another factor which contributed to farm abandonment in the early part of this century was the steepness of slopes for the newly introduced farm equipment, and the sense of social isolation that prevailed there [Hesselink, 1970].

References


Coleman, A. P. 1924. "Georgian Bay Was Once A Mighty River Flowing to Toronto Still Runs Underground and Throws Up Artesian Wells," The Toronto Star Weekly 2 May 1924.


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