

# NORTHERN<br/>POLICY INSTITUTEINSTITUT DES POLITIQUES<br/>DU NORD

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# True North:

How "Northern" is Northern Ontario?

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## About the Author Mike Commito



Dr. Mike Commito joined Northern Policy Institute as a policy analyst in June 2015. He has over seven years of experience in researching and writing about the history of natural resource management questions that affect northern Ontario, ranging from forestry to wildlife management.

Mike is a graduate of Laurentian University with a B.A. (2008) and a Masters (2010) in History. He recently completed his PhD in Canadian history from McMaster University.









Red Lake is not as northern as it was forty years ago. The Northwestern Ontario community has not moved — it still sits at the fifty-first parallel. It is arguable, however, that changes in some of Red Lake's physical and socio-economic elements have rendered it less "northern" than it used to be. Some might be keen to debate this hypothesis, but the state of being "northern" is a matter of perception. For some, this could simply be a matter of fixed geography: it depends on where you live. For others, northernness is rooted in a perspective: an identity that is the result of a combination of factors ranging from climatic to economic to biological to social.

Things can become muddled, however, when the places where we reside do not necessarily conform to the labels we place on them. Take, for example, Northern Ontario. The region, which is nearly 90 percent of Ontario's area, by itself would be Canada's second-largest province (Sibley 2007). Its population of 803,000 lives in settlements ranging from Parry Sound in the south to the shores of Hudson Bay. Is it reasonable to assume that such a vast region is uniformly "northern," from both a geographic and a sociological perspective? Marten Falls is geographically more northern than Thunder Bay; people in Timmins likely consider themselves more "northern" than those in Powassan, in the Nipissing district.

These variances provide an interesting entry point for a discussion about how to measure northernness. Is the state of being northern truly a fixed concept—a latitudinal line such as the Arctic Circle? Can climate change and resource development affect a location's northernness over time? Those living in northern communities face such challenges on a daily basis, while policy makers and government officials must take account of the effects of these changes when they issue directives on matters as diverse as the upkeep of winter roads and the calculation of income tax or isolation pay (Kirkup 2016). Most important, climate change's effects on physical elements such as precipitation and summer heat — often used to define an area's northernness — might also be having an impact on how an area in the circumpolar north is perceived and managed. Furthermore, if the inherent physical characteristics of an area can become less "northern," what does that mean for our use of language and terminology? Will we still be able to refer to the most populous and urban parts of Northern Ontario as "northern" Ontario in fifty years' time?

The North has long fascinated artists and authors. Many have found its cold and barren backdrops as ideal muses for their canvases, or romanticized the landscape in the pages of their writing. Aside from these visceral and engaging reflections in the form of artwork, scholars have also been intrigued by the allure of the North. Many, though - predominantly geographers — have sought to constrain the North and organize what defines it through the construction of indices. Amanda Graham (1990) has chronicled how early scholars of the North often used singular units to define the region. These included global, climatic, and biological definitions, which were often narrow — for example, whether or not a particular area possessed or lacked trees. Soviet scholars in the early to midtwentieth century focused on these single definitions of the North and expanded the criteria. Graham notes, for example, the proposal by S.V. Slavin of a four-point definition of northern locales using a scale focused on economic, population, logistical, and environmental factors. In 1967, V.F. Burkhanov created a boundary system for the Soviet North that relied on climatic data to produce an indicator of climatic harshness and the division of the region into an arctic zone of maximum harshness, a subarctic zone of high harshness, a northern harsh zone, and an eastern moderately harsh zone (Graham 1990, 24).

But it was the work of Canadian geographer Louis-Edmond Hamelin, however, that vaulted the study and creation of northern indices to the next level. Hamelin's goal was to create "a concrete and universally acceptable definition of the Canadian North and a language with which to discuss it" (Graham 1990, 24). In 1970, Hamelin first published a paper that discussed the establishment of a polar index and the concept of "nordicity." For him, "nordicity" was a quantitative definition of northernness based on ten physical and socio-economic variables, including latitude, annual temperature, average annual precipitation, and proximity to industry and infrastructure. To measure these variables, Hamelin devised a scoring system using units of measure known as valeurs polaires, or VAPO (Hamelin 1979). Based on these scores, locations were placed in zones that include Extreme North, Far North, Middle North, and Near North. For example, according to the nordicity index, the North Pole has a theoretical value of 1,000 VAPO, which is the maximum value possible. Conversely, the southern limit of areas in Hamelin's classification system is represented by the line designating 200 VAPO.

Besides providing a new lens through which to view the North, Hamelin's work also offered significant insights for planners looking to implement indices of their own. As the federal government looked to extend its reach in the North from the 1950s onwards, it encountered issues such as worker retention and incentivizing people to relocate. As a result, it sought to establish a bonus and allowance system based on some measure of northernness. Early systems were unsatisfactory, but, by 1978, B.M. Burns, F.A. Richardson, and C.N.H. Hall had created an index based on eleven mathematically weighted parameters that included criteria, such as latitude, similar to those in Hamelin's index, as well as other metrics, such as mean annual number of heating degree-days, and mean annual number of freezing degree-days, that were meant to be more formulaic in their calculation. Hamelin, however, while noting that their system was similar to his own, argued that "the formula itself encompasses variables that are not calibrated, and contain some very simple calculations" (Hamelin 1979, 18). Graham also notes that the Burns, Richardson, and Hall index was limited because "it could not present a calculation for nordicity for maritime or uninhabited locations [and] it made diachronic comparison of nordicity nearly impossible because of its reliance on 1971 data" (Graham 1990, 28).

The federal advernment also weighed in on the indexing question when it set up a Task Force on Tax Benefits for Northern and Isolated Areas. Established on April 29, 1988, the Task Force was to report to Minister of Finance Michael Wilson about the prospects of a system of benefits based on "multiple zones and graduated levels of benefits" (Brunelle, McGillivrary, and Poole 1989). One of the Task Force's primary responsibilities was to review the federal government's then-current remuneration scheme for northern employees. That system had three benefit levels divided in categories that included an environmental allowance, a cost-of-living differential, and an energy and utilities differential weighted on a scale similar to Hamelin's that accounted for factors that included population and climate. According to Graham, the Task Force "decided that this method was not suitable for determining eligibility of a taxpayer, though it worked well for federal employees. The main drawback to [this] method was that it necessarily assumed that all beneficiaries were residents of identifiable communities" (Graham 1990, 30).

In designing its own scheme, the Task Force felt that certain aspects of Hamelin's index, such as economic activity, were subjective, and opted to replace these indicators with metrics it felt would be more objective. The Task Force's subsequent index, known as the Northern Ranking System (NRS), was similar to those of Hamelin and Burns, Richardson, and Hall, but with some minor differences. Unlike the previous two systems, the NRS included factors such as climate severity and road accessibility/distance to urban centres. Like Hamelin's, however, the NRS included fixed criteria such as latitude, physical factors such as natural vegetation cover, and human factors such as population density. The Task Force also noted that, despite its best efforts to create a scheme that was less subjective than Hamelin's, it too encountered difficulties in this regard, admitting that "development of criteria require an element of judgement because their measurement and relative weight are arbitrary. Consequently, it is difficult, if not impossible, to structure totally objective criteria" (Brunelle, McGillivrary, and Poole 1989, 19).

Moreover, rather than attempting to map out multiple zones or areas for allowances and taxable benefits, the Task Force identified a single northern zone based on the sharing of a common set of characteristics and environmental conditions by communities in that area. Although the federal government came to its own conclusions on how best to construct a set of northern indices, Hamelin's works and ideas undergirded the process. In this regard, the concept of nordicity has had a tangible value: the federal and territorial governments use its main tenets to determine isolation allowances for their employees, including administrators, nurses, and teachers. According to Graham, the work of Hamelin and other researchers "is evidence of a contemporary realization that the North is a complex place and must not be categorized or delineated by simplistic criteria. The North is an important part of the modern world, and as such deserves the same intensity of scholarship and scrutiny as any other area or subject" (Graham 1990, 33).

Unlike indexing work done for taxation purposes, the beauty of Hamelin's index is that it can be iterative and reconfigured as data and conditions on the ground change. As a case in point, Hamelin noted that, in the late nineteenth century, places such as Sault Ste. Marie and Saskatoon were classified as northern because they had a polar value higher than 200. With increased settlement and industrialization, however, by 1941 both locations had shed their northern status under Hamelin's classification (Hamelin 1979). Similarly, geographer Robert M. Bone has noted that, with the continued onset of global warming, "physical elements may change, adding another dynamic feature to the concept of nordicity. For instance, if the summer ice pack retreats sufficiently, then ocean vessels could sail through the Northwest Passage" (Bone 2012, 14).





Source: Author's calculations, based on Hamelin (1979). Map by Julien Bonin.

Location	Polar (VA	Value PO)	Zone
	1978	2015	
North Pole	1,000	1,000	North Pole
Moosonee	270	227	Middle North
Red Lake	220	93	Middle North
Kenora	117	78	Near North*
Timmins	67	60	Near North*
Sault Ste. Marie	59	32	Near North*

Table 1: Polar Values, Selected Northern Ontario Communities, 1978 and 2015

\* The Near North lies south of the 200 VAPO line and therefore is not considered part of the Canadian North. Source: Author's calculations from Statistics Canada and Environment Canada data.

Using Hamelin's "zonal nordicity values for various Canadian centres" from his translated work, Canadian Nordicity: It's Your North, Too (Hamelin 1979), Figure 1 shows the five locations that are applicable to Northern Ontario. The full classification breakdown appears in the Appendix, but Table 1 presents a brief summary comparison of VAPO scores from Hamelin's calculations in 1978 with results I calculated in 2016. As Hamelin did not include individual valuations for the ten categories, I developed a method and calculated the 2016 results using available contemporary data from Statistics Canada, Environment Canada, and a number of other sources. Hamelin provided criteria for each scoring metric, but he did not show his work; accordingly, the 2016 results might not be completely accurate. That said, Table 1 shows that the five Northern Ontario locations, using Hamelin's scale, have become less northern in just under forty years. The considerable changes to places such as Red Lake and Kenora are due to increased settlement, advances in transportation, and the development of natural resource industries in those areas. Moreover, a highway to the Ring of Fire would greatly alter the level of nordicity for the communities along that route, and undoubtedly have a significant long-term impact. These are largely human- and socio-economic-influenced shifts, but a variation in the results also might be attributed to slight changes in annual heat and cold or precipitation. It is noteworthy that only two of the five Northern Ontario communities qualified as "northern" in 1978 and only one, Moosonee, qualified in 2016. Although Table 1 does not include Sudbury, Thunder Bay, or North Bay, they, too, would fall short of the 200 VAPO northern threshold. Accordingly, the region's five largest cities are technically not "northern," based on the criteria in Hamelin's nordicity scale.

What does this mean for the language we use to describe the region or how we approach problems or issues we inherently associate as "northern"? As Northern Policy Institute has advocated, albeit in lighter tones, "Maybe it's about time for us to usurp the Central Ontario designate" (Commito 2015). Short of renaming Northern Ontario, it is time we change our perspective of the region and accept that we live in a dynamic location. What was "northern" to our predecessors might not be for the next generation. This is not to say that we should move forward with our eyes firmly fixed on the concept of nordicity. Rather, it is a wakeup call, an alert that our region and our perception of it are not static. Indeed, with continued climate change, even the physical elements associated with Northern Ontario are changing. As a result, we also need to adapt our approach to issues of concern to the region. As we increasingly find ourselves dealing with problems that are no longer inherently "northern," we need to turn our gaze outward if we hope to remedy the challenges that confront Northern Ontario.



# Appendix: Nordicity Index, 2015

Criteria	Classification System	Polar Units	Timmins	Kenora	Sault Ste. Marie	Red Lake	Moosonee	North Pole
Latitude								
	Degree north							

Degree norm							
Up to 90	100						
80	77						
70	55						
50	33	33	33		33	33	
45	0			0			

#### Summer heat

Days above 5.6 °C							
0	100						100
40	80						
60	70						
80	60						
100	45						
120	30						
135	20						
>150	0	0	0	0	0	0	

#### Annual cold

Degree days							
	100						100
0,030	100						100
5,550	85						
4,700	75						
3,900	65						
2,900	45	40			30	34	
1,950	30		25				
1,250	15			12			
550	0						

Criteria	Classification System	Polar Units	Timmins	Kenora	Sault Ste. Marie	Red Lake	Moosonee	North Pole
Types of ice								
Frozen ground	Continuous permafrost 457 m	100						100
	Continuous permafrost > 457 m	80						
	Discontinuous permafrost	60						
	Ground frozen for 9 months	50?					50	
	Ground frozen for 4 months	20?	20	20	20	20		
	Ground frozen for less than 1 month	0						
Floating ice	Permanent pack ice	100						
	Pack ice on per-Arctic seas	90						
	Pack ice for 9 months	64						
	Pack ice for 6 months	36						
	Pack ice for 4 months	20						
	Pack ice for less than 1 month	0						
Glaciers and snow cover	Ice sheet 1,524 m thick or more	100						
	Ice sheet 700 m	96						
	Icecap about 304 m	60						
	Neve	20						
	Snow cover of less than 2.5 cm	0						

#### **Total precipitation**

Millimetres							
100	100						100
200	80						
300	60						
400	30						
500	0	0	0	0	0	0	

Criteria	Classification System	Polar Units	Timmins	Kenora	Sault Ste. Marie	Red Lake	Moosonee	North Pole
Natural veget	ation cover							
	Rocky desert	100						100
	Tundra clumps, 50%	90						
	Sparse tundra; almost continuous	80						
	Dense tundra and shrubs; humid steppe	60						
	Open woodland	40					40	
	Dense forest	0	0	0	0	0		

#### Accessibility other than by air

	No service	100						100
Seasonal	Once per year	80						
service	For two months	60						
	For three months	55						
	For six months or two seasons	40						
Year round	By one means	20						
	By two means	15						
	By more than two means	0	0	0	0	0	0	

Criteria	Classification System	Polar Units	Timmins	Kenora	Sault Ste. Marie	Red Lake	Moosonee	North Pole
Air services								
	Charter flights, 1,600 km	100						100
	Charter flights, 480 km	80						
	Charter flights, 160 km	65						
	Charter flights, 48 km	60						
	Regular service, twice per month	40						
	Regular service, weekly	25						
	Regular service, twice weekly	15						
	Regular service, daily or better	0	0	0	0	0	0	
Resident or wintering population								
Inhabitants	None	100						100
	About 25	90						
	About 100	85						
	About 500	75						
	About 1,000	60						
	About 2,000	40					40	
	About 3,000	20				10		
	> 5,000	0						
Population	Uninhabited	100						100
density	0.004 per km <sup>2</sup>	90						
	0.4 per km <sup>2</sup>	70						
	1 per km <sup>2</sup>	50						
	2 per km <sup>2</sup>	25				Ś	Ś	
	4 per km <sup>2</sup>	0	0	0	0			

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Criteria	Classification System	Polar Units	Timmins	Kenora	Sault Ste. Marie	Red Lake	Moosonee	North Pole
Degree of economic activity								
	No production, none foreseen	100						100
	Exploration, no exploitation	80						
	20 persons living off the land; airstrip	75						
	Low level of commercial sea fisheries	60						
	Gathering, extraction, or handicrafts	50					Ś	
	Mineral concentration, storage, terminal	30					30	
	Major "secondary" enterprises	15						
	Interregional centre with multiple services	0	0	0	0	0		
Total			93	78	32	93	227	1,000

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# About Northern Policy Institute

Northern Policy Institute is Northern Ontario's independent think tank. We perform research, collect and disseminate evidence. and identify policy opportunities to support the growth of sustainable Northern Communities, Our operations are located in Thunder Bay, Sudbury, Sault Ste. Marie, and Kenora. We seek to enhance Northern Ontario's capacity to take the lead position on socio-economic policy that impacts Northern Ontario, Ontario, and Canada as a whole.

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