

Tree Species Distributions in North-Central Ontario: Recent Observations in Pukaskwa National Park*

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Abstract

*Pukaskwa National Park and Ecological Services Group (Timmins, Ontario) recently completed an updated inventory using the Northwestern Ontario Forest Ecosystem Classification and the Northwestern Ontario Forested and Wetland Ecosite Classification. This was one of the first such inventories in Ontario and was one of the most extensive fieldwork efforts ever undertaken in the park. This paper describes some of the observations made during the last four years of inventory fieldwork in Pukaskwa National Park. For example, Sugar maple (*Acer saccharum*) does occur in the park, though it is rare. There are several sugar maple stands in the extreme southern end of the park. Our inventory has "discovered" two additional sugar maple stands, both considerably farther north than known stands. To our knowledge these stands are the most northerly on the northeast coast of Lake Superior. The distribution of white pine (*Pinus strobus*), red pine (*Pinus resinosa*), red maple (*Acer rubrum*), hawthorne spp., black ash (*Fraxinus nigra*), and other species along with curious "gaps" in the distribution of jack pine (*Pinus banksiana*) will be discussed. Successional processes in the white birch (*Betula papyrifera*) and balsam fir (*Abies balsamea*) mixedwood forest community will be highlighted.*

Pukaskwa National Park is located in the transition area between the Boreal and the Great Lakes/St. Lawrence forest regions. Lake Superior has a moderating influence on the climate of the area. Tree species occur in the park which are at the very northern edge of their range, a situation somewhat analogous to southwestern Ontario where the transition between the Carolinian and the Great Lakes St. Lawrence Region occurs.

Recently, Pukaskwa National Park staff and Ecological Services Group (Timmins, Ontario) completed a comprehensive ecosite inventory of the Park using the Northwestern Ontario Forest Ecosystem Classification (Simms, 1989) and the Northwestern Ontario Forested and Wetland Ecosite Classification (Racey, 1996). This is one of the first inventories of this type in Ontario and was one of the most extensive fieldwork efforts undertaken in the park since the Biophysical Resources Inventory of Pukaskwa National Park (Gimbarzevsky, 1978).

During our fieldwork we have 'rediscovered' some arboreal wonders. Since 1995, over 325 transects have been surveyed amounting to approximately 65 linear kilometers of sampling effort. On each transect the species composition of the forest community was assessed and the age, height and diameter of representa-

* This paper arises from a poster paper at the 1999 Annual Meeting at the Parks Research Forum of Ontario

tive trees was recorded. An assessment was made of the soils underlying the area. Using the Northwestern Ontario Forest Ecosystem Classification, the forest community was then classified into one or more of 36 vegetation types, one or more of 15 soil types and one of 28 terrestrial ecosites. The survey transect locations were chosen as ground checks for air photo interpretation, so the placement of the transects may not be the best for determining the distribution of a tree species in the park. The park covers 1 876 km² and remains a very wild and inaccessible area. There is a great deal more botanizing to be done!

Ubiquitous forest trees in the park include the common boreal species (in order of abundance): balsam fir; white birch; black spruce; white spruce; jack pine; trembling aspen; white cedar; balsam poplar; and, tamarack. There is no known occurrence of white elm in the park. Some of the more uncommon species are described in more detail below. The maps compare the generalized distribution of these tree species in the park, with the range of the species as reported in *Trees in Canada* (Farrar, 1995).

Eastern White Pine (*Pinus strobus*)

White pine occurs commonly as scattered individuals in the southern two thirds of the park but rarely do they occur as groups or stands (Figure 1). White pine is uncommon in the northern one-third of the park. We have recorded some of the locations of white pine north and east of the park. There are reports of some white pine just north of the town of Marathon. While they would be considered rare in the Marathon area, there is evidence that the white pine range has extended further to the north. We discovered a large bole which had long been resting on the forest floor in the northwest corner of the park near the Willow River. We sent a sample to Lakehead University for identification. The sample was confirmed as white pine (K. Yang pers. comm.) This specimen would have been the most northerly occurrence of the species in the park.

It is unlikely that logging has affected the distribution of white pine in the park. The logging which did occur in the 1920s and 1930s was focussed on spruce. Undoubtedly the occasional white pine was taken for construction purposes, for example, dams and weirs. Salvage logging, which occurred in the Oiseau Bay fire area north of the park in 1937 and 1938, may have impacted on the white pine distribution.

Red Pine (*Pinus resinosa*)

Though Pukaskwa National Park lies within the documented red pine range, this species is very rare in the park (Figure 2). There may be fewer than 200 individual trees in the entire park. Some of these are amazing trees. Individuals at Imogene Cove date to about 1790. Most of the red pine locations are coastal. This is an indication that the species may have persisted as a result of a regime of more frequent, but low intensity forest fires. Note that the coast of Lake Superior has been an important travel route for millenium. Sheltered coves, very much the exception on this rugged coastline, would have attracted people, and their fires. There are no known occurrences of red pine in the park interior, i.e., beyond four kilometres from the Lake Superior coast shoreline.

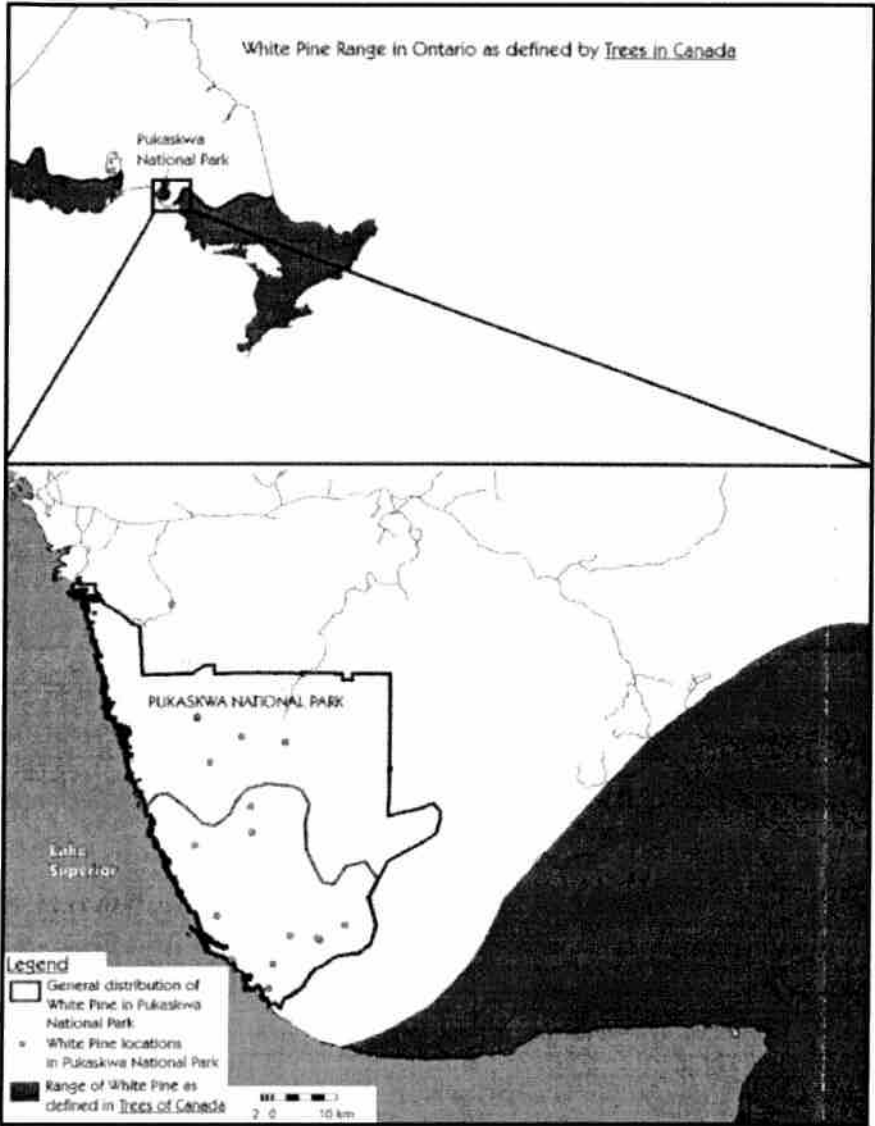


Figure 1: Eastern White Pine (*Pinus strobus*) locations and distribution in Pukaskwa National Park in relation to White Pine range as defined in *Trees of Canada*. Note that *Trees of Canada* shows the park area to be beyond the range of White Pine. (Prepared by L. Parent, Pukaskwa National Park, Parks Canada, 1999.)

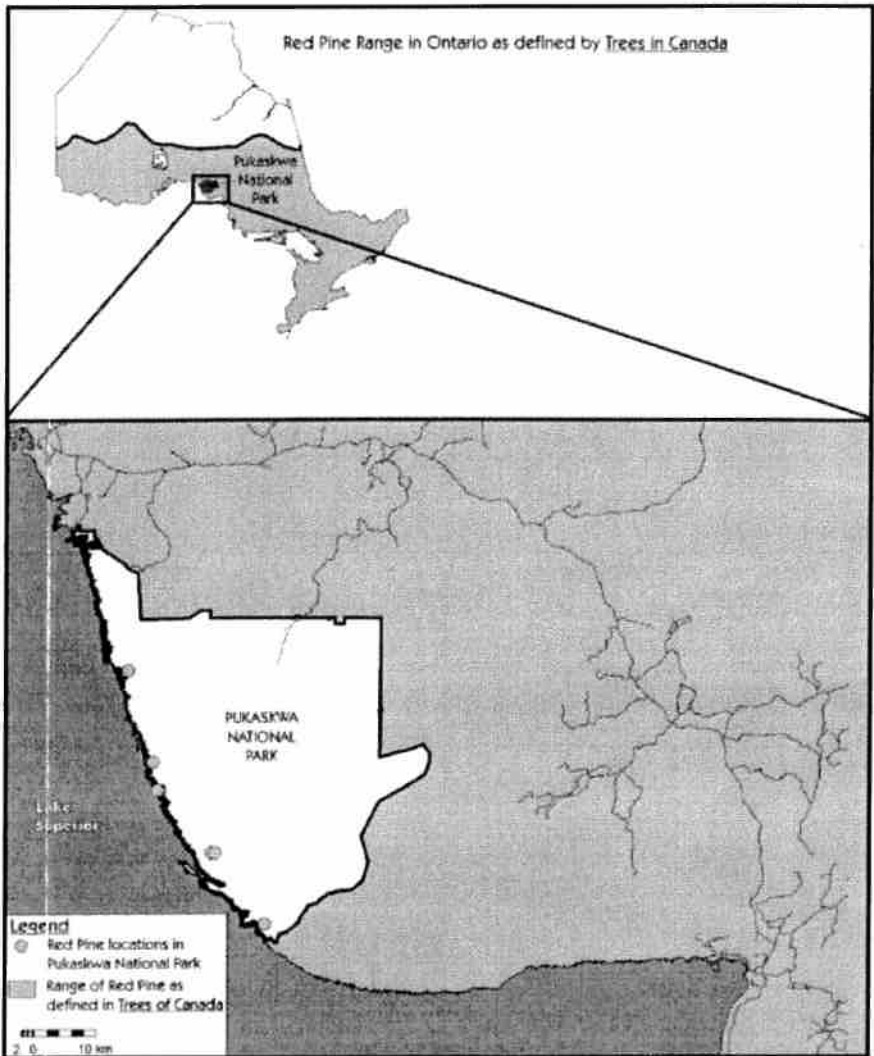


Figure 2: Red Pine (*Pinus resinosa*) locations in Pukaskwa National Park in relation to Red Pine range as defined in *Trees of Canada*. (Prepared by L. Parent, Pukaskwa National Park, Parks Canada, 1999.)

Sugar Maple (*Acer saccharum*)

There are several sugar maple stands in the extreme southern end of the park (Figure 3). Most of the sugar maple stands along the southern park boundary were identified in the Biophysical Resources Inventory (Gimbarzevsky et al. 1978). One of these stands was used in a study comparing sugar maple genetic material from sites in southern Ontario and Quebec. In the stands which we visited, the sugar maple trees are of good form and free of obvious signs of defect or disease. Our inventory has documented two additional sugar maple stands, both further north than previously known stands. To our knowledge these stands are the most northerly on the northeast coast of Lake Superior.

Red Maple (*Acer rubrum*)

Red maple is very common in the park, especially so in the central portions of the park interior (Figure 4). Associations of white birch and red maple (where red maple makes up 40% of the stand) are common on hill tops along the coast and cause the hill tops to turn scarlet twice a year, once in the fall and again, more subtly, in the spring as the tree flowers. Red maple becomes more shrub like towards the northeast corner of the park.

Black Ash (*Fraxinus nigra*)

Though the park area is well within the range of black ash, this species occurs infrequently in the park. The occasional tree is found around wetlands. Black ash is found with relative frequency along the lower Pukaskwa River. There is no known occurrence of white ash in the park.

Other Species

The presence of mountain ash (*Sorbus decora* and *Sorbus americana*) also gives much of the Pukaskwa forest a unique character. Heights of 13 meters and diameters of 20 cm are common, making this species of forest shrub, very much more a forest tree. While it usually occurs in the shrub layer, we have confirmed that in some stands this species makes up about 10% of the canopy.

Hawthorne specimens (Western or Black hawthorne - *Crataegus douglasii* Lidl.) were found along the Pukaskwa River. There are anecdotal reports of other hawthornes in the area. We cannot say whether these are naturally occurring, or are a relict of logging operations which occurred along many of the area rivers in the 1920s and 1930s. These were the days of horse logging, and most of the hay brought in for the horses came by tugboat from Sault Ste. Marie. It is possible that some haws were included in the mix. There are reports of yellow birch and large tooth aspen in the park, and though our search continues, we cannot confirm this.

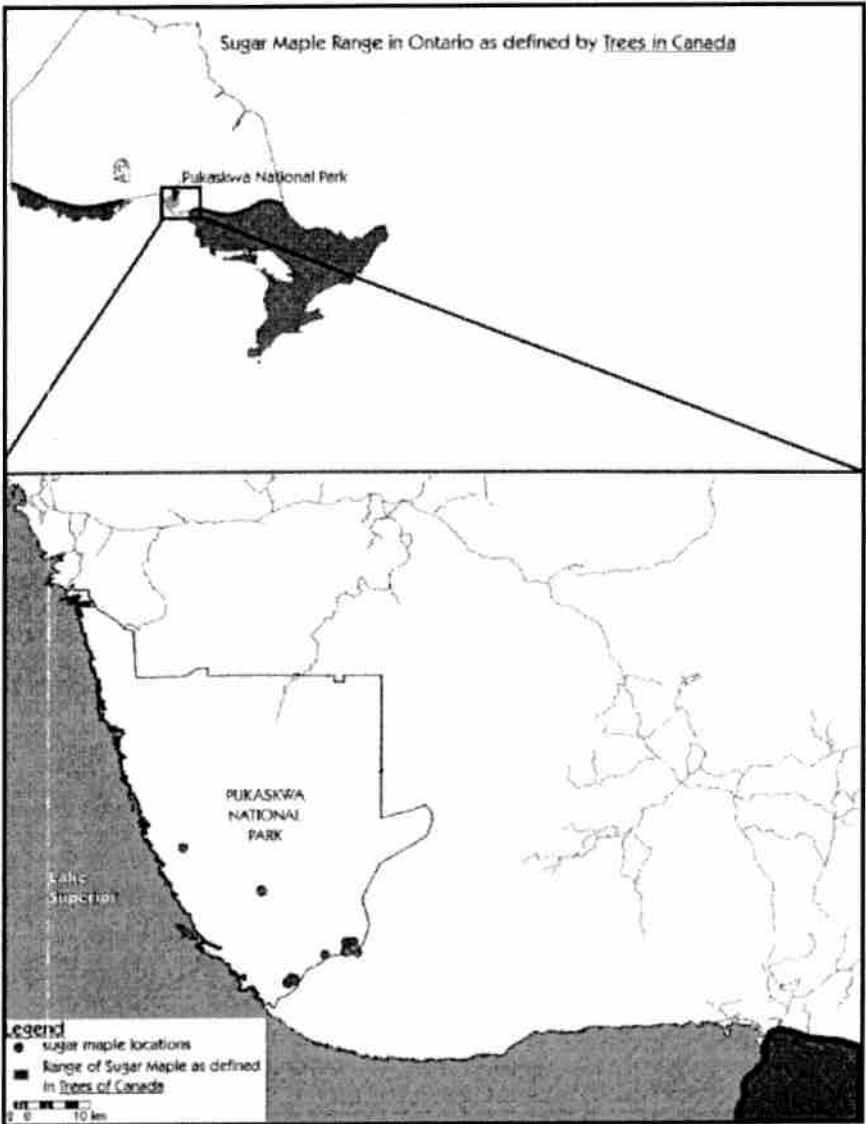


Figure 3: Sugar Maple (*Acer saccharum*) range in Pukaskwa National Park in relation to Sugare Maple range as defined in *Trees of Canada*. Note that *Trees of Canada* shows the park area to be beyond the range of sugar maple. (Prepared by L. Parent, Pukaskwa National Park, Parks Canada, 1999.)

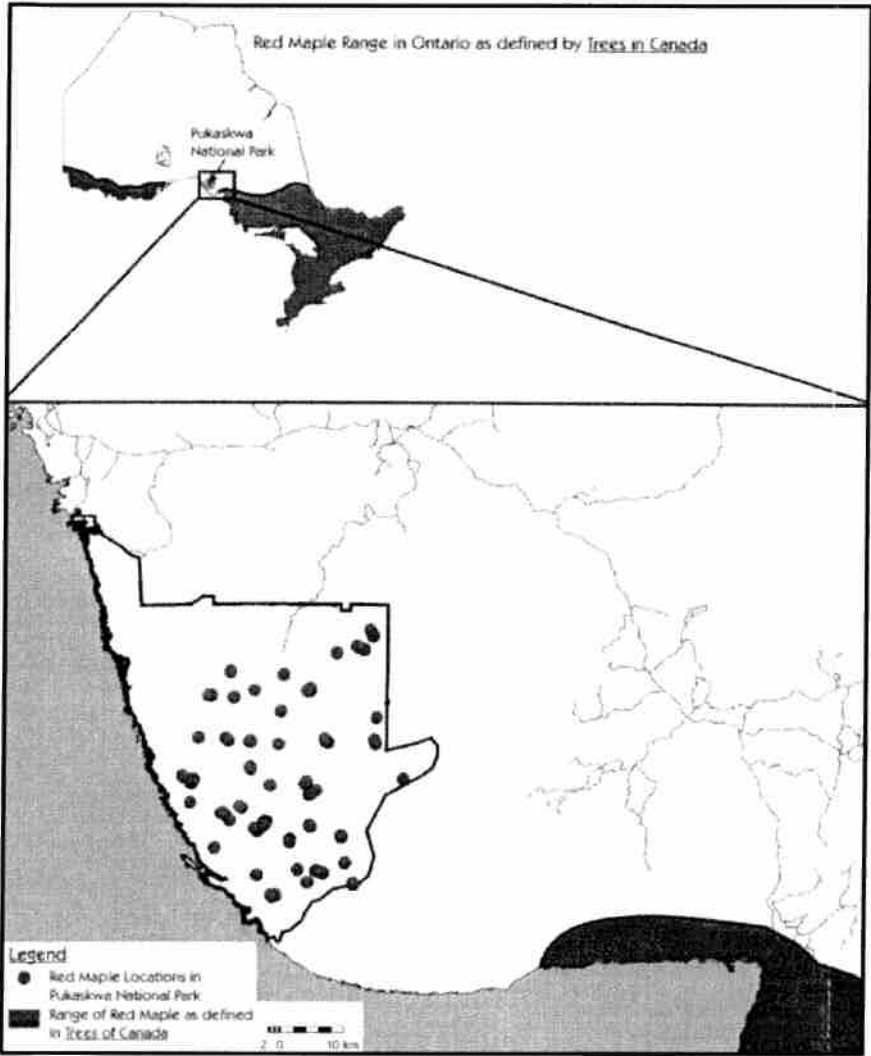


Figure 4: Red Maple (*Acer rubrum*) locations in Pukaskwa National Park in relation to Sugar Maple range as defined in the *Trees of Canada*. Note that *Trees of Canada* shows the park area to be beyond the range of red maple. (Prepared by L. Parent, Pukaskwa National Park, Parks Canada, 1999.)

References

- Farrar, J. L. 1995. *Trees In Canada*. Markham, Ontario. Fitzhenry and Whiteside Ltd.
- Gimbarzevsky, P., N. Lopoukhine and P. Addison. 1978. *Biophysical Resources of Pukaskwa National Park*. Forest Management Institute report #FMR-X-106. Ottawa.
- Lopoukhine, N. 1989. *Pukaskwa National Park Vegetation Management Plan*. Department of Canadian Heritage - Parks Canada.
- Racey, G.D., A.G. Harris, J.K. Jeglum, R. F. Foster and G.M. Wickware. 1996. *Terrestrial and Wetland Ecosites of Northwestern Ontario*. Ontario Ministry of Natural Resources, Northwest Science and Technology, Field Guide FG-02.
- Rivard, D., R. Lutz and J. Sparkes. 1989. *Pukaskwa National Park Resource Description and Analysis*. Parks Canada.
- Sims, R., W. D. Towilland and K. A. Baldwin. 1997. *Field Guide to the Forest Ecosystem Classification for Northwestern Ontario*. Ontario Ministry of Natural Resources, Northwest Science and Technology, Thunder Bay, Ont. Field Guide FG-03.
- Yang, K.C., 1996. Professor of Wood Science, Lakehead University, Thunder Bay, ON. Personal communication.