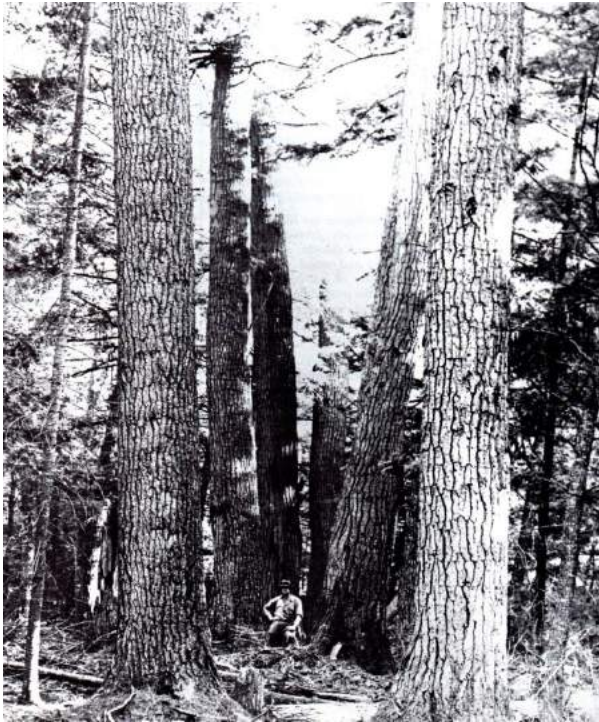


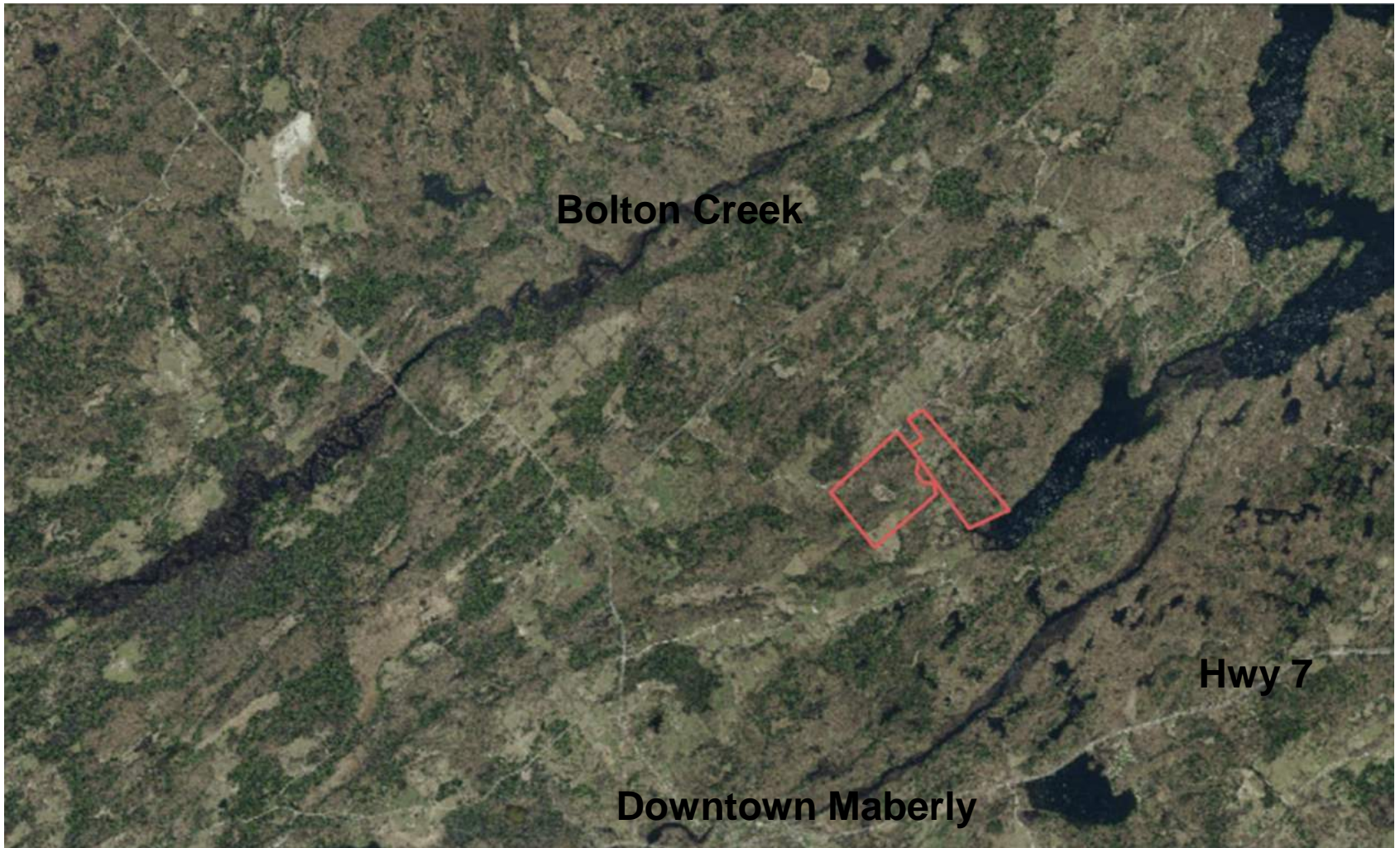
The Forests of Eastern Ontario – a quick tour through the last 20,000 years



Eric Boysen, New Leaf Forest Services

Kemptville Woodlot Day, February 22, 2017

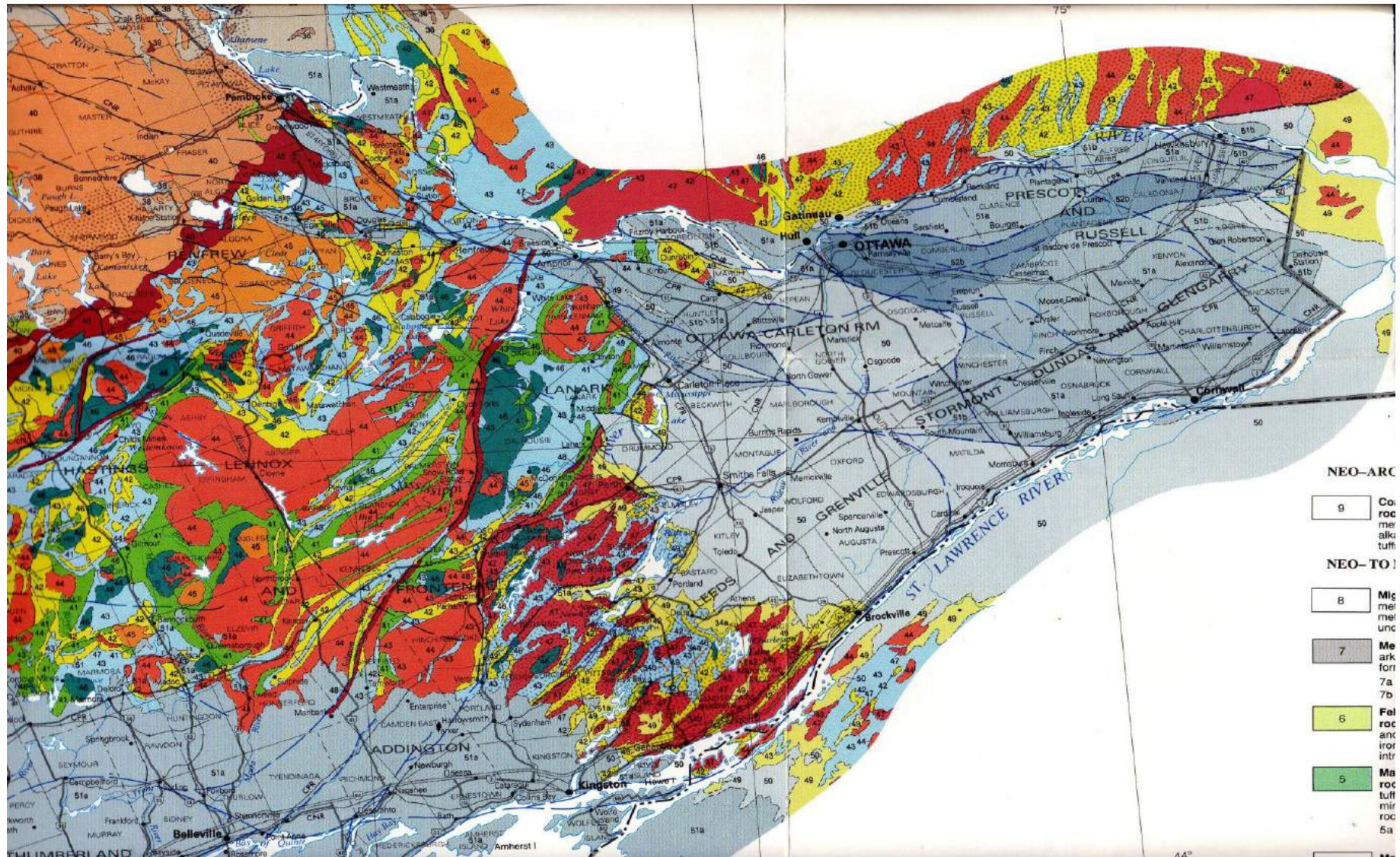
Where I live – why do the forests look the way they do?



Overview

- Geological time
- Glacial time
- Nature's time
- Human time
 - Pre-settlement
 - Agricultural Use
 - Restoration and you

Bedrock Geology – the forest foundation



How glaciers changed the land

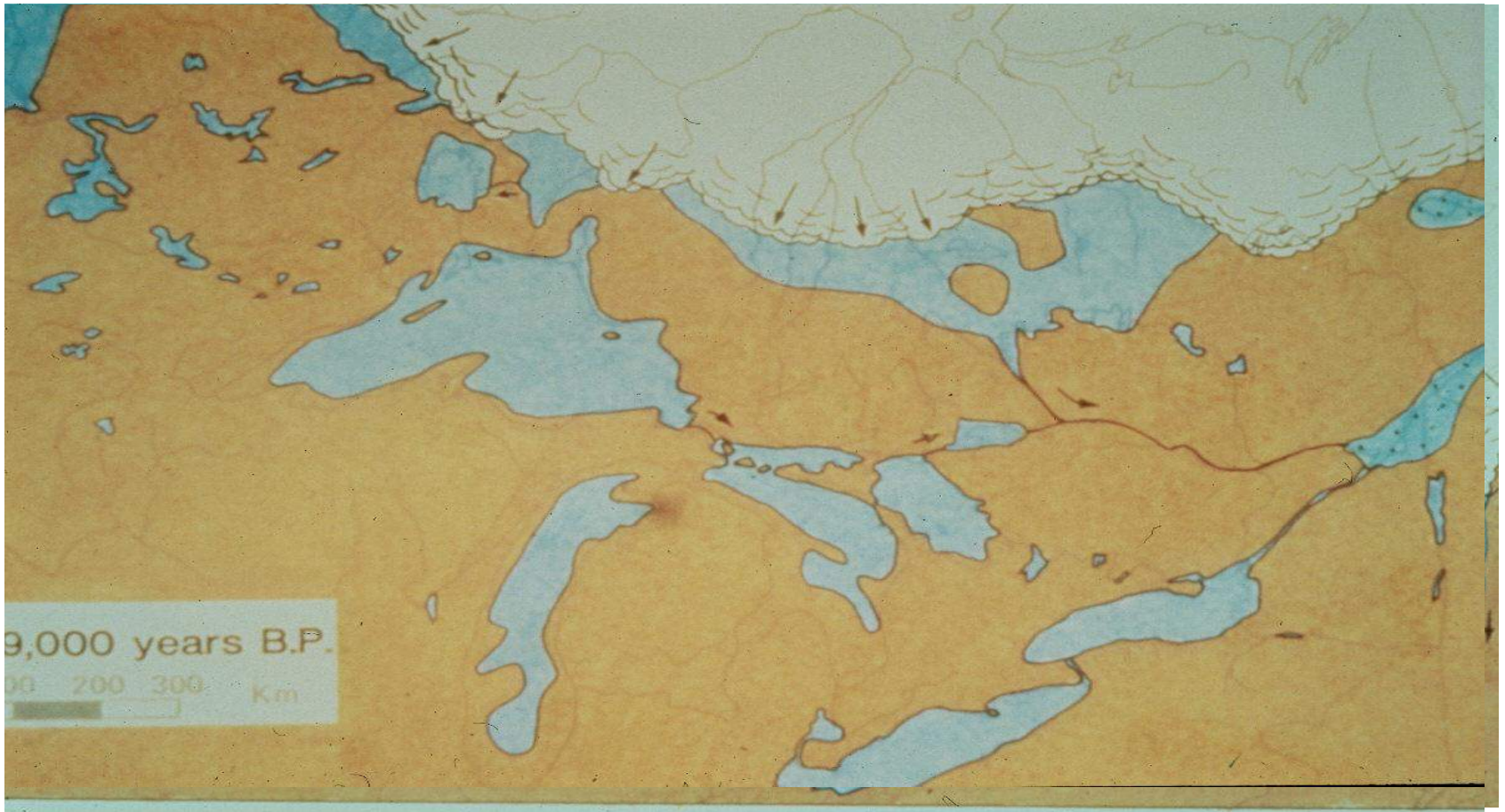
- 23,000 to 10,000 years ago



Glaciers – 3 km thick scoured the land



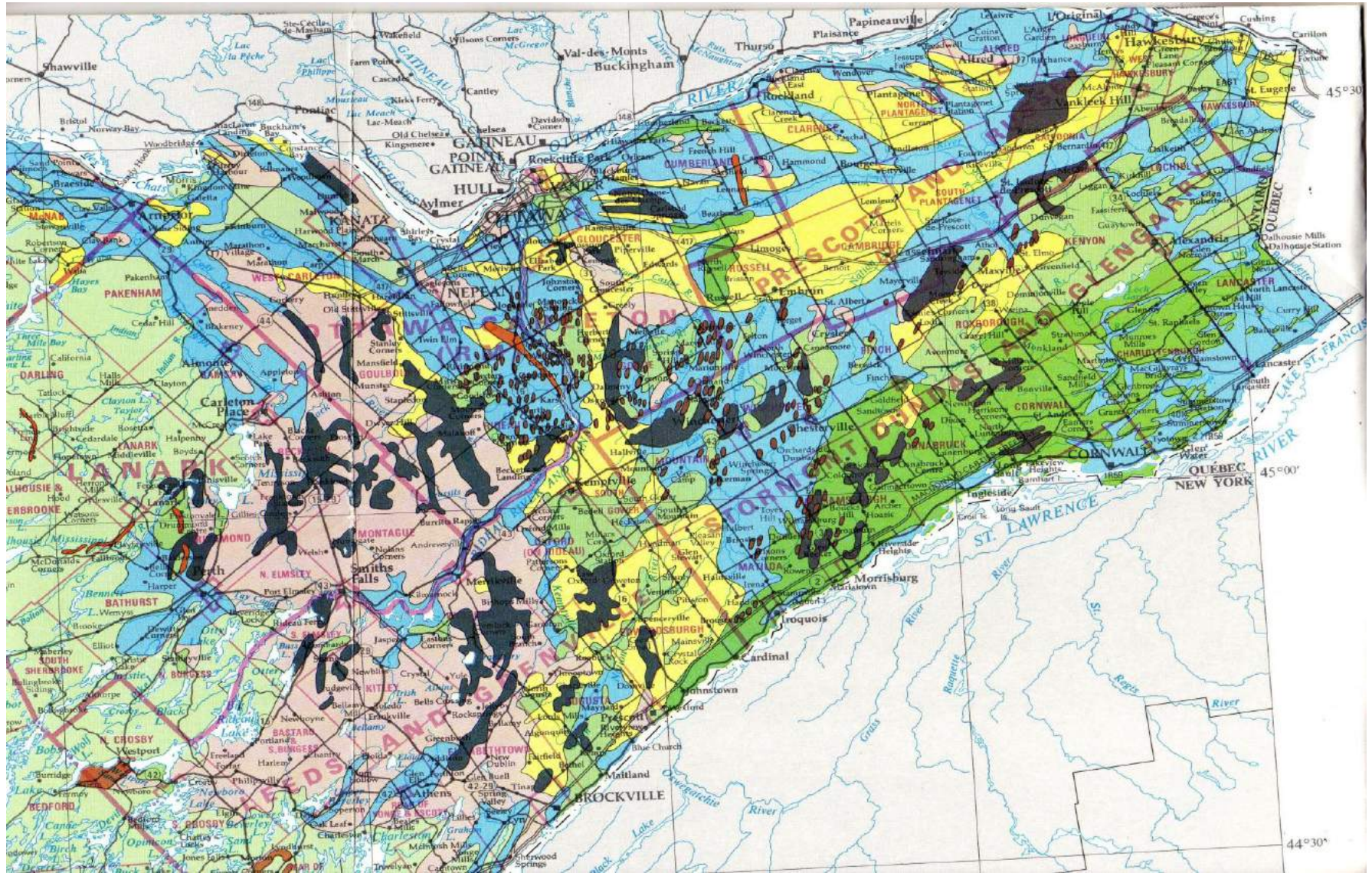
Then the climate warmed and glaciers started to retreat



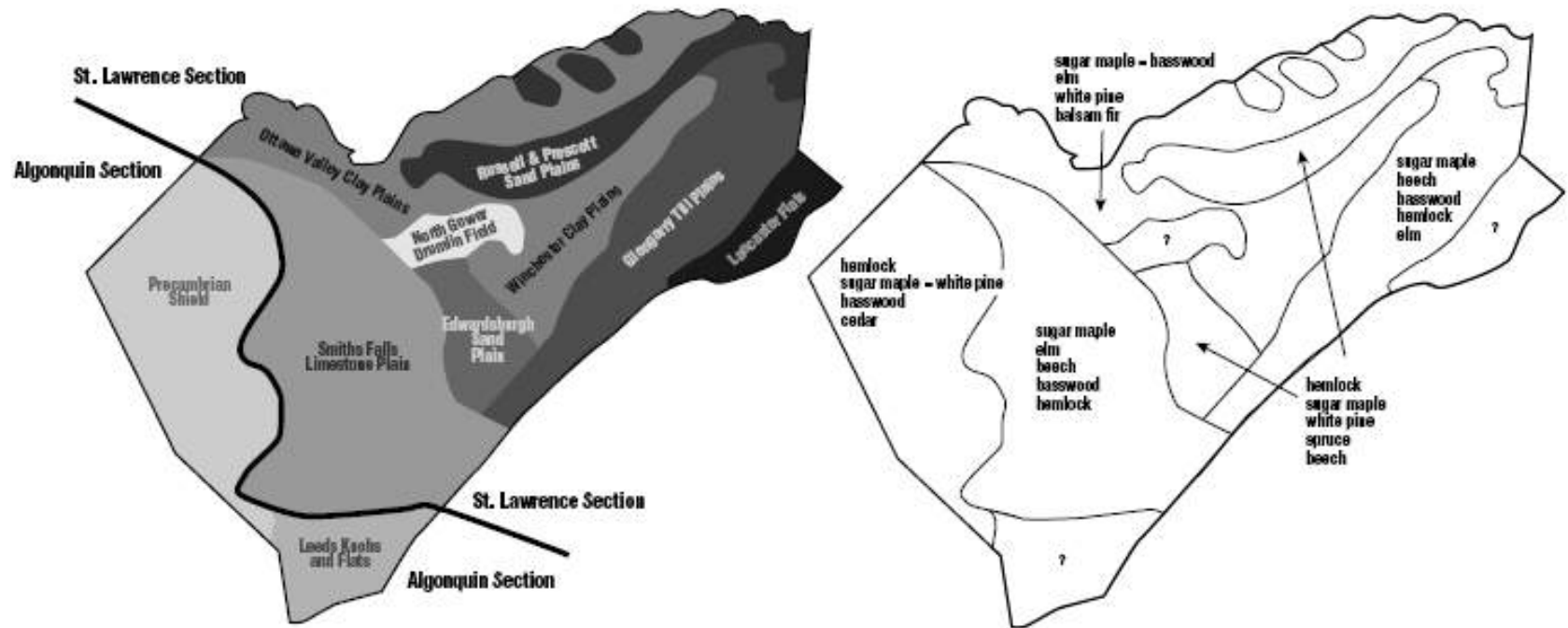
A unique impact – the Champlain Sea



Glaciers changed our landscape – forever?



The site influences the forest types



Physiographic regions of the Eastern Ontario Model Forest Region (from Eastern Ontario Forest Resources Stewardship Council 1992).

Tree species in upland forests prior to European settlement. For each region, the five species most frequently mentioned in surveyors' notebooks are listed in order of abundance.

Natural forces influence the forest



What did the historical forest look like 300 years ago?



Figure 4. *In The Woods*, by Asher Brown Durand, 1855. The Metropolitan Museum of Art, New York. Gift in memory of Jonathan Sturges by his child 1895.

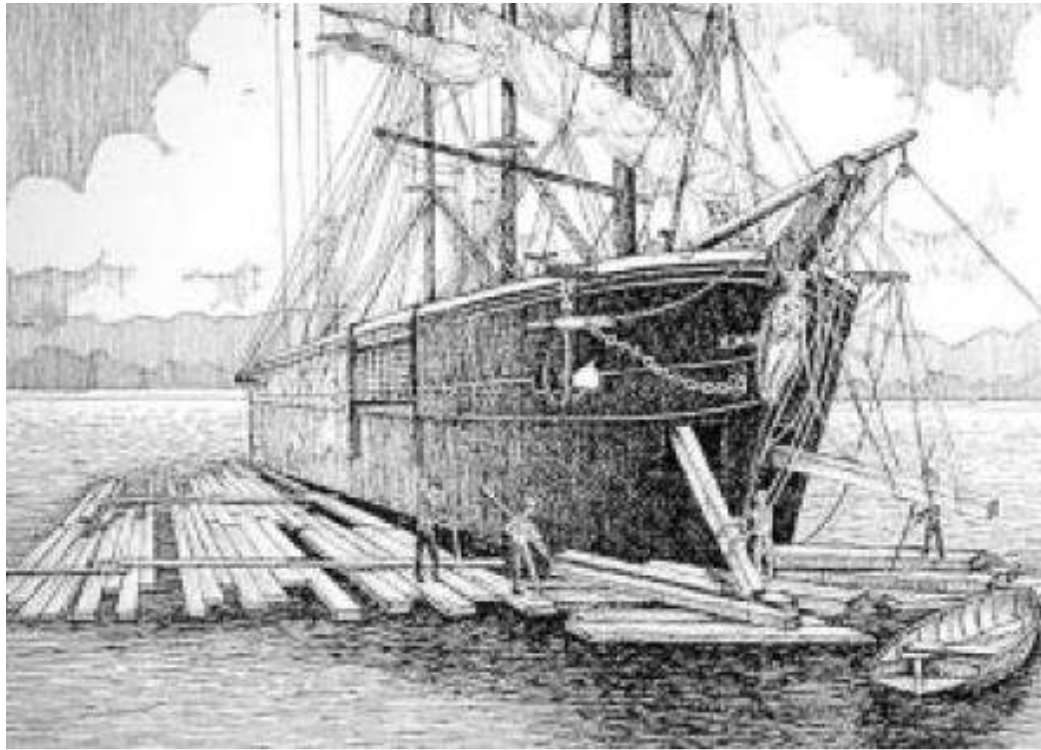
Humans influence the forest

- Indigenous people have lived here since time immemorial
- Lived in, and with, the forest
- Cleared some lands for agriculture
 - Three sisters – corn, beans and squash
 - Nut and fruit trees – butternut, hickory, chestnut
- Used fire to clear the understory
 - Helped white and red pine to become dominant in some areas
- Before Europeans, Eastern Ontario was almost 100% forest cover, except for lakes and wetlands, and small clearings

European influence

- Initially, focus was on the fur trade with little impact on the forest (except the removal of beaver!)
- Then, harvest of trees. Forests were seen as inexhaustible
- Main focus was white pine to supply British demand for lumber, masts for the Navy
- Settlement usually followed, but not always
- Settlers viewed the forest as an obstacle, and something that needed to be cleared to bring “order” to the land

Logging History – post 1700's

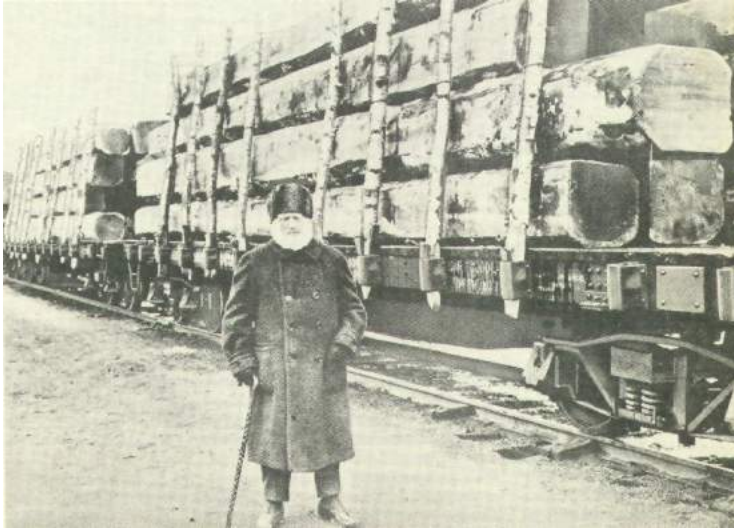


“The most dramatic change in forest cover has occurred in the past two centuries”, Forest History of E. Ont., 1997

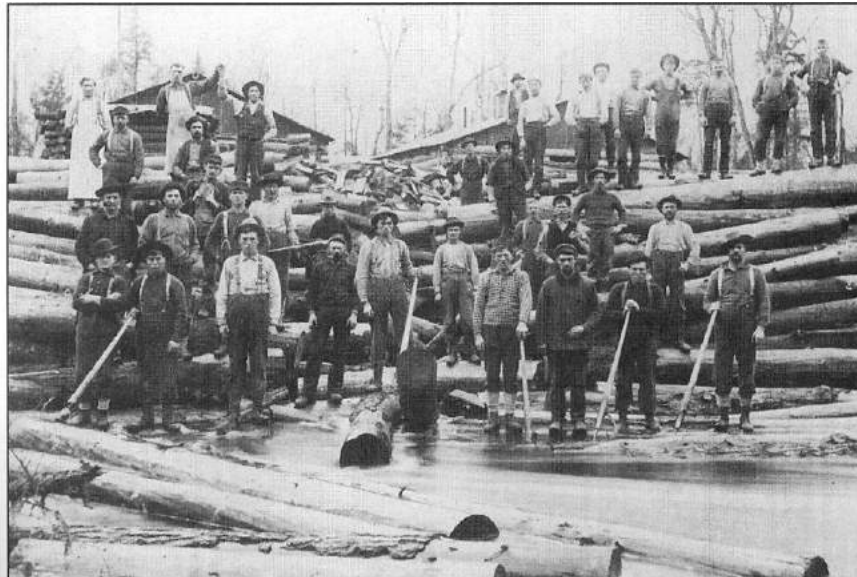
Logging phase

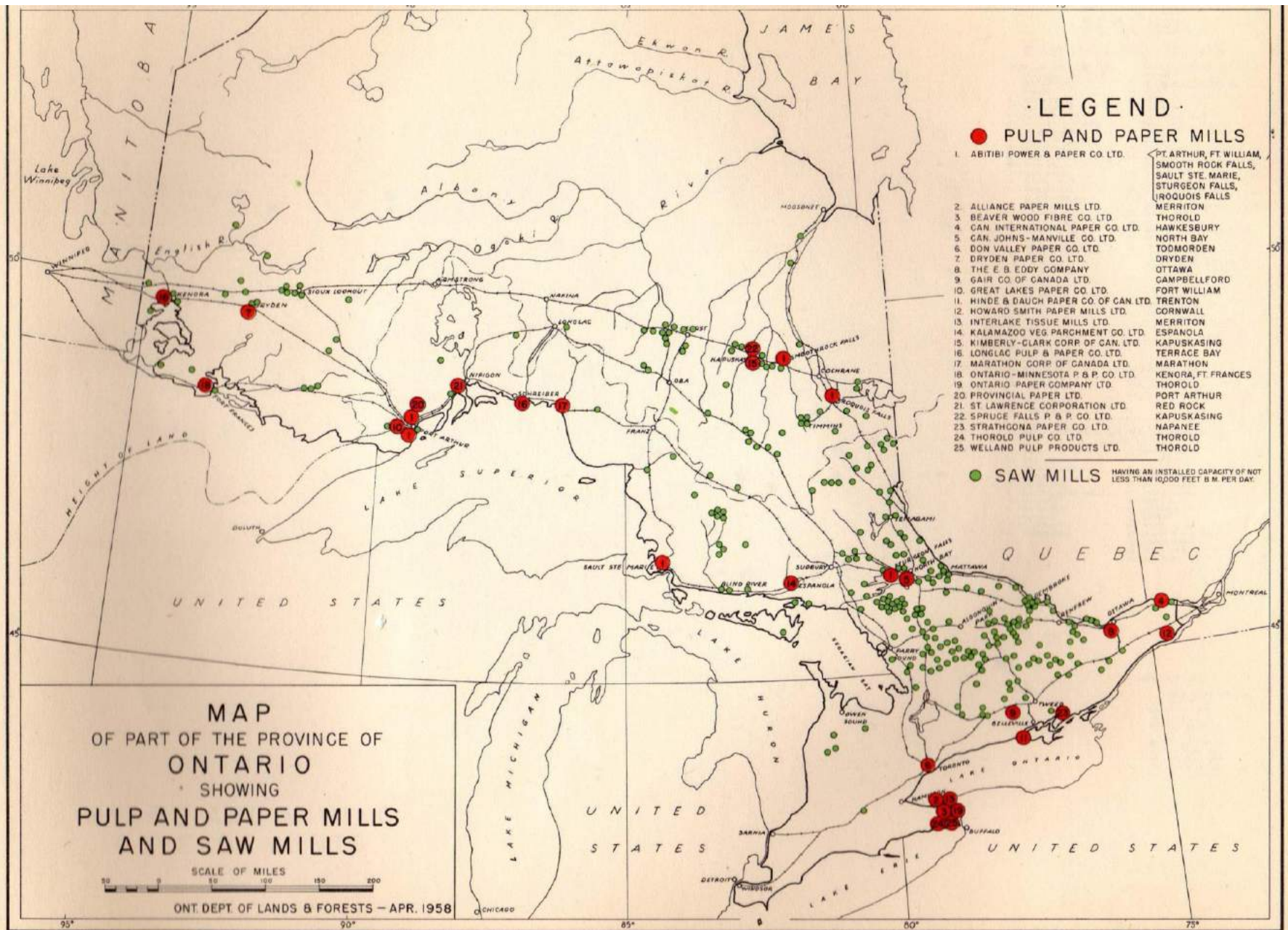
- 1800's was the Era of timber barons: Philomen Wright, E.B. Eddy, Caldwell, others...
- By 1860's choice stands were gone
- 1881 first paper mill in Ontario - Toronto Paper Company, Cornwall
- 1898 second pulp and paper mill established in Hawkesbury
- 1500+ sawmills in operating in Ontario by 1900

Square Timber trade



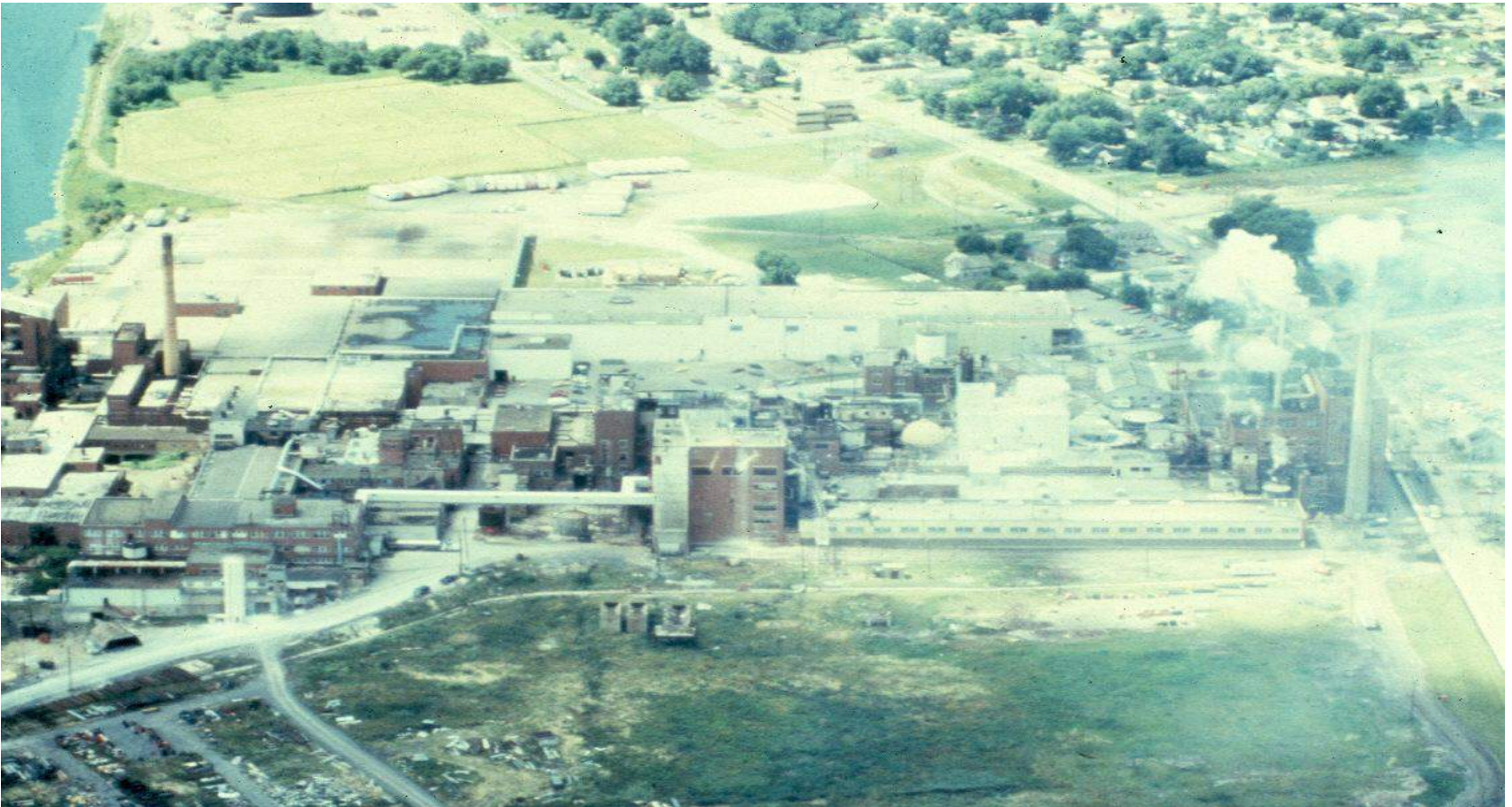
The waste was terrific – 25% of each squared tree was lost; unwanted trees lay prostrate; severed branches everywhere; heaps of bark and mountains of chips. The slash and chips from the hewer's axes was knee-high





Domtar closed – 2006

End of an era? Or the beginning of the next?

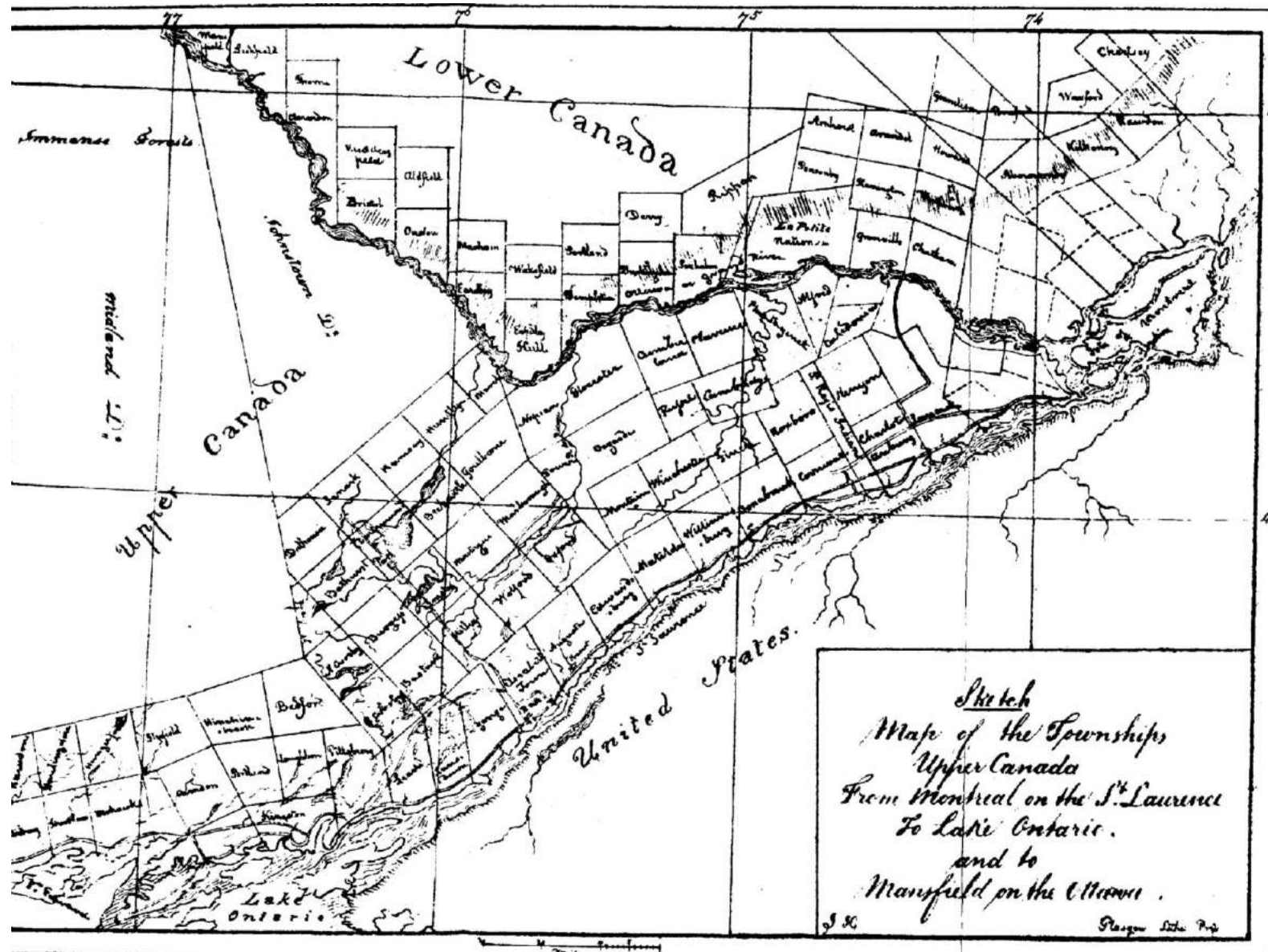


Almost 1,000 jobs lost

Agricultural phase

- Settlement began in the 1700's along the rivers
- United Empire Loyalists post-American Revolution
- Began expanding in the early 1800's in response to changing economic conditions in Europe, and the need for Canada to defend itself
- Military settlements and roads post War of 1812
- Rideau Canal opened 1832
- Roads and railways followed

Settlement Map used to attract Scottish settlers in about 1820





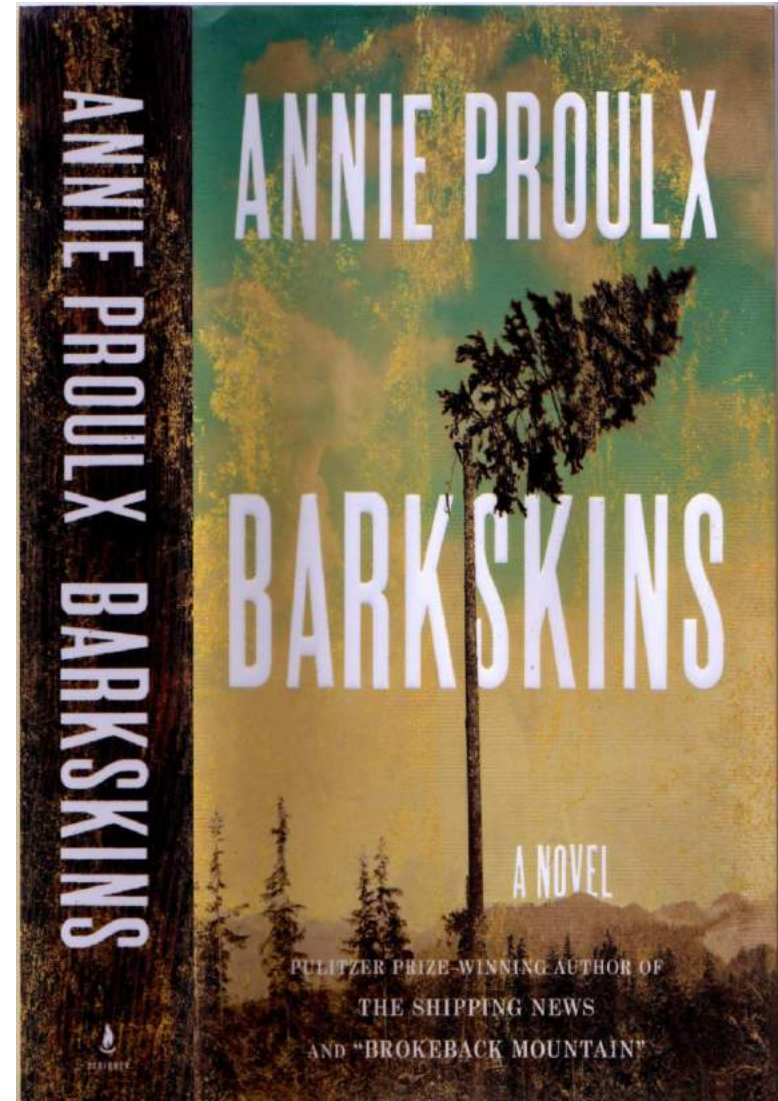
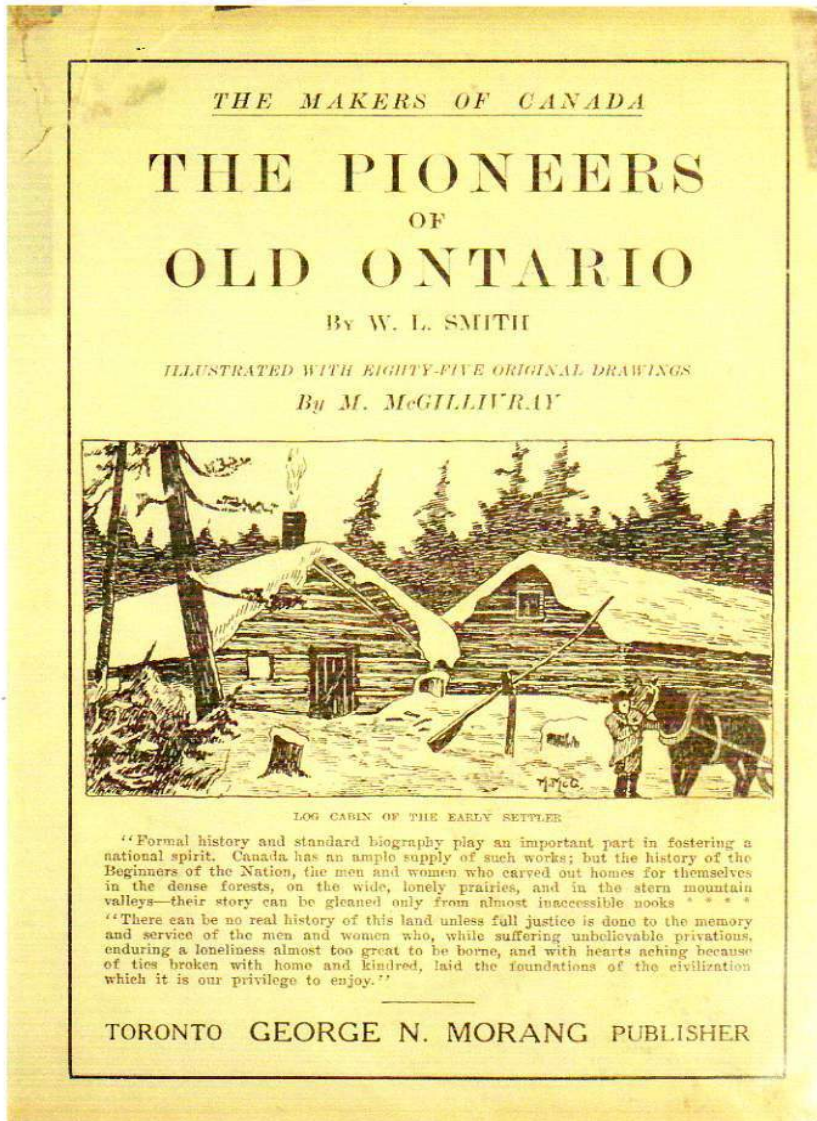
Trees were seen as an obstacle

- Primary objective was to remove forests and replace it with fields
- Often just felled and burned, crops planted around the stumps
- Sometimes used to make potash
- By 1861, 17 townships in Eastern Ontario had reached forest levels of less than 30%, including Lavant – which had 10%

The result

- Shortages of fuel wood
- Declines in soil productivity for crops
- Snow drifts blocking roads in winter
- Severe spring floods, and reduced summer stream flow
- Local climate and weather changes
- Forest fires!
 - The Great Fire of 1870 burned Darling, Pakenham, Lanark, Ramsay and Montague Townships and almost made it to Ottawa
- People moved on
- The forest changed
 - more early succession and intolerant species

For further reading



Land clearing for agriculture on fragile soils caused large scale erosion



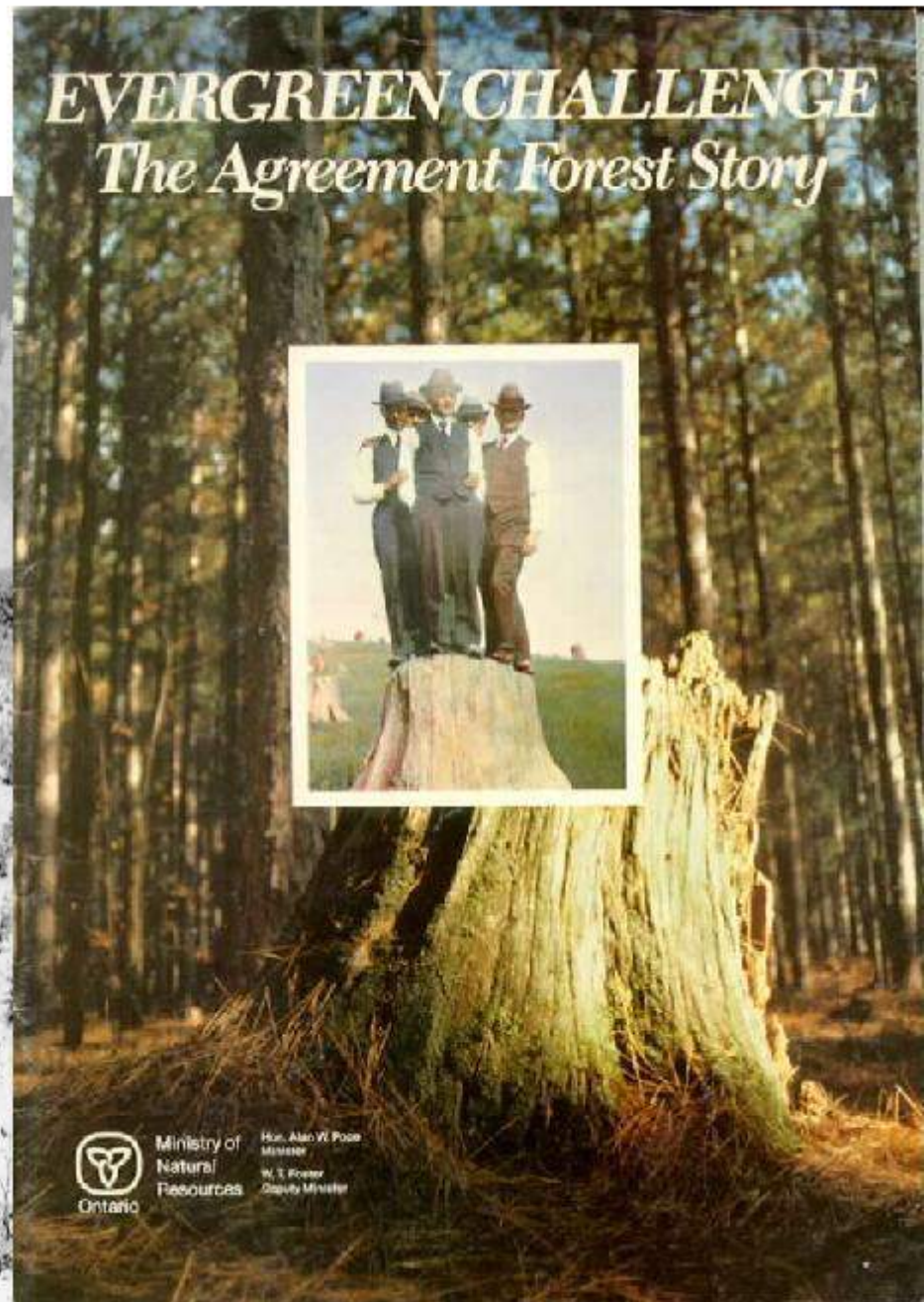
Waste Lands left behind – Prompted a call to action



Ontario government responds

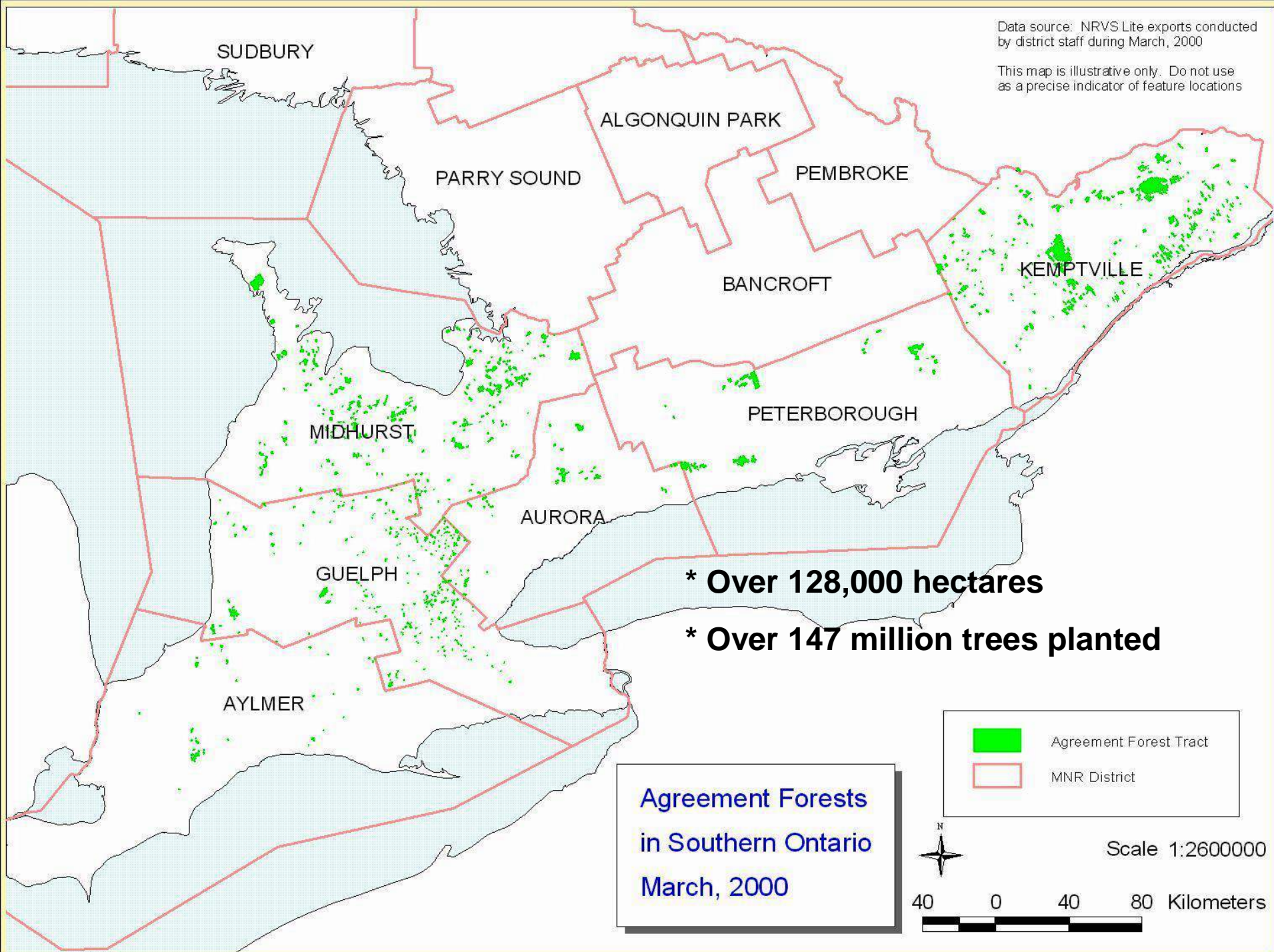
- 1871, 1883 – The *Tree Planting Act*
- 1880 – the first tree nursery
- 1909 - Zavitz report “*Waste Lands in southern Ontario*”
 - Estimated almost 400,000 acres required re-forestation
- 1911 – The *Counties Reforestation Act*
- 1921 – The *Reforestation Act*
 - 1922 – The Hendrie Forest, Simcoe County
- 1946 – The *Conservation Authorities Act*

Followed by large scale
reforestation from 1920
through to 1960



Data source: NRVs Lite exports conducted by district staff during March, 2000

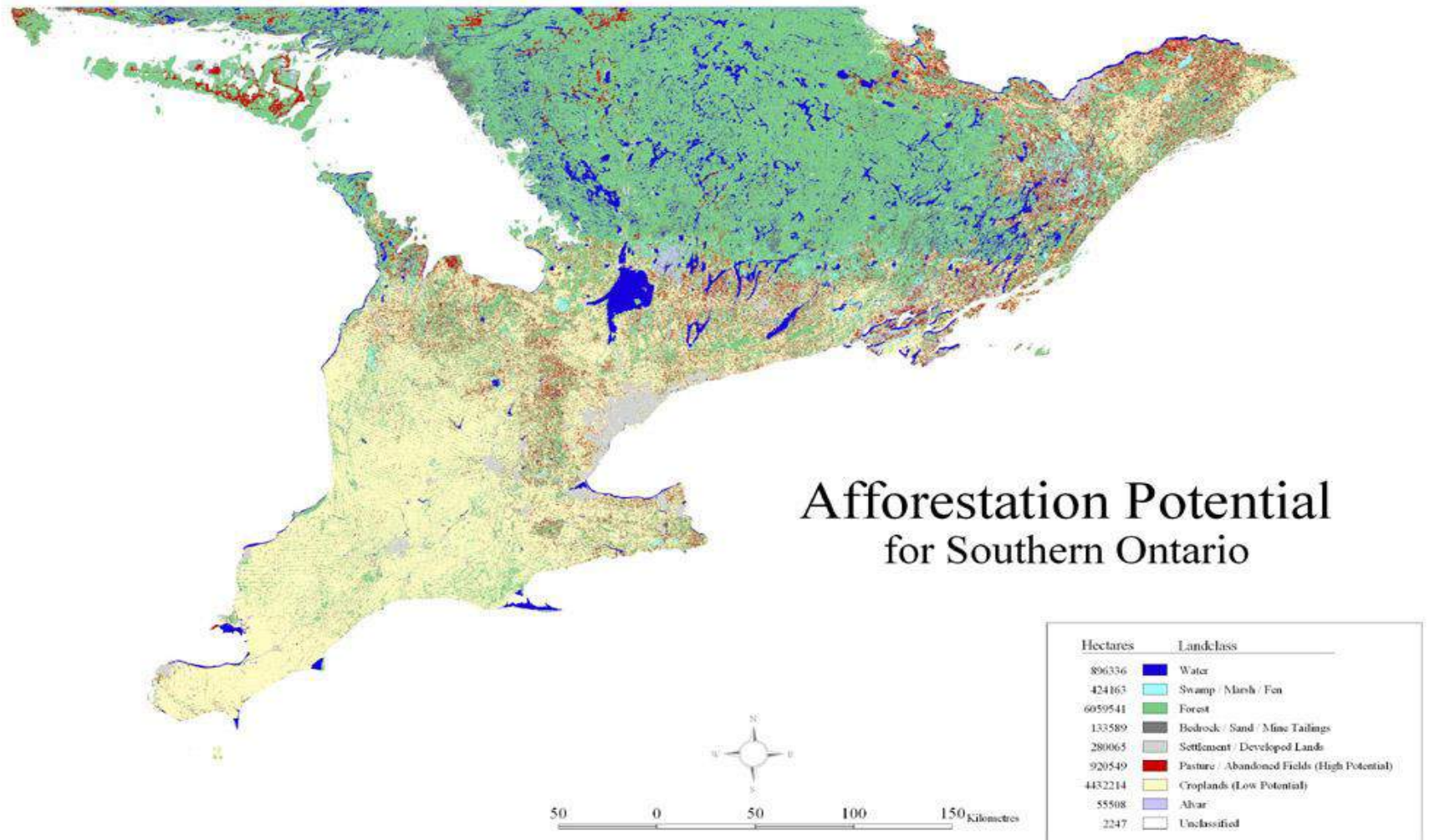
This map is illustrative only. Do not use as a precise indicator of feature locations

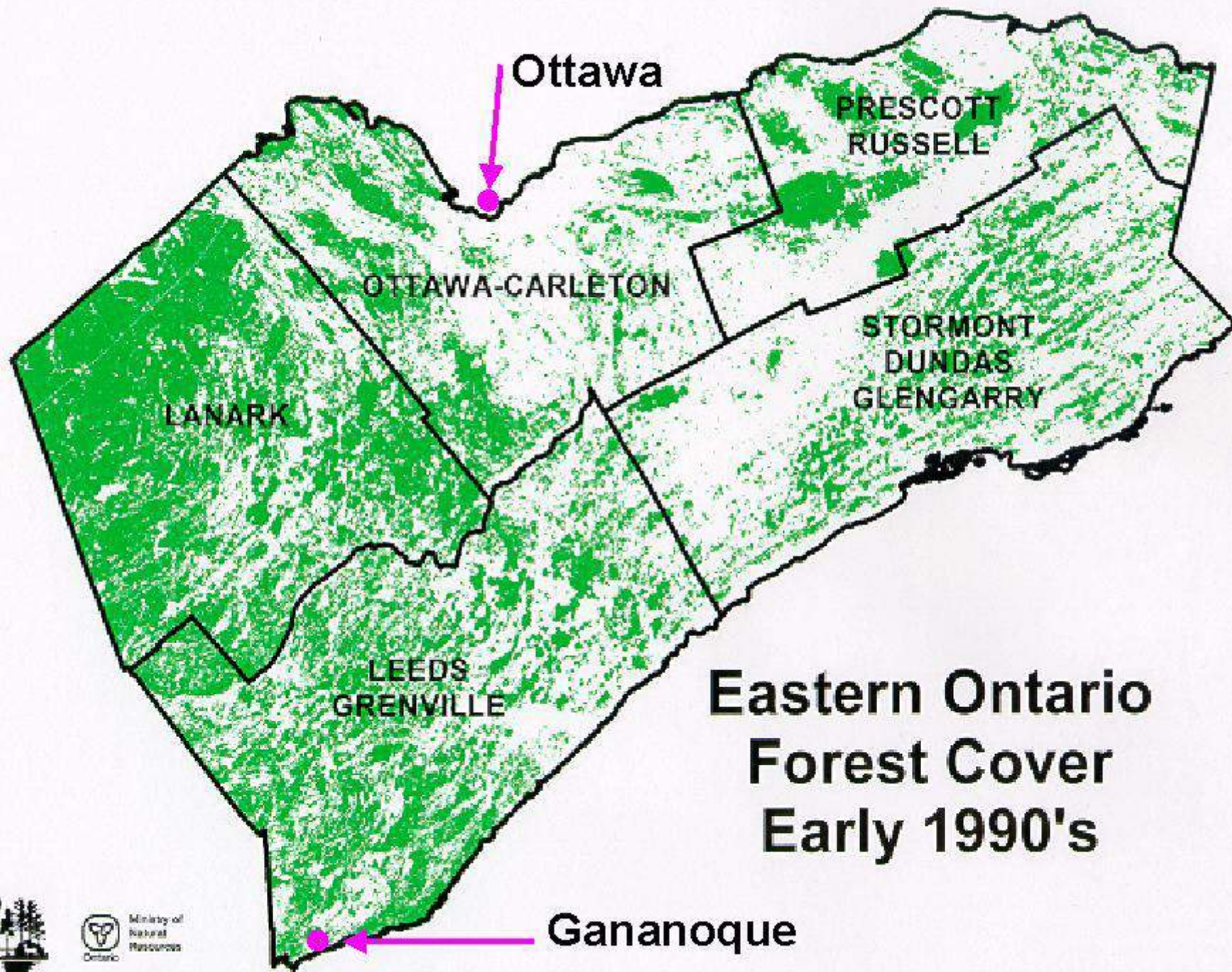


Private land Forestry

- Over-the-counter sales of nursery stock
 - More than 800 million seedlings since 1905
- 1966 – The *Woodlands Improvement Act*
 - For plantations and woodlot management – 137,000 ha
 - Over 200 million seedlings
- 1975 - Managed Forest Tax Rebate Program
- 1980 – the Domtar Private Land Program
- 1993 – MFTRP cancelled (re-instated in 1996, and later in 1998 as the Managed Forest Tax Incentive Program)
- 1994/5/6 – last WIA plantings
- By 1999 most provincial tree nurseries were closed or privatized

Land cover by the late 1990's ...



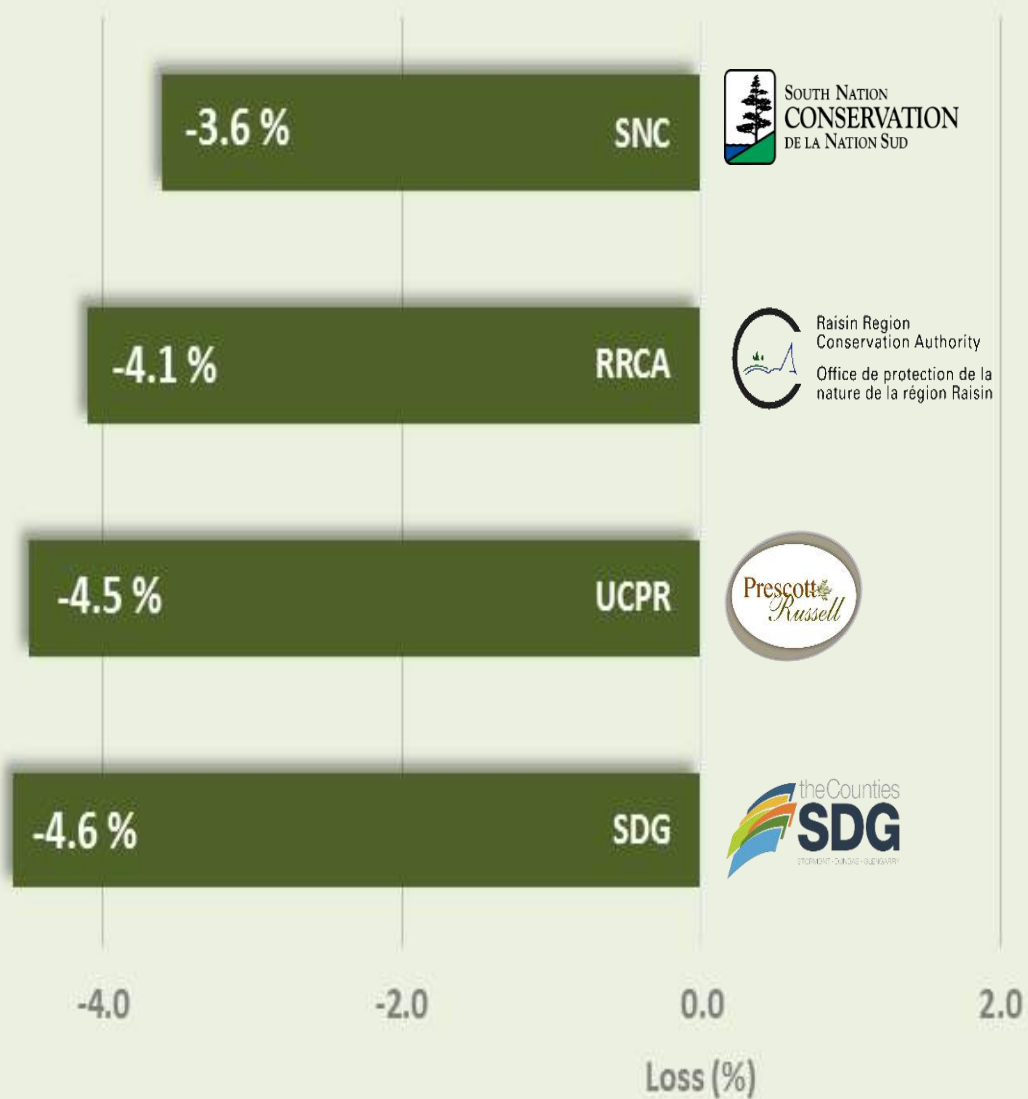


Ministry of
Natural
Resources
Ontario

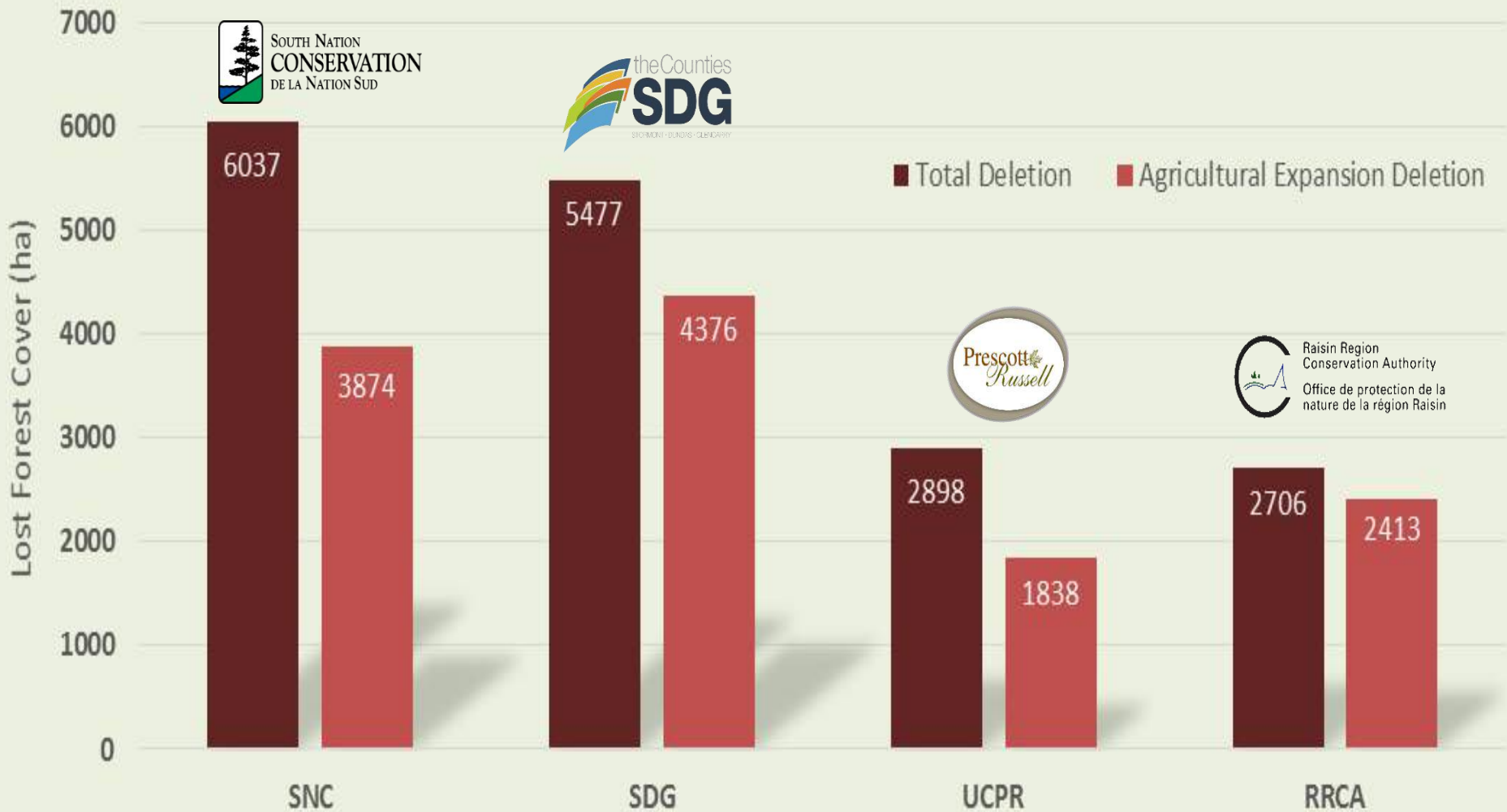
Forest Cover Trends

- Forest cover increased from lows of <10% in the 1880's to >80% in some townships by the 1980's
- Forest cover of around 30% is considered to be “a healthy landscape”, but should be seen as a minimum
- Starting in the early 2000's, we began to lose forest cover
 - 1998 ice storm
 - Urban expansion onto farmlands
 - Industrial expansion around urban areas =
Agricultural expansion onto forest lands
 - Emerald Ash Borer

Forest Cover Loss Since 2008

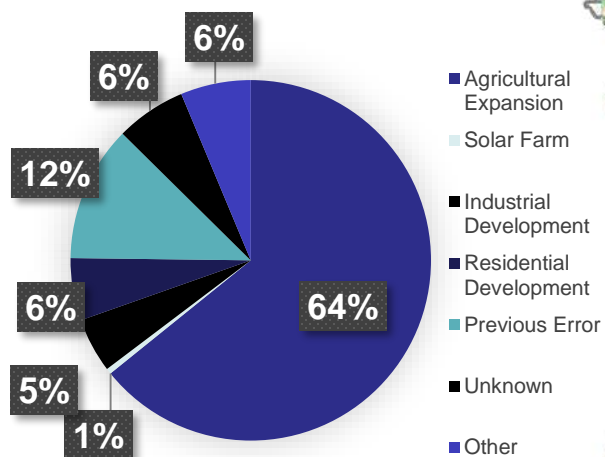


Total Deletion VS Agricultural Expansion Deletion

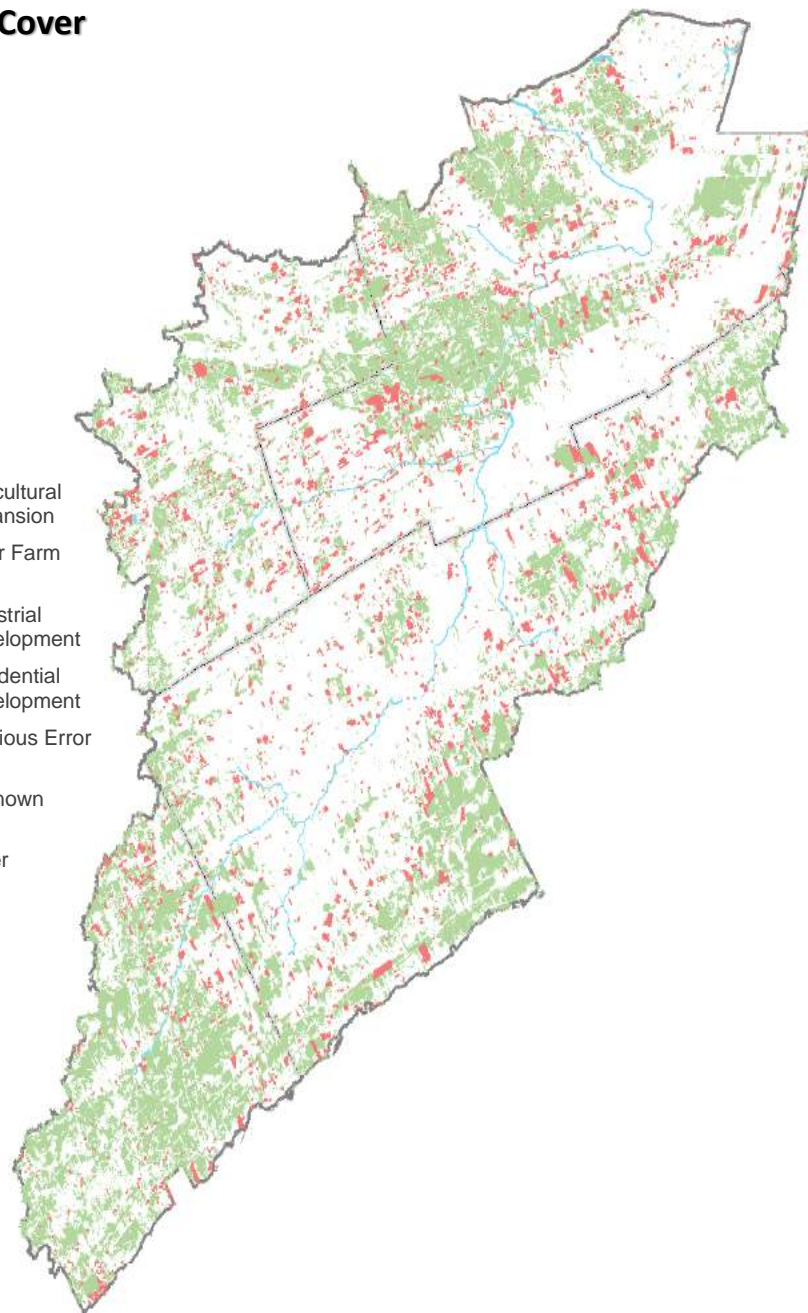




Deleted Forest Cover

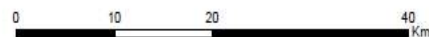


- Agricultural Expansion
- Solar Farm
- Industrial Development
- Residential Development
- Previous Error
- Unknown
- Other

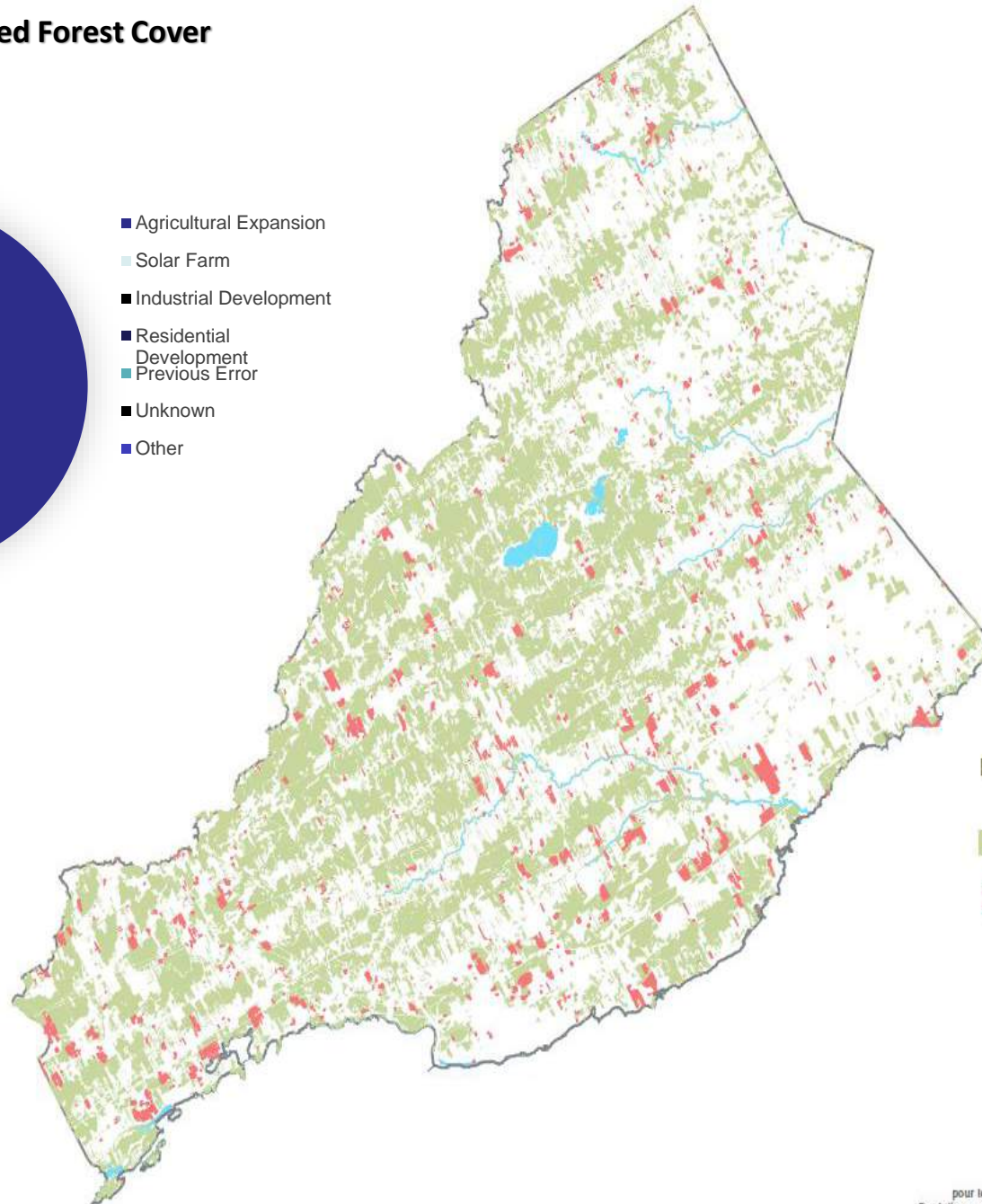
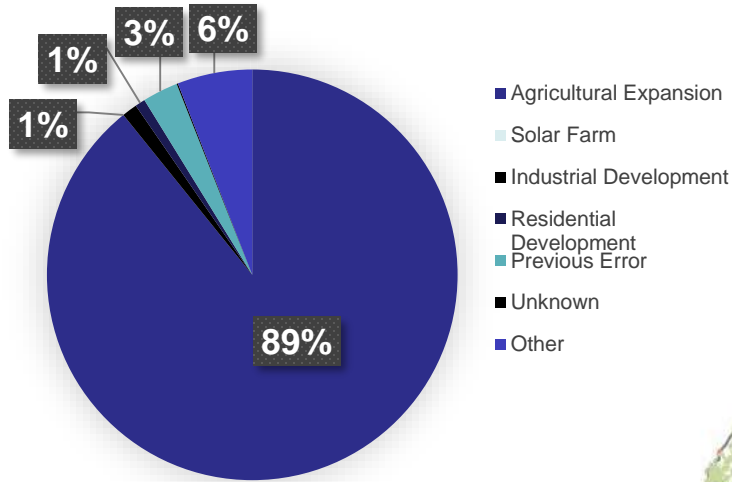


Légende / Legend

- = Couvert forestier 2014 Forest Cover
- = Couvert forestier supprimé Deleted Forest Cover



Deleted Forest Cover



Légende / Legend

- = Couvert forestier 2014 Forest Cover
- = Couvert forestier supprimé Deleted Forest Cover

This map is illustrative only.
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An aerial photograph of a wooded area with various handwritten labels. A large yellow circle highlights a central portion of the image. The labels include:

- CE 10
80-13-10-100
WM-C3-2
- CE 16
100-7-08-40
WM-C3-1
- CE 10 (AW)
80-13-10-100
WM-C3-2
- Ms AW, BW,
75-22-08-90
W-H5-X
- CE 10
80-10-
10-100
WM-C3-3
- CE 10
80-10-
10-100
WM-C3-3
- CE 10
80-10-
10-100
WM-C3-3
- A AW
B-S (10)
WM-H5-1
- SUB
15-18-05-6
M-CF3-3-2
- P.W.
15-6-08-10
M-CF1-2-2
- A AW (Ed)
Bd
30-11-04-50
WM-H5-1
- MCL
DR



2009 DRAPE Aerial Photography



What was untouched forever
will soon be forever gone!

A Rare Opening in a Forest!

KORTRIGHT IN WOODBRIDGE



Extraordinary homes on deep 40' & 46' lots backing onto the magnificent Kortright Conservation Area where Woodbridge meets Kleinburg.

- gourmet kitchens with servery & walk-in pantry
- unique window designs that overlook sweeping vista views
- luxury spa ensuite bathrooms
- soaring 9' ceilings, cathedral and vaulted ceilings
- hardwood and ceramics
- gas fireplaces & more!



Luxury homes from
\$319,990*

Agricultural Expansion 2008 Imagery



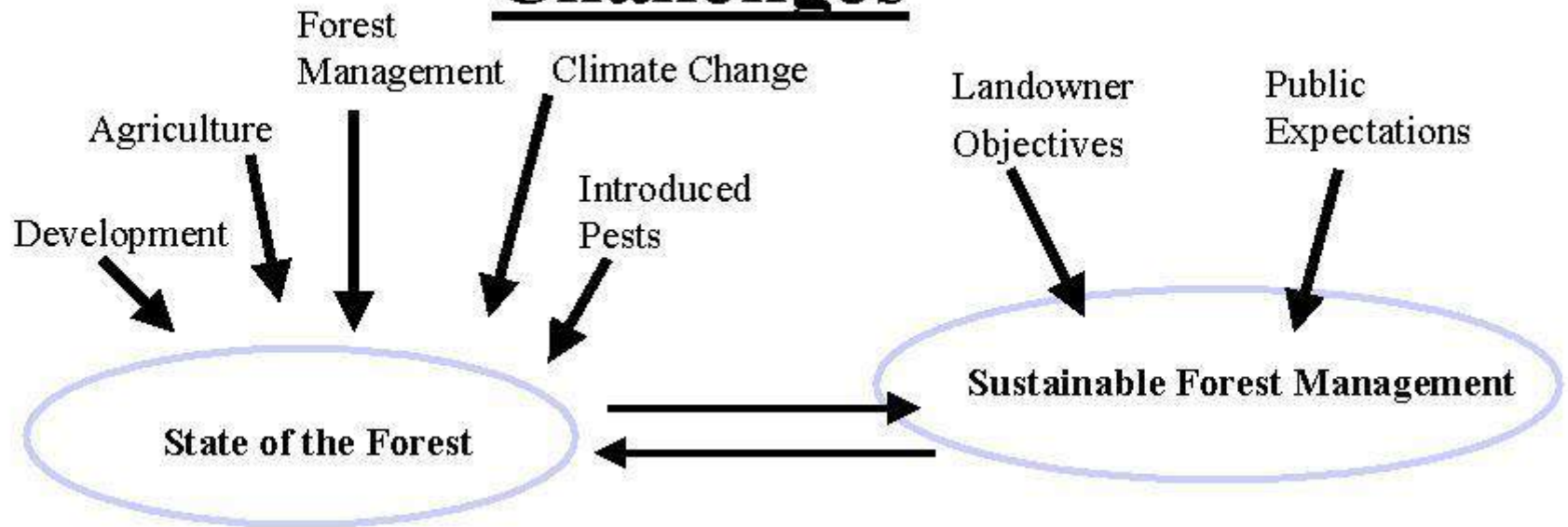
Agricultural Expansion 2014 Imagery



**Agricultural
Expansion** 2014 Google
Earth Imagery



Challenges



The Next Phase –

The beginnings a new planting program, ~2002/03

- **Issues**

- Willing partners ?-
government shouldn't
have to “go it alone”
- Available workforce?
- Land costs are
climbing
- Kyoto Protocol is
complicated

- **Program Elements**

- Historical planting
review
- Seed and stock review
- Genetics / adaptability
- Landowner survey
- Industrial survey
- Landbase analysis
- Carbon sequestration

Profile of the Average Landowner

- Farmers in Ontario own average of 272 acres
- Most are age 45 or more
- Over half have at least some post-secondary education
- Average length of ownership is 25 years
- 9/10 have forests (avg. 56 acres)
- Non-farmers in Ontario own an average of 148 acres
- Most are age 45 or more
- Two-thirds have at least some post-secondary education
- Average length of ownership is 20 years
- 8/10 have forests (avg. 105 acres)

The 50 Million Tree Program



The objective of the government of Ontario's 50 Million Tree Program is to plant 50 million trees across Ontario by 2025. Forests Ontario is the lead delivery agent of the program, working with partners across the province to make this goal a reality. 🌱

*More than **4,000 landowners** have joined us since 2008 to plant on their property.*

50 Million Tree Program

Helps fund the majority of landowners' tree planting costs – up to \$1.35/tree

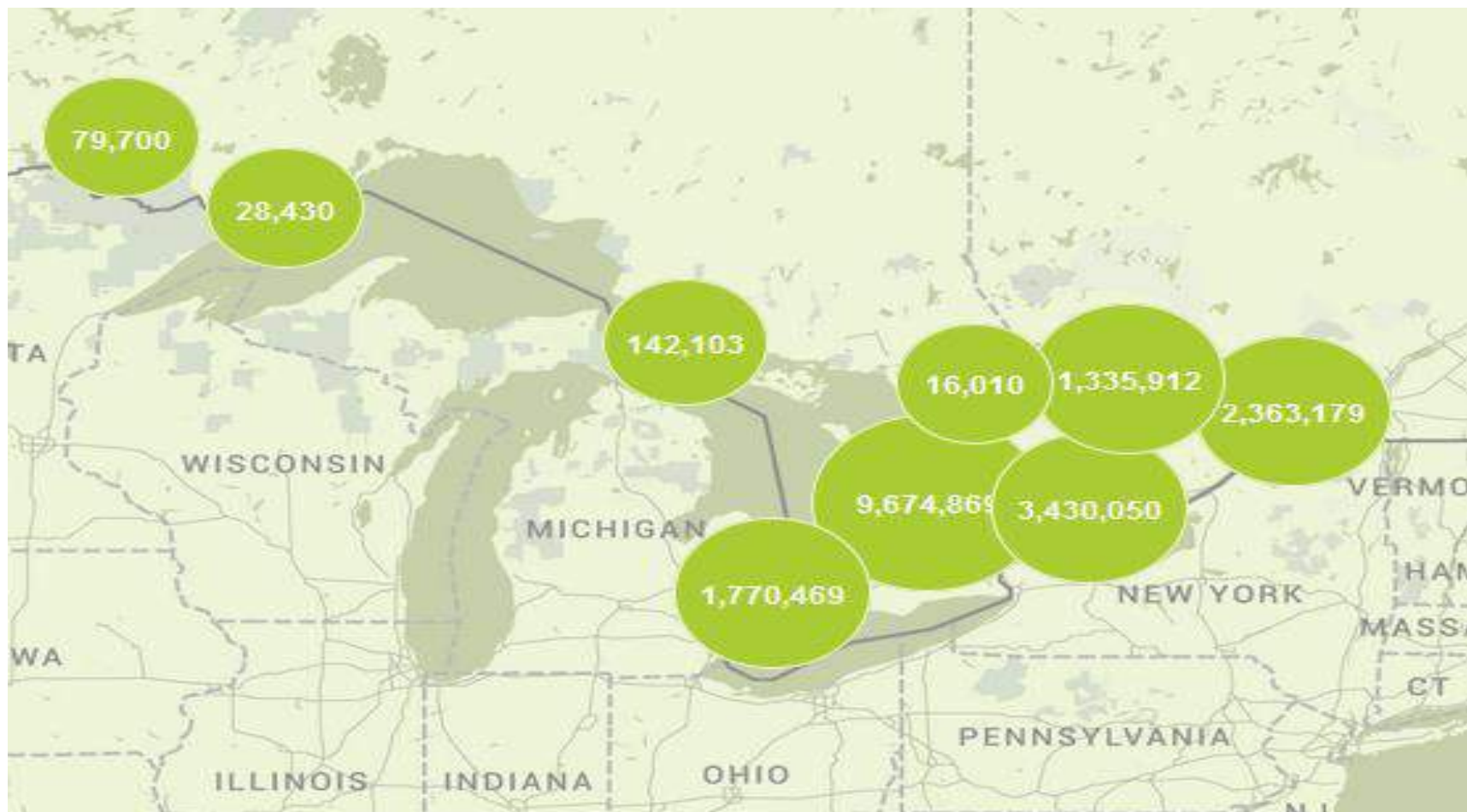
This program helps increase tree planting on rural private and public land across Ontario

Landowners Requirements:

- Minimum: 1 hectare (2.5 acres) land size
Unless a windbreak or riparian plant has been identified
- Landowner agrees to protect forest for 15 years
- Landowner agrees to employ good forestry practices



50 Million Tree Program – Results so far



The Future?

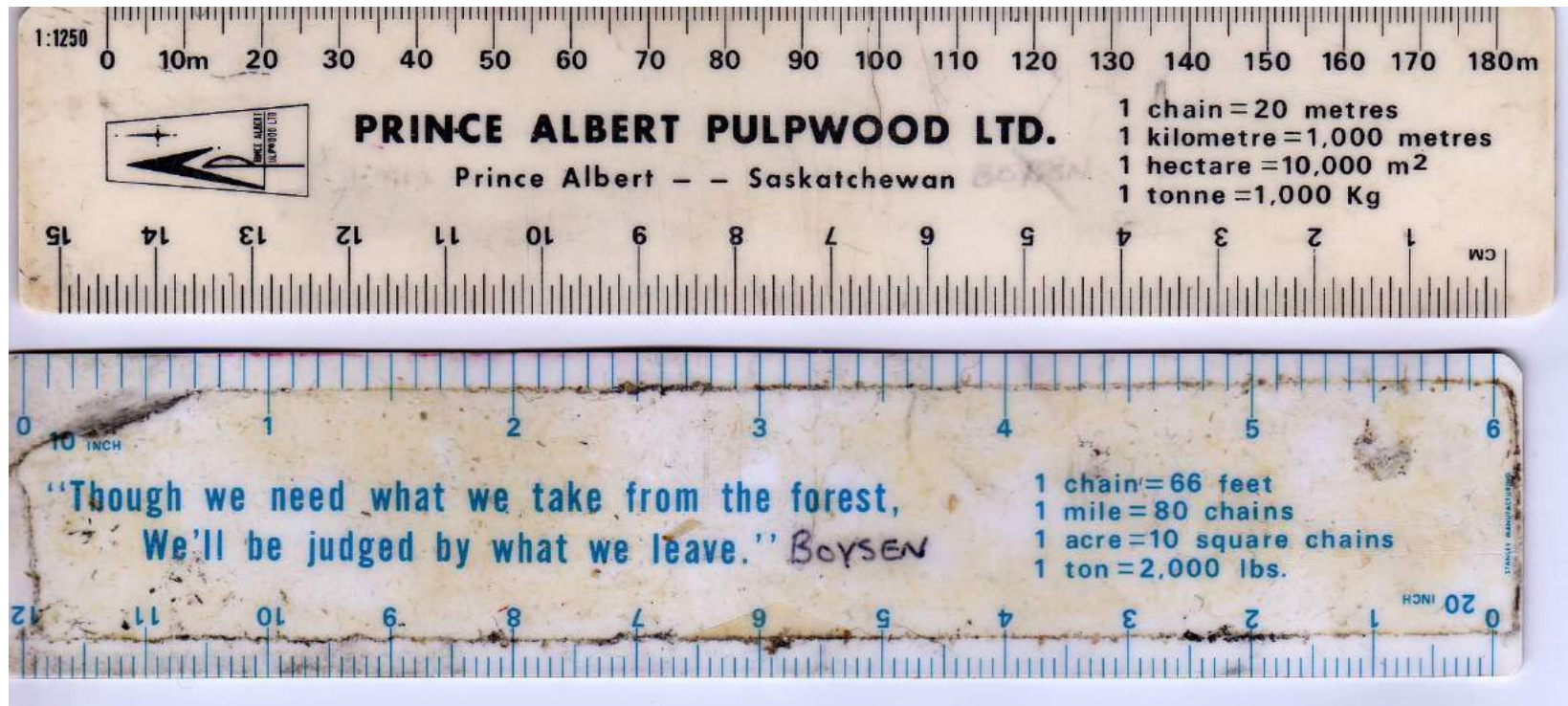
- On the bright side ...
 - With over 100 years of afforestation experience, Ontario knows what to do, and how to do it
 - We have engaged and willing partners, landowners, and supporters
 - Emerging forest product markets and MFTIP help offset expenses
- On the flip side ...
 - Invasive insects and diseases
 - Continued pressure from urban and agricultural expansion, raising land prices
 - Climate change

The Conservation Challenge

As a landowner ..

- Do you have old fields that can be, and should be, planted?
- Are you managing your forest for all values including forest products, wildlife habitat, tree seed, clean air and water? Carbon?
- Are you sharing your story with others?
- Are you passing along your passion, interests and traditions, or “opening” your forest to others, to help ensure that we have “*A Forest for Seven Generations*”?

My own measure of success ...



***"Though we need what we take from the forest,
we'll be judged by what we leave"***

Thank You!

