FIELD SURVEY FOR OLD FORESTS

Surveyor's name: Approx. center of forest Lat: Long:

Site Name: Access point of forest Lat: Long:

FOREST CHARACTERISTICS

- Presence of beech or hemlock
- Presence of large trees (>50 cm diameter)
- Presence of apparently old trees (complete below)
- Large logs
- Pit and mound topography
- Cut stumps
- Other major human disturbance (describe)

Description/ other notes (e.g. tree species composition, understory compostion, disease/insect damage, signs of wildlife, wetlands, non-forested habitats, relationship to surrounding areas, general impressions):

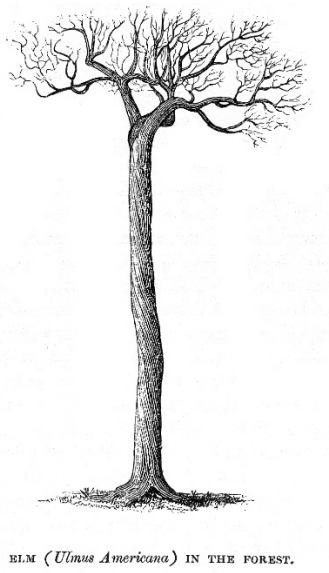
INDIVIDUAL TREE CHARACTERISTICS

Primary features:

- First branches high on tree
- Upper branches few and large / twisting
- Trunk holds diameter / doesn't taper (column-like)
- Bark balding
- Trunk has strange twists or turns (sinuous)
- Spiral grain

Secondary features:

- Bark very ridged (old conifer or intermediate age hardwood)
- Tree leaning



ELM (*Ulmus Americana*) IN THE FOREST.

1870 DRAWING OF AN OLD ELM TREE

Frequency of apparently old trees:

FIELD SURVEY FOR OLD TREES

Surveyor's name: Access point Lat: Long:

Site name: Notes:

Tree # *[Core #* *Counted age* *]*

Species		Lat	(decimal degrees)
Photo 1		Long	(decimal degrees)
(File 2		DBH	(cm diameter, 1.4 m off ground)
Names) 3		Height	(if available)
4		1st branch	(height from ground if available)

First branches high up | Branches few and large / twisting | Little taper on trunk

Bark balding | Sinuous trunk | Spiral gain

Leaning | Deeply ridged bark | Other:

Notes:

Tree # *[Core #* *Counted age* *]*

Species		Lat	(decimal degrees)
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Leaning | Deeply ridged bark | Other:

Notes:

How to photograph old trees for identification

Photos should show the bark, also the trunk and branch shape from below and a distance. Provide these **four photos**:

- Bark, showing lower ~3m of trunk
- Bark on the other side of tree
- Trunk from below. Stand back 2-3 m from the base of the tree and photograph straight up trunk from below (include major branching).
- Growth form of the tree. Walk upslope, or in the direction where the forest understory is most open, until you can capture the growth form of the entire tree in a photo.

Old Tree Features Explained

Bark: The bark of hardwoods of many species follows a fairly consistent pattern with age. Young trees are fairly smooth-barked, developing ridges or plates as they age. Usually sometime after middle age the ridges, plates etc. actually start to fall away, and the bark begins to smooth out again. This is called balding, it has a fairly distinctive appearance and tends to indicate old age (>250 years). On the other hand many conifers have increasingly ridged bark throughout their lives, and extreme ridging is an indicator of old age. Sometimes conifer bark takes on a red hue with age.

Trunk: One of the best ways to recognize old trees, both hardwood and conifer, is to look at the amount of taper in the trunk. Middle aged trees may be quite large near ground level but taper to a much narrower growing tip. The reason is fairly self-evident: the base of the bole has been growing for entire life of the tree, whereas it might take 80-100 years for the tree to achieve most of its height growth. Therefore on a 100 year-old tree the trunk has had very little time to gain diameter near the top. On a 300 year-old tree, however, there is much less difference between the top of the tree and the base. In fact the upper trunk gains diameter a little faster than the lower trunk, so old trees can have little or no taper in the trunk. Trunks of old trees are also often sinuous, with strange twists and curves, and may have spiral grain.

Branching: Much like the upper trunk, the branches of old trees may have been growing for centuries, and can be very large. In that time they may have endured ice storms, wind storms and other catastrophes that have broken tips and reshaped them in mysterious ways. In general, dendrochronologist Neil Pederson describes the result as "crowns comprised of few, thick, twisting limbs."

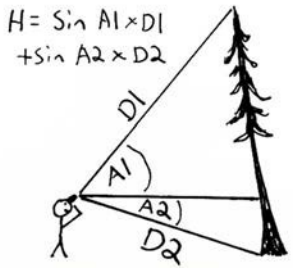
Beech and hemlock are notable because they are very shade tolerant, and tend to decline with human disturbance.

NOTES:

DBH = Diameter at Breast Height (1.4 m) = Circumfrence/3.14.

If possible record height using a clinometer and measuring tape, or preferably an accurate laser rangefinder. Also record height to first branch (straight shot up with rangefinder, remember to add height to eye level).

Tree Height = Sin(Angle1)*Distance1 + Sin(Angle 2)*Distance2



Resources

http://www.ancientforest.org/recognizing-old-trees/

http://www.ldeo.columbia.edu/~adk/pubs/CharacteristicsOldTreesNAJ_2010pederson.pdf

Ontario's oldest hardwood tree

This 580-year-old black gum tree in the Niagara region shows trunk sinuosity, and a few large, twisting branches near the top of the tree.

An old sugar maple: spiral grain, little taper in trunk, large branches. Beech on left with sinuous trunk.

Bark balding

Low taper in trunk







SUGAR MAPLE


EASTERN WHITE CEDAR


SUGAR
MAPLE


EASTERN
HEMLOCK


BASSWOOD


TAMARACK