
Finding Old Growth
in Your Woodlot
Caring for Your Land Series of Workshops

Outline

Old Growth Overview

- Definitions
- Characteristics
- Management
- Importance

Finding Old Growth in Eastern Ontario

- Old Growth Program in SD&G
- Finding Old Growth in Limerick Forest


Old Growth Forests:
An overview
Caring for Your Land Series of Workshops

Definitions of old growth forests

Natural Resources Canada

- “Ancient” or “original” forests”
- “Primeval” or “pristine” forests”
- “Virgin timber”
- “Decadent stands”
- “Overmature stands”
- “Old-growth,” “older growth”
- “Climax forests”

Old growth forests are relatively old and relatively undisturbed

- Dominant trees are beyond their average life span
- “Climax” state of forest succession without any large-scale disturbances
- “Ultimate” or “penultimate” stage of a forest stand

Temagami White Pine

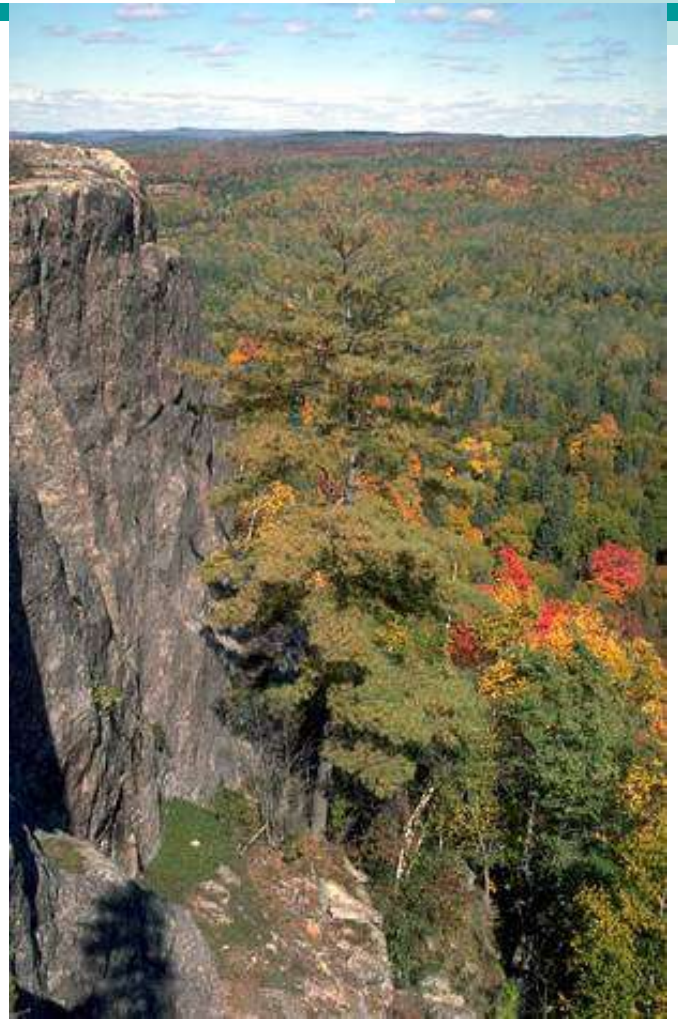
Ancient Forest Exploration and Research

Common life expectancies of some trees in Ontario old growth stands

Eastern Hemlock	600+	White Spruce	200+
White Cedar	400+	Red Oak	200+
White Pine	450+	Black Spruce	200+
Red Pine	350+	Poplar	150+
Sugar Maple	300+	Jack Pine	140+
Yellow Birch	300+	White Birch	80+

Old growth forests are relatively old and relatively undisturbed

- "Undisturbed"
- Mostly free of logging or other human disturbance
- *Best* conditions exist where forest cover remained since settlement
  - Not cleared or cultivated



Iron Bridge old growth landscape

Brian Fox, Natural Resources Canada

Old growth forest "elements" are valuable components of all forests

- Pockets of original untouched forest
- Scattered, remnant old growth features
- "Young" structural elements that will reach their prime in old growth forests
- Forest operations can maintain these

Clear Creek Forest

History and ecology affect how and where old growth forests develop

- Ecology of forests means that old growth is rare
- Large scale natural disturbances that "replace" forest stands
  - Large scale forest fires
  - Windstorms
  - Widespread insect outbreaks
  - Uncommon

History and ecology affect how and where old growth forests develop

- Smaller scale disturbances that diversify forest stands
  - Ice storms
  - Local wind and storm events
  - Accidental wildfires
  - Clearing and burning
  - Much more frequent, and can affect large area cumulatively

History and ecology affect how and where old growth forests develop

- Most original forest in Southern Ontario destroyed by logging, forest fires and settlement between mid-1700s and the early 1900s
  - Square timber trade and high-grade logging
  - Accidental wildfires
  - Clearing and burning
- Southern Ontario forest cover reduced to 20-30% of landbase

History and ecology affect how and where old growth forests develop

- Small remnants remained in inaccessible locations and by random chance
- Second growth forests and planted forests now growing to an old age

Marten study in remnant old growth pine

Ancient Forest Exploration and Research

History and ecology affect how and where old growth forests develop

- Private stewardship maintained some spectacular sites – now protected areas
  - Peter's Woods
  - Backus Woods
  - Shaw Woods
  - Gillies Grove
  - Insert your own example!

Emily Burton, Statistics Canada

What to look for: old growth forest features

- Old trees, big trees
- Supercanopy trees
- Multi-layered forest canopy
- Large uprooted trees
- Large cavity trees
- Large dead trees
- Logs on the ground
- Pit and mound microtopography

What to look for: old trees, big trees

- Beyond age and size typically harvested for quality timber
- Few branches to the canopy
- Maps (FRI), local knowledge, aging techniques

Fortune Farm, Lanark County

What to look for: Old trees, big trees

- Size isn't everything: Growth depends on local productivity
  - Stunted, scraggly ancient cedars can reach 1,000 years

Ancient Forest Exploration and Research

Which tree is older?

What to look for: Supercanopy trees

- Remnant trees that survived logging and fires
  - Pine, Hemlock etc.
- Evident that forest has not been cleared for some time
- Wildlife values
  - Sanctuary trees for bear cubs
  - Stick nest sites, perches, outlooks for raptors (Osprey, Bald Eagle)

Kirkwood Pine, Thessalon

Brian Fox, Natural Resources Canada

What to look for: Multi-layered forest canopy

- Hardwood forests less susceptible to fire – regenerate through many small scale events
- Large canopy gaps regenerate by seedlings from forest floor
- Result is forest includes pockets and patches of different aged trees
- Diversity of habitats for birds and other wildlife

Ontario Heritage Foundation

What to look for: Large, uprooted trees

- Large trees that blew down or “died a natural death” and fell where they stood
- Tree harvesting tends to reduce this natural process of forest floor disturbance
- “Tip-ups” create structural features for wildlife
  - Nest sites for Winter Wren, Louisiana Waterthrush etc.
- Windthrow of large live trees creates large canopy gaps

What to look for: Pit/mound microtopography

- "Tip-ups" create mounds and pits that diversify the forest floor environment
  - Influences and diversifies regeneration
  - Pits collect organic matter and debris (attracting higher wildlife diversity)
  - Pits support vernal pools
    - Breeding areas for salamanders & frogs
  - Mounds create sites for tree regeneration
    - e.g. Yellow Birch, Hemlock

Hummocky forest floor

Don Carroll, Natural Resources Canada

What to look for: Large cavity trees

- Larger, older growth trees important source of large cavities
  - Pileated Woodpecker nests and winter roosts
  - Nests for Barred Owl, Eastern Screech-owl and waterfowl such Wood Duck and Hooded Merganser
  - Dens for squirrels, Raccoon, American Marten
  - Winter dens for rare Southern Flying Squirrel

Pileated Woodpecker Roost Tree

Brian Naylor, OMNR

What to look for: Large, dead trees

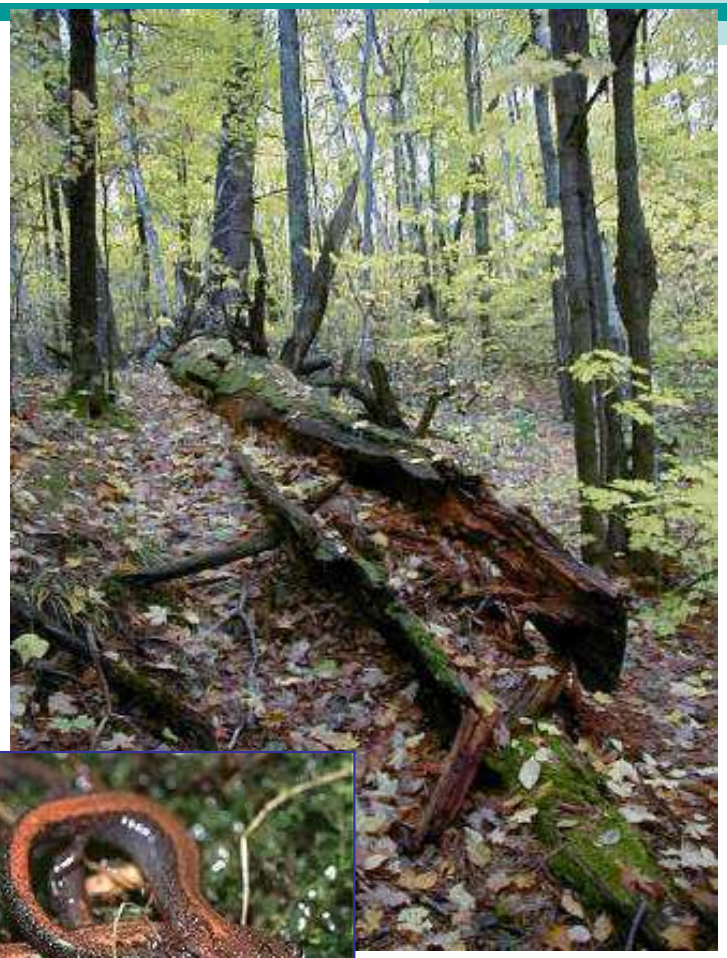
- Large “snags” or “chicots”
- Feeding and nesting sites for woodpeckers, squirrels and others
- Perching sites for raptors
- Evidence of lower level of harvesting
- Beware of safety concerns

Southern Flying Squirrel in dead Yellow Birch in Marcy’s Woods, Niagara Region

Steve Patterson

What to look for: Large logs on the ground

- Logs create important habitat for wildlife and plants
  - Snakes, salamanders, mice and others
  - Natural regeneration sites for Pine, Hemlock, Yellow Birch
- Decay process carries on for decades – create habitat diversity under leaf litter



Remnant of forests past

Ottawa River Institute

Old Growth Management and Restoration

- Protect what you have or protect what you can
- Maintain old growth elements
  - Supercanopy trees
  - Cavity trees
  - Large logs on the ground
- Let trees fall in the forest
- Maintain old growth pockets where natural process can occur safely

Gillies Grove, Arnprior

Town of Arnprior photo

Old Growth Management and Restoration

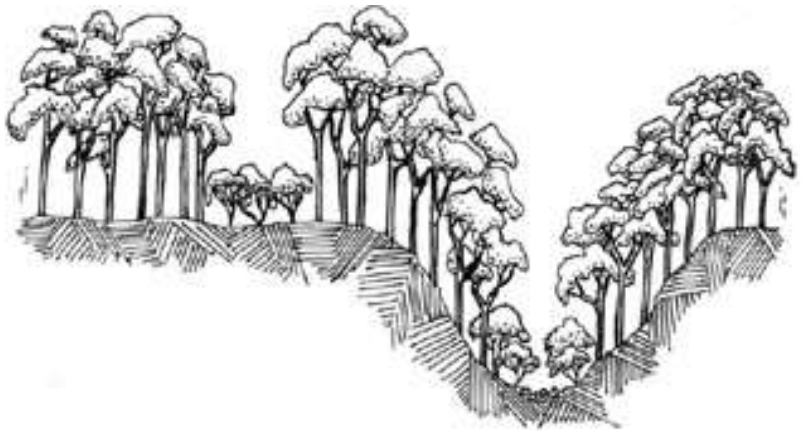
- Log sensitively
  - Log in winter to maintain the forest floor and its woody debris
  - Don't crush old rotten logs with machinery
  - Leave cull material in the woods, not on the landing

Natural Resources Canada

Old Growth Management and Restoration

- Create small to large gaps in even-aged stands to diversify the forest layers
  - e.g. make some

    10m²+ gaps by removing 3 large canopy trees
  - protect the forest interior



Canadian Wildlife Service Ontario Region

Old growth	Younger forest
Large and/or old trees	Smaller, younger trees
Few branches to canopy	Trees branches along trunk
Canopy with many layers	Canopy has fewer layers
Canopy gaps	Few canopy gaps
More uprooted trees	Fewer uprooted trees
More large, dead and decaying trees	Fewer large, dead and decaying trees

Old growth	Younger forest
Large logs and woody debris is common	Logs and woody debris is uncommon
Streams crossed by logs and woody debris	Streams have less woody debris
Few signs of logging	Logged regularly; signs of logging
Natural tree diversity	Species diversity affected by logging
Ground hummocky from mounds and pits	Less evidence of tip-up mounds

Why are old growth forests (or old growth features) important?

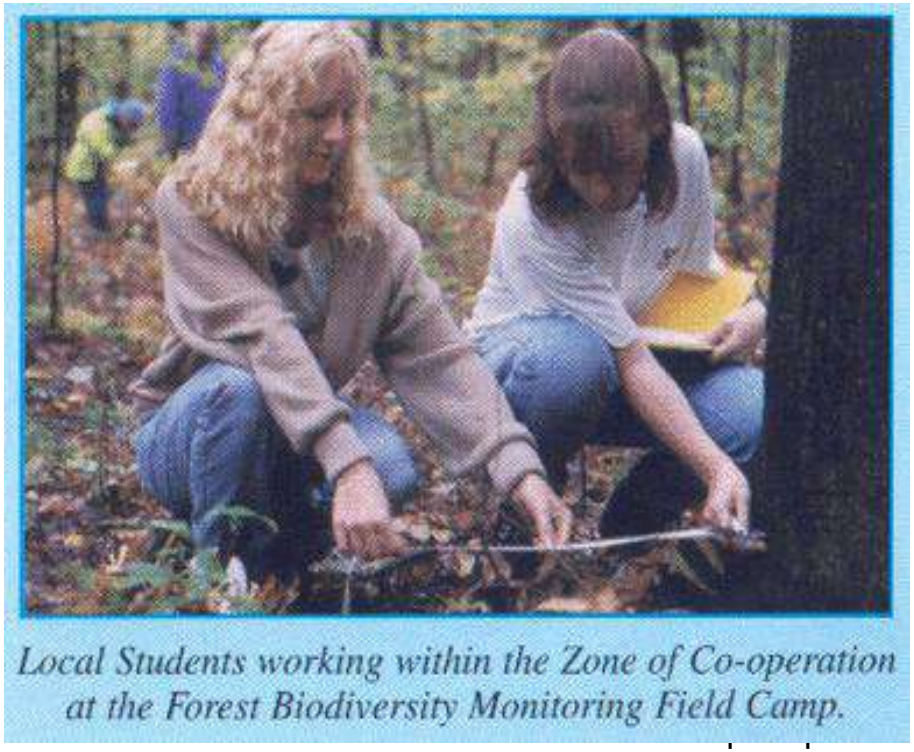
- Benchmark sites for scientific research
- Sources of natural diversity on the land
- Natural sources of forest history information
- Habitats for old forest species
- Living manuals for how natural forests work

Backus Woods

J. David Andrews,
Natural Resources Canada

Why are old growth forests (or old growth features) important?

- Sites for ecological education, interpretation, ecotourism
  - If planned carefully
- Heritage appreciation
  - The forests the first settlers saw…
- Inspiration!



Local Students working within the Zone of Co-operation at the Forest Biodiversity Monitoring Field Camp.

Students setting up research plots

Backus Woods – Long Point Biosphere Reserve

Finding Old Growth in Eastern Ontario

Caring for Your Land Series of Workshops

Old Growth Forest Conservation Program

for

Stormont, Dundas and Glengarry

Caring for Your Land Series of Workshops

Program Sponsors

- Great Lakes Sustainability Fund
- Raisin Region Conservation Authority
- Resource Stewardship S.D.& G. Council

Program Outline

- Rationale
- Background
- Goal and Objectives
- Methodology
- Results To Date
- Next Steps

Rationale

"Perhaps most important of all is that, to have healthy forests over the entire landscape, it is necessary to have healthy old growth forest ecosystems as part of the landscape."

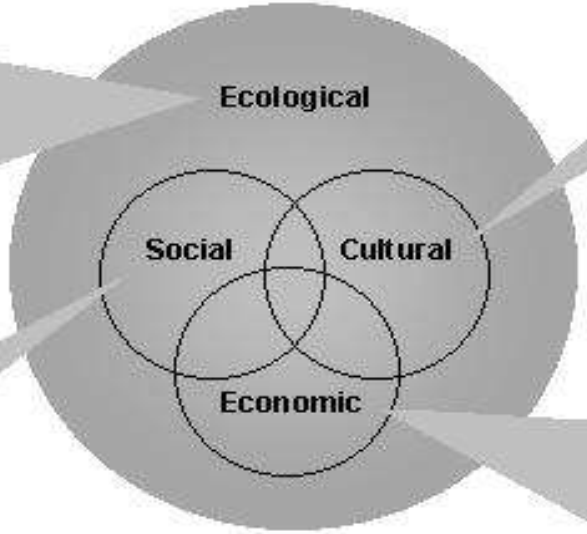
- Conserving Ontario's Old Growth Forest Ecosystems, Final Report of the Forest Policy Advisory Committee, page 18

Ecological

- Benchmark sites
- Biodiversity
- Discovery of new species
- Historic data base
- Maintenance of ecological processes
- Maintenance of ecosystems
- Maintenance of known species
- Manual for how nature works
- Specific wildlife habitat

Cultural

- Natural aesthetics
- Intrinsic
- Solitude, peace and quiet
- Spirituality



Social

- Natural heritage
- Recreation
- Wilderness experience

Economic

- Community stability
- Employment
- Hunting and fishing
- Medicinal and other plants
- Mineral extraction
- Tax revenues
- Timber harvesting
- Tourism
- Trapping

Direct Benefits of the OGFC Program

- Knowledge and Understanding
- Watershed Protection
- Natural Heritage Protection
- Stewardship Planning Assistance

Background

Old Growth Forest Committee

- Raisin Region Conservation Authority
- Resource Stewardship S.D.& G. Council
- Domtar Inc.
- Program Coordinator

Supporting Documents

- Conserving Ontario's Old Growth Forest Ecosystems (MNR 1994)

- Great Lakes, Great River Remedial Action Plan for the St. Lawrence River (Cornwall) Area of Concern Stage 2 Report: The Recommendation Plan (1997)

- Old Growth Definition for Ontario (MNR 2003a)
- Old Growth Policy for Ontario's Crown Forests (MNR 2003b)
- RRCA Natural Heritage Strategy (Draft- 2005)

Program Goal & Objectives

Goal:

To identify old growth forests in S.D. & G. and to encourage stewardship of these forests

Objectives:

1. To define old growth conditions
2. To conduct woodlot inventories
3. To increase public knowledge
4. To promote and implement stewardship planning

Methodology Defining Old Growth

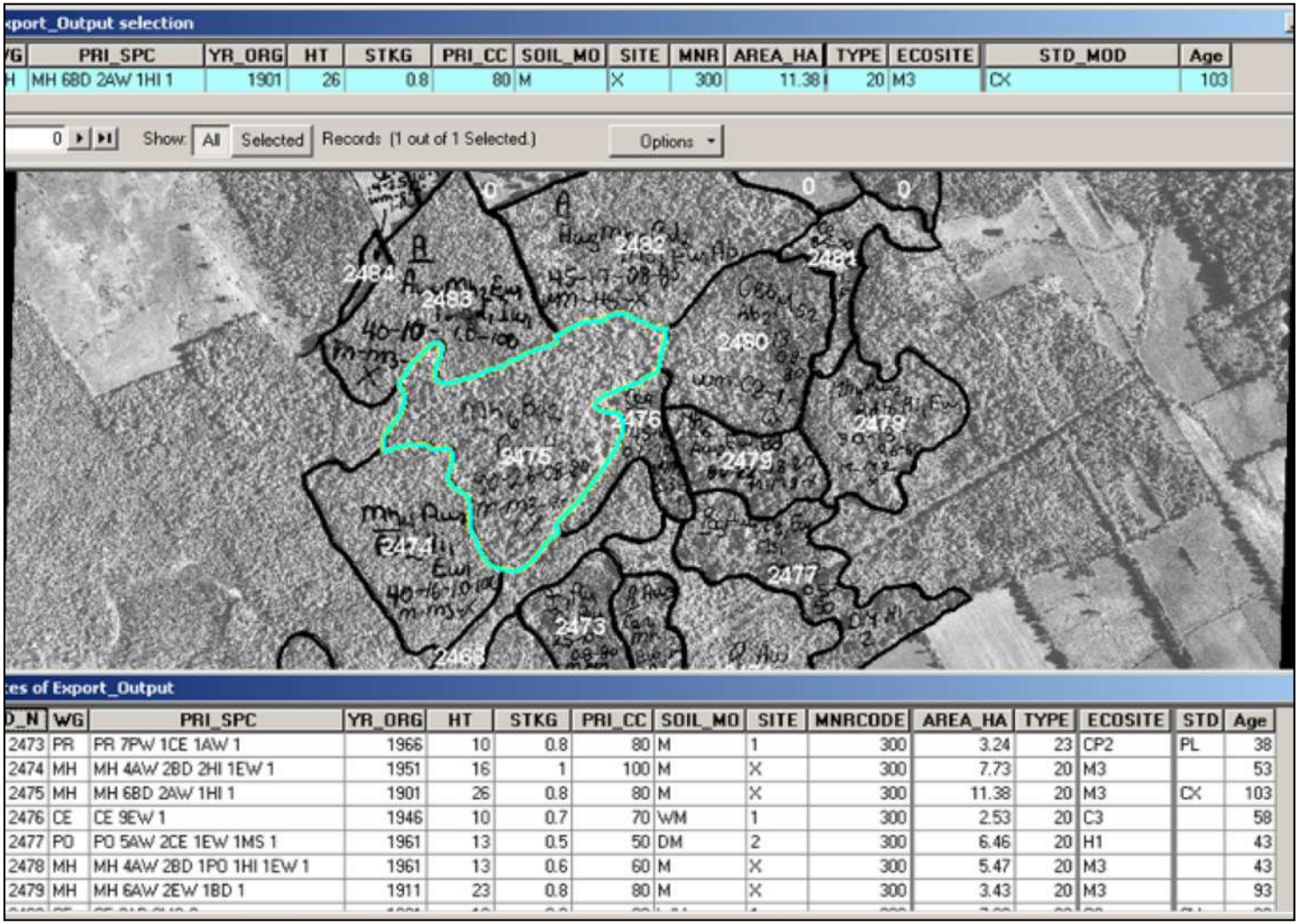
Old growth age-of-onset and duration for eco region 6E (MNR 2003A)

Ecosites	General Species Associations	Common Soil and Site Description	Associated Vegetation and Stand Structure Characteristics	Old-Growth Age-of-Onset (yrs)*	Old-Growth Forest Stand Duration (yrs)*
FOC3, FOC4	White Cedar, Hemlock	Fresh to moist, sandy to fine loamy soils	Conifer dominated; Pw, Bf, and some hardwoods occur.	Ce – 110 He – 140	Ce - 1000+ He - 600+
FOM3-7	Tolerant Hardwood – Conifer Mixedwood	Dry to moist, wide range of soil textures	Mixedwoods with any of Mh, Ms, He, Or, Ce, Po, Bw, and By.	Mh – 120 He – 140	Mh – 200+ He – 600+
SWD1-7, SWM1-6	Lowland Hardwoods and Mixedwoods (forested wetlands)	Moist mineral, peaty phase to organic soils	Hardwood dominated ecosites with silver, Ab, Ag, Black Willow, Hackberry, Swamp White Oak, Bur Oak, Swamp Maple, Ew, By, Poplars; Mixedwoods with Ce and hardwoods (rich in herbs and ferns).	Obur – 120 Msilver – 120 Ash – 120	Obur – 200+ Msilver – 200+ Ash – 200+
BOT1, FET1, SWC1-4	Lowland Conifers (forested wetlands)	Moist mineral, peaty phase to wet organic soils	Conifer dominated wetlands, with Sb, L, Ce, Other Conifers; includes treed bogs (Sphagnum), fens (brown moss) or swamps (may be herb, fern, and shrub rich).	Insuf. data	Insuf. data

Old Growth Forest Indicators and Criteria:

Indicators	Criteria
Old trees	>120 yrs >3/ha
Large trees	>50 cm >3/ha
Climax species present	White pine, hemlock
Basal area	>20m²/ha
Multi-Canopy layers	4 or more
Evidence of CWD	Present
Evidence of Cavity Trees	Present
Evidence of snags	Present
Pit and mound topography	Present

- Using the 1991 enhanced FRI, potential old growth forests were identified
- Stands were digitized
- Forest database created & linked to property owner information



xport_Output selection

VG	PRI_SPC	YR_ORG	HT	STKG	PRI_CC	SOIL_MO	SITE	MNR	AREA_HA	TYPE	ECOSITE	STD_MOD	Age
H	MH 6BD 2AW 1HI 1	1901	26	0.8	80	M	X	300	11.38	20	M3	CX	103

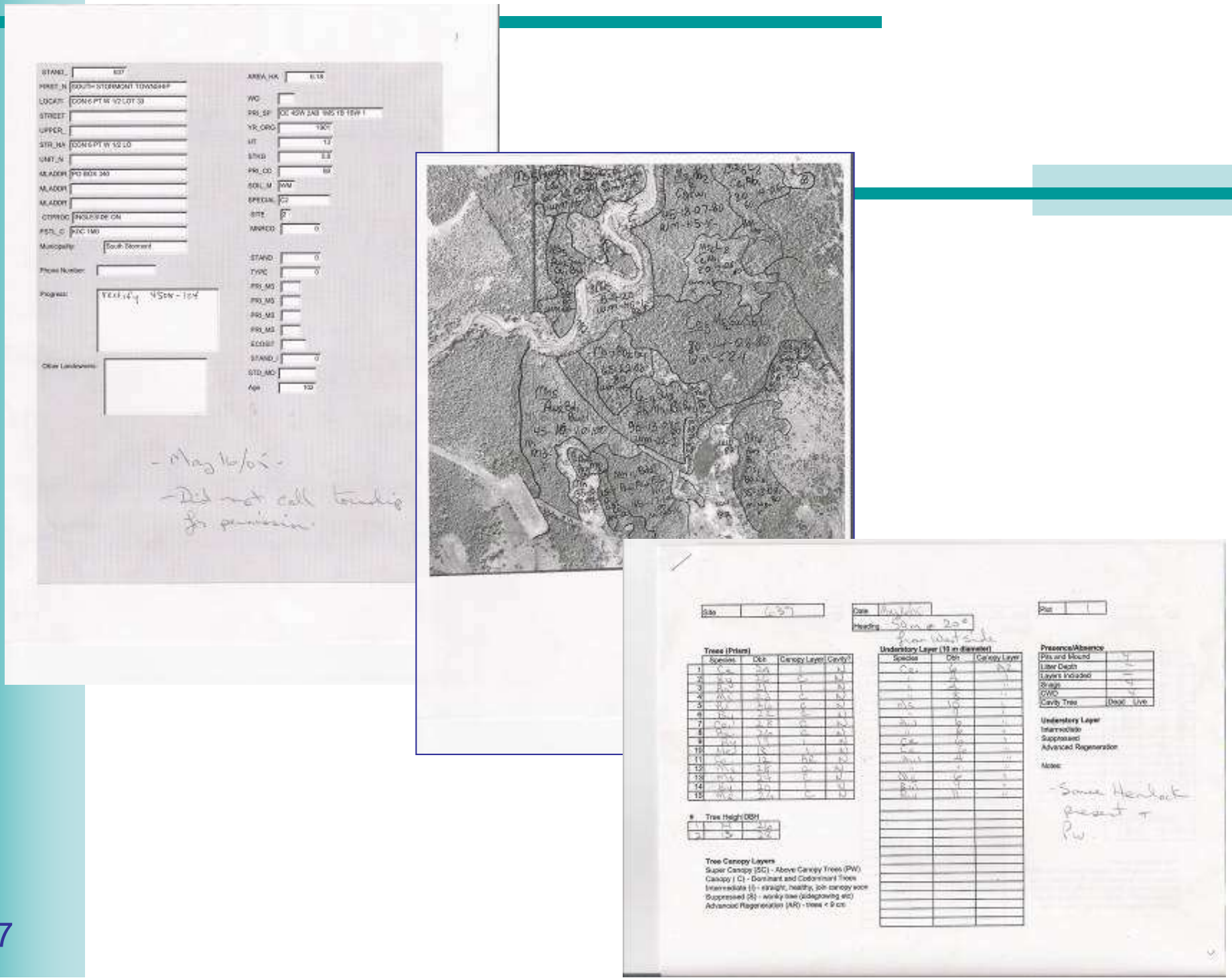
0 Show: All Selected Records (1 out of 1 Selected.) Options

es of Export_Output

D_N	WG	PRI_SPC	YR_ORG	HT	STKG	PRI_CC	SOIL_MO	SITE	MNRCODE	AREA_HA	TYPE	ECOSITE	STD	Age
2473	PR	PR 7PW 1CE 1AW 1	1966	10	0.8	80	M	1	300	3.24	23	CP2	PL	38
2474	MH	MH 4AW 2BD 2HI 1EW 1	1951	16	1	100	M	X	300	7.73	20	M3		53
2475	MH	MH 6BD 2AW 1HI 1	1901	26	0.8	80	M	X	300	11.38	20	M3	CX	103
2476	CE	CE 9EW 1	1946	10	0.7	70	WM	1	300	2.53	20	C3		58
2477	PO	PO 5AW 2CE 1EW 1MS 1	1961	13	0.5	50	DM	2	300	6.46	20	H1		43
2478	MH	MH 4AW 2BD 1PO 1HI 1EW 1	1961	13	0.6	60	M	X	300	5.47	20	M3		43
2479	MH	MH 6AW 2EW 1BD 1	1911	23	0.8	80	M	X	300	3.43	20	M3		93

Landowner Contact

- Stands >120 yrs
- Stands by sub-watershed
- All other stands



Municipality: South Stormont

Trees (Prism)

Understory Layer (10 m diameter)

Presence/Absence

Tree Canopy Layers
Super Canopy (SC) - Above Canopy Trees (PW)
Canopy (C) - Dominant and Codominant Trees
Intermediate (I) - straight, healthy, join canopy soon
Suppressed (S) - wonky saw (sidegrowing etc)
Advanced Regeneration (AR) - trees < 9 cm

Results to date

Potential Old Growth	Number of Landowners	Area Surveyed	Number of Landowners
1180 ha	150	475 ha	50

Stand Classification	
Category	Area (ha)
1. All nine criteria met	42
2. At least 7 of 9 criteria	112
3. 4 to 6 criteria	172
4. 3 or fewer criteria	40
Total	376

Landowner Report/Assistance

Landowner Package

- Summary of woodlot survey
- 1991 FRI photo
- "A Guide for Stewardship Planning"

- Extension Notes
- Offer to provide Extension visit

Stewardship Initiatives

- Two Old Growth Demonstration Forests
- Conducted 10 landowner field visits

- Effects of disturbance on old growth mixed wood forests in eastern Ontario

Next Steps…

- Complete survey of stands within RRCA watershed
- Address unique old growth forest communities not captured by current methodology
- Identify remaining old growth in S.D.& G.

- Continue with stewardship initiatives, on a priority basis
- Build partnership with S.D.& G. and SLPC to ensure protection of public lands
- Final Report March 2006

Finding Old Growth in Limerick Forest

Caring for Your Land Series of Workshops

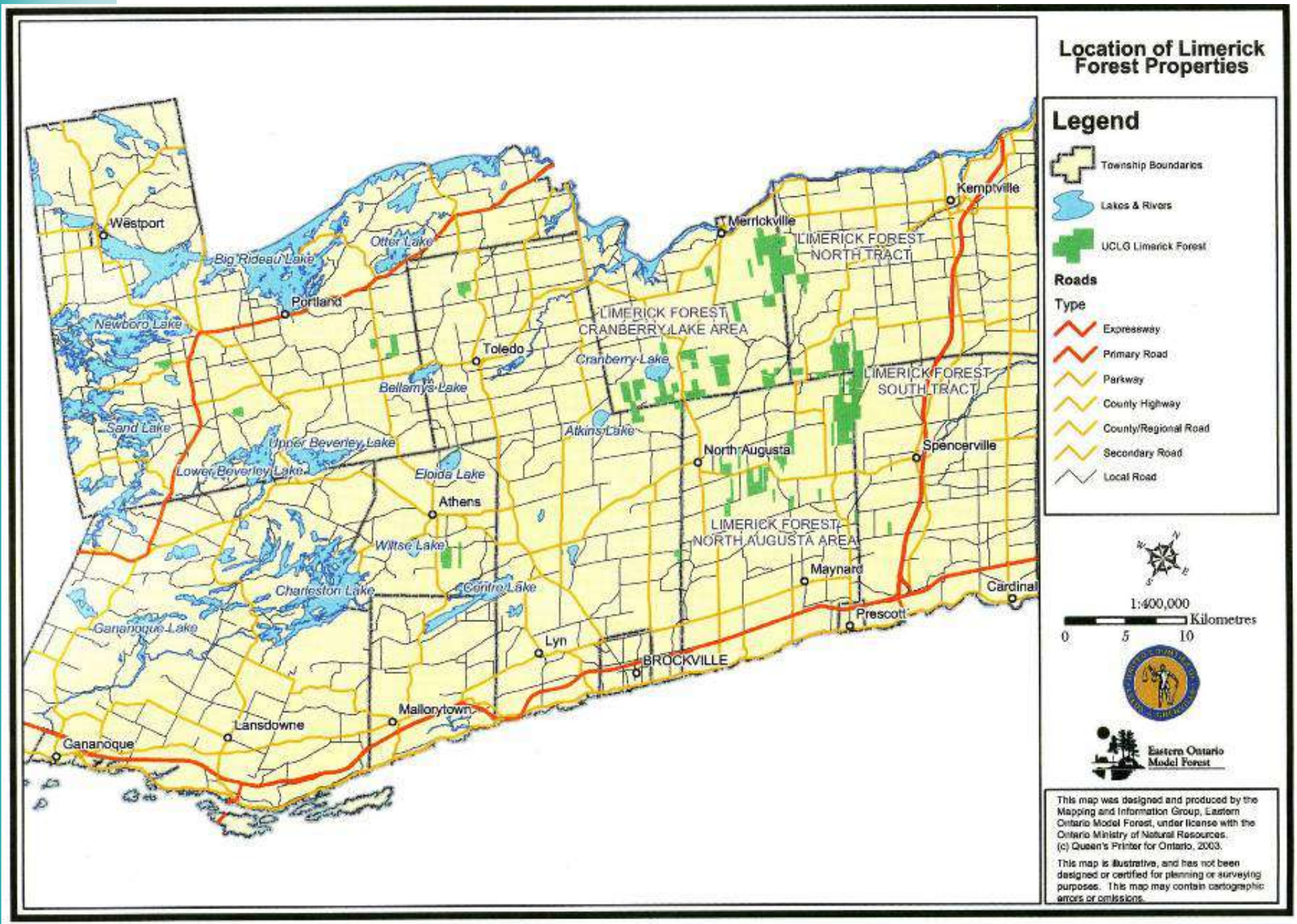


Figure 1.1: Location of Limerick Forest properties.

Limerick Forest

Forest (land with trees)	**natural forest**	**2068 ha**	**36%**
	plantation	**1692 ha**	**29%**
Wetland (bog, marsh)		**1939 ha**	**33%**
Other (agriculture, open water, pit, right-of-way)		**96 ha**	**2%**
TOTAL		**5795 ha**	**100%**

Standards to be met

Special attention must be given to ensure the protection and retention of ... old growth of many of the commercially targeted species in the GLSL forests.

- Representative samples of existing ecosystems shall be protected in their natural state.
- Remnant pockets of natural forest with no recent (last 100 years) history of logging should be retained.

Forest Stewardship Council in “Standards for Well Managed Forests in Central and Southern Great Lakes-St. Lawrence Forests of Ontario”, 2000.

Standards to be met

- A Managed Forest Plan must include, where appropriate, the retention of remnant pockets of "untouched" old growth forest.
- Forest owners of old growth stands will be strongly encouraged to consider their protection and set [them] aside from harvest activities.

Standards for certification set out by the Eastern Ontario Model Forest in "Eastern Ontario Model Forest Certification for Owners of Small Woodlots Policies and Procedures Manual", 2004.

Targets

- Protect at least 10 hectares or at least 30% of the stand as old growth.

Minnesota Forest Resources Council, 1999

- Restore forest diversity so that in each watershed, 5% of the forest cover is in mature or old-growth forest.

Raisin Region Conservation and

S.D.&G. Resource Stewardship Council, 2004

Limerick Forest Potential Old Growth Stands

Old Growth Group	Stand Age 71-90 in 2002		Age 91-110 in 2002		Age 110+ in 2002		Total ha
	# of stands	Area ha	#	Area ha	#	Area ha	
Hard Maple	13	75.0			2	4.6	79.6
White Cedar	23	180.8	1	3.6			184.4
Soft Maple	17	181.0	3	25.5			206.5
White Pine	1	8.4			1	15.7	24.1
White Spruce	2	6.8					6.8
Poplar	9	48.9	1	8.4			57.3
Other Conifers	2	4.7			1	4.6	9.3
Other Hardwoods	8	69.2					69.2
TOTALS	75	574.8	5	37.5	4	24.9	637.2

Limerick Old Growth Inventory – by:

Sub-compartment	Size in hectares	Production or Protection Main species	Location: Lot Con Twp Road
Date	Age in 2002	Measured age	
1. Large trees			
Main species		Average dbh	
Other species of large trees		Average dbh	
		Average dbh	
		Average dbh	
Is at least 30% of the subcompartment over 50 cm dbh?			
2. DWD: more or fewer than 5 large (>40 cm dbh) fallen logs per hectare?			
3. Snags: more or fewer than 5 per hectare			
4. Cavity trees: more or fewer than 7 per hectare			
5. Mosses Lichens indicate yes if abundant Fungi			
6. Indicator species: present (number) or sign of presence			
Cerulean Warbler			
Pileated Woodpecker			
Southern Flying Squirrel			
Redback Salamander			
Yellow-spotted Salamander			
7. Other species of note Ringneck Snake Four-toed Salamander Philomycus slug Red-shouldered Hawk Any owl or hawk Shining Clubmoss any Botrychium (except Rattlesnake Fern) Maidenhair Fern Christmas Fern Polypody fern Ginseng			8. Other uses / features noted 9. Priority / Quality (scale of 1-3) 10. Suitable for plot? (large enough? accessible?)

Limerick Forest Advisory Committee – Ecology Subcommittee 2003

Old Growth Indicators

Any large trees (but especially White Pine) over 120 years, or over 50 cm dbh

Old Growth Indicators

Abundant downed woody debris, snags, & cavity trees

Old Growth Indicators

Abundant slow-growing species:
mosses, lichens, & fungi

Old Growth Species Indicators

Old Growth Species Indicators

Pileated Woodpecker

Old Growth Species Indicators

Old Growth Species Indicators

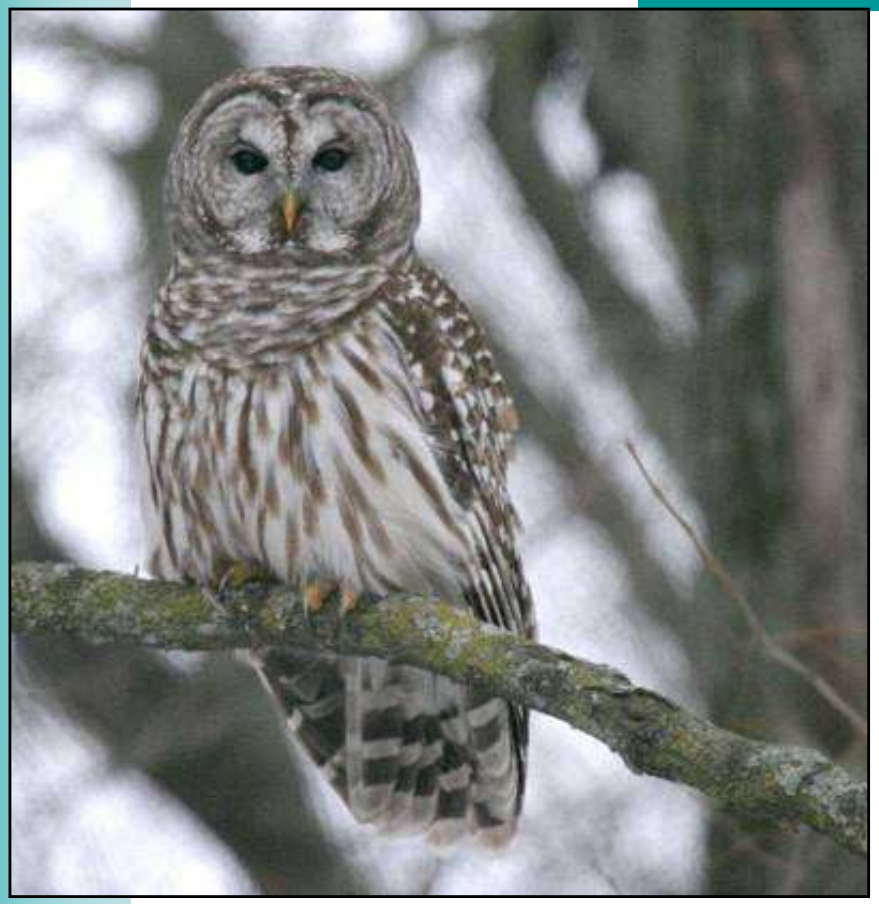
Redback Salamander

Yellow-spotted Salamander

Other Species of Note

Red-shouldered Hawk

Other Species of Note



Barred Owl

Brown Creeper

Other Species of Note

Lycopodium lucidulum

Other Species of Note

Polypody (fern)

Christmas Fern

Other Species of Note

Maidenhair Fern

Botrychium (such as Leathery Grape Fern)

Inventory

Inventory

Results


2003 10 17

2003 10 17

2003 10 17

Limerick Forest Old Growth Definition

A natural forest stand which is at least 80 years old, containing trees at least 120 years old, with undisturbed ground vegetation.

Limerick Forest Potential
Old Growth Stands

Old Growth Group	Stand Age 71-90 in 2002		Age 91-110 in 2002		Age 110+ in 2002		Total ha
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Recommendation

Designate and protect up to 10% of Limerick Forest as old growth.

Summary

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- Definitions
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- Importance

Finding Old Growth in Eastern Ontario

- Old Growth Program in SD&G
- Finding Old Growth in Limerick Forest

This work was sponsored by:

- Ecological Monitoring & Assessment Network of Environment Canada
- Eastern Ontario Model Forest
- Limerick Forest Advisory Committee
- Eastern Ontario Biodiversity Museum
- Leeds County Stewardship Council
- Grenville Land Stewardship Council
- United Counties of Leeds & Grenville
- Ontario Ministries of Citizenship, Culture, Tourism & Recreation

Thank you to:

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- Lanark Community Stewardship Council
- Leeds County Stewardship Council
- Limerick Forest Advisory Committee
- Raisin Region Conservation Authority
- Resource Stewardship Stormont, Dundas, & Glengarry Council

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