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 **LEGISLATIVE AND POLICY CONTEXT**

- Public input to strategic forest policy.
- Ontario's Policy Framework for Sustainable Forests (1994) established principles.



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 **PRINCIPLES FOR SUSTAINING FORESTS**

- Maintain ecological processes and conserve biological diversity
- Large, healthy, diverse and **productive** forests are essential
- Emulate natural disturbances and landscape patterns via forest practices
- **Ecosystems should not be harvested if it impairs their long-term health and productivity**

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### ECOLOGICAL SUSTAINABILITY..

- The need to produce products (e.g. timber) while maintaining site quality and ecological function (e.g. wildlife habitat)
- Protect and conserve our valuable soil, aquatic, forest and wildlife resources and their biological foundations
- Pre-cursor to social and economic sustainability

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### LEGISLATIVE AND POLICY CONTEXT

- Class Environmental Assessment for Timber Management on Crown Lands (r.s.o. 1993)
- Crown Forest Sustainability Act (r.s.o. 1994)




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### IS THIS ACHIEVABLE ?

- **PROBLEM**
  - ecosystems are complex
  - our understanding is minimal
- **SOLUTION**
  - precautionary approach
  - emulate natural disturbances




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## PLANNING FRAMEWORK

- All Crown Forests **MUST** have an approved Forest Management Plan
- Guidelines are to be considered during planning and implementation of forestry
- All proposed harvest blocks in the plan must have a silviculture prescription assigned and confirmed by the forester prior to operations commencing
- Use of ecosites / site types **REQUIRED**.

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## ECOSITES - WHY?

- Provides an ecological description of the production forest within a broader ecological land classification hierarchy
- Defined in terms of abiotic factors: soil depth, texture, moisture regime, hydrology and nutrient regime
- Captures biotic differences in plant community: composition and structure

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## LINKING ECOSITES AND SILVICULTURE



- Understanding of:
  - site productivity
  - stand dynamics
  - growth and yield
  - biological legacy
  - site hazards
  - silvicultural effectiveness

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## WHY GUIDES?

- Regulatory documents which are easily revised and updated (E.A. T&C 94a)
- Vehicle to provide "best science" direction, with flexibility for local decisions by professionals
- Establish "Bounds of Acceptable Practice" for forest industry
- Future application will be as "Standards of Practice"

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## NEW SILVICULTURE GUIDES ?

- Management of ecosystems for a species
- Contains ecological and management interpretations
- Clearly identifies 'Recommended', practices




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## RELATED GUIDELINES..

- Guidelines for the Protection of the Physical Environment
  - Compaction
  - Erosion
  - Nutrient loss
  - Loss of landbase
  - Hydrological issues




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## HOW IS THE GUIDE ORGANIZED?

- **Three Books, Book I includes:**
  - The Introduction
  - Silvicultural Practices
  - Autecology of Selected Forest Plants
  - Silvicultural Decision Tools
  - Applying This Guide

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## HOW IS THE GUIDE ORGANIZED?

- **Book II and III - Ecological and Management Interpretations for Black Spruce, Jack Pine and Aspen includes:**
  - The Ecological Framework
  - Ecological and Management Interpretations

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## Book I, SILVICULTURAL PRACTICES

- Provides an overview of the science, art and practice of silviculture
- Describes and defines most common silvicultural terms and practices



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### Book I, AUTECOLOGY OF SELECTED FOREST PLANTS



- Provides information about selected crop trees and competitors:
  - response to
    - disturbance
    - management
    - physical environment

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### Books II and III, ECOLOGICAL AND MANAGEMENT INTERPS

- Eco-interp's emphasize interaction among plants, animals and abiotic site factors
- Interpretations are for the 'Modal' or 'Average' condition

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Black Spruce - Labretation



Ecological conditions are described using ecosites or site types

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## ECOLOGICAL INTERPRETATIONS

- Includes:
  - Typical landscape associations
  - FEC Veg. and Soil-type relationships
  - Site structure and composition
  - Successional relationships
  - Species - site productivity
  - Advance growth potential
  - Natural Ingress probability & density

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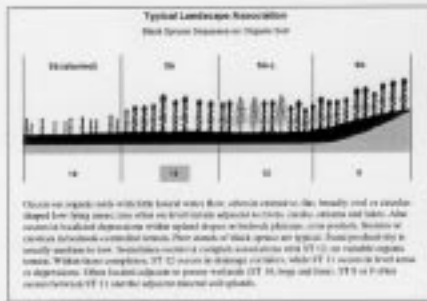
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Example - Ecological Interpretations

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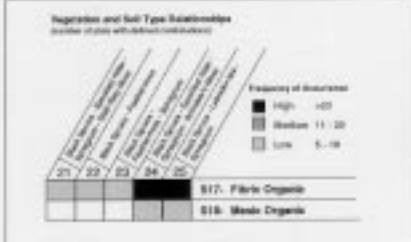
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Example - Ecological Interpretations

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Selected Species Habitat Use

Species	Forest Stage			Species Habitat Preference
	Open	Young	Mature	
Aspen				
Balsam Poplar				
Black Spruce				
Blue Spruce				
Canadian Larch				
Common Spruce				
Jack Pine				
White Pine				
Yellow Pine				
White Birch				
Black Birch				
Red Pine				
White Pine				
White Spruce				
Black Spruce				
White Spruce				
Black Spruce				
White Spruce				

Legend: □ Open Habitat    ● Preferred Habitat

**Example - Ecological Interpretations**

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Advance Growth Density (acres)

Species	Forest Stage	Density Type				
		Open	Young	Mixed Conifer	Hardwood	
Sp.		Density (trees/acre)	Stocking (%)	Density (trees/acre)	Stocking (%)	
Aspen	18000	84				
White Pine	11000	10	2800	84		
Black Spruce	29000	84				
<b>B</b>						
Aspen	130	0				
White Pine	200	8	3700	82		
Black Spruce	1800	14				

Legend: □ sample size < 5    □ sample size > 5

**Example - Ecological Interpretations**

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- ## MANAGEMENT INTERPRETATIONS
- Represents the best synthesis of our knowledge of silvicultural practices as related to the modal condition
  - Objective of 80% pure species stocking always in mind when developing table
  - Linkage to site limitations and hazard potential
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**Site Characteristics, Limitations and Hazard Potential**

Site	Disturbance					Soil					Hazard Potential				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1		2							4	3					Severe
2									4	4					Severe
3									4	3					Severe

**Assessments:**

- Minimize disturbance to soil and sediment for existing site damage.
- Minimize erosion following activity.
- Design all soil erosion control measures to prevent runoff.
- When erosion control is required, use best management practices to prevent sediment from entering water bodies or streams. Sediment control measures should be installed and maintained throughout the project.
- Minimize noise and vibration from site activities.

**Opportunities:**

- Consider opportunities for future site use.
- Use best management practices to prevent sediment from entering water bodies or streams.
- Minimize disturbance to soil and sediment from site activities.
- Use best management practices to prevent sediment from entering water bodies or streams.

**Example - Management Interpretations**

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**MANAGEMENT INTERPRETATIONS**

**R = RECOMMENDED**

This activity is ecologically appropriate (it relates well with to the biology of the species and the conditions of the site type, and minimizes the potential for damage to the physical environment), and can contribute to the management objectives.

Recommended means that the activity can work based on field experience and current knowledge.

Recommended does not necessarily suggest that this activity is the best or only option from a biological, ecological or management objective perspective.

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**MANAGEMENT INTERPRETATIONS**

**CR = CONDITIONALLY RECOMMENDED**

This activity is ecologically appropriate (it relates well to the biology of the species and the conditions of the site type, and minimizes hazards to the physical environment), and it can contribute to the management objectives, only if the conditions or limitations referenced in the comments section are addressed.

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## MANAGEMENT INTERPRETATIONS

### CR = CONDITIONALLY RECOMMENDED (con't)

The conditions or limitations in the comments section must be addressed each and every time the practice is referenced in the silvicultural ground rules or in a specific silvicultural treatment package. Otherwise use of the activity will be deemed to be "Not Recommended", which will trigger the exception process. Refer to the FMPM for details on this process.

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## MANAGEMENT INTERPRETATIONS

### NR = NOT RECOMMENDED

This activity is not ecologically appropriate (it does not relate well to the biology of the species and the conditions of the site type, or it presents potential for damage to the physical environment), or will not contribute to the management objectives or is not supported by field experience or current knowledge.

Selection of this activity in the silvicultural ground rules, or in a specific silvicultural treatment package triggers the "exception" process. Refer to the FMPM for details on this process.

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Black Spruce - Labrador	
Silvicultural Interpretations for the Establishment of Black Spruce	
Silvicultural Practice (Method/Action)	Comments
Harvest	R
Harvest Method Conventional	R
Site Work	CR Site selection from 10 to 30m apart. This technique may be prohibited to meet other management objectives.
Plant	R
Spacing	CR Spacing and row. This technique may be prohibited to meet other management objectives.
Soil	CR Soil may be used to determine that grass stands that already exist beneath the soil maintain a semi-permanent grass cover.
Disturbance	NR High priority in conditions
Drainage	NR

**Example - Management Interpretation**

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**Black Spruce - Labrador Inu**

Silvicultural Interpretations for the Establishment of Black Spruce

Logging Method	Notes
Full-tree	OK - Species or forest growth or average forest age/stand being harvested is suitable
Partial-cut	OK - See Logging Method comment
Clear-cut	OK - See Logging Method comment
Intermediate	OK - See Logging Method comment

OK = Recommended    OK+ = Conditionally Recommended    OK- = Not Recommended

**Example - Management Interpretation**

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**Black Spruce - Labrador Inu**

Silvicultural Interpretations for the Establishment of Black Spruce (cont.)

Forest Treatments	Comments
Site Preparation	
- skidding	OK - Skidding should only be done on heavy ground
- slash	OK
- mulching	OK

**Example - Management Interpretation**

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**Black Spruce - Labrador Inu**

Silvicultural Interpretations for the Establishment of Black Spruce

Forest Treatments	Comments
Regeneration	
- Natural	
- Advance growth	OK
- Seed	OK
- Regeneration (young)	OK - See species list or regenerate by species
- Shelter	OK
- Artificial (barley)	OK
- Planting	OK
- Stump	OK - See Silviculture Site Preparation comment

**Example - Management Interpretation**

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Soil Spray - Labels/ies		
Sociocultural Interpretations for the Calibration of Soil Sprays (user?)		
Treating Treatments		Comments
Fluopyram	R	
Metazachlor	CR	Be careful to apply. Ground pressure of equipment should be reduced. This may damage seedlings.
Metazachlor	CR	Ground pressure of equipment should be under 1000lb.
Azoxystrobin	R	
Spinosad	R	

R = Recommended CR = Cautionary Recommendation NR = Not Recommended

The establishment of best practices and aspects to better appropriate management requires for this site type

**Example - Management Interpretation**

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