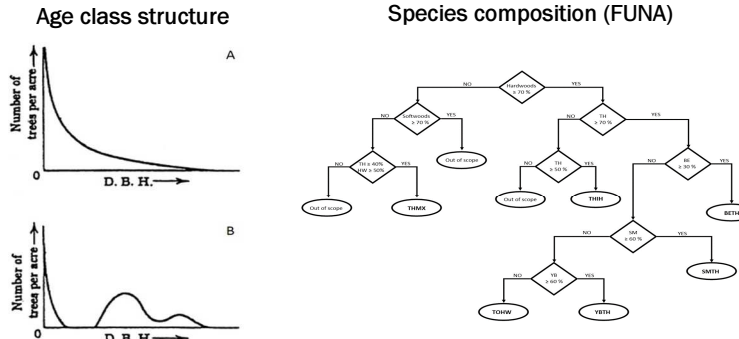




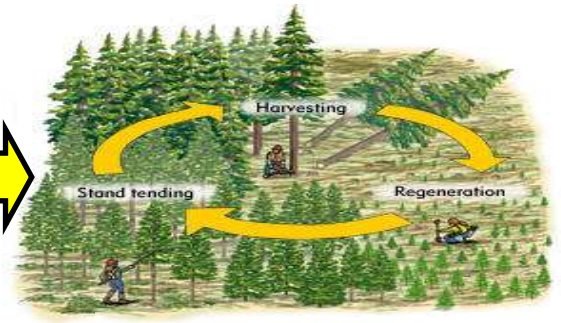
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Northern Hardwoods Research Institute

the NHRI Silviculture Prescription System

I- determination of stand type



II- choice of eligible systems



Source: Silvicultural systems, BC gov., 1998

IV- prescription

Method/Treatment: Group Irregular shelterwood

System: Irregular (2-aged) Irregular shelterwood

Sub-system: GIS

Stand Eligibility:

- FUNK at
- Structure: at
- Irregular stand structure
- Species that require some protection from exposure to regenerate successfully
- Mature to overmature development stage
- Poor quality stand or low stocking
- Species of different strata
- Lack of well-established regeneration
- Patchy distribution of trees in stand (groups)

Objectives of system:

The irregular high-forest system is characterized by a desire to regenerate the entire treated stand over a long period that is not continuous over time. It uses partial cuts of varying extents, allowing several vertical or horizontal slices of different age classes to be maintained so forest cover is permanent but not necessarily dominated by mature trees throughout.

The main objective of this system is to generate stands with an irregular structure (two-story or uneven-aged structure) including at least three age classes, primarily through natural seeding. This system is characterized therefore by the simultaneous presence of at least two cohorts of trees of different ages within the same stand. Because a wide spectrum of light conditions is created, this system allows species with different tolerances to shade and sensitivity to be grown together.

Description:

This pattern adapts to variations in stages of development often encountered in an irregular stand, and depends on recognizing groups of trees that require different treatments as follows:

- Groups of pole-size trees:** cover is partially removed; dominant cover is removed to encourage growth in the regeneration.
- Groups of regeneration or saplings:** if there are patches of established regeneration (saplings), dominant cover is removed locally (forming a gap) to allow enough light to encourage growth in the regeneration.
- Groups of mature trees:** if a mature high-forest is ready for harvest but regeneration is deficient, partial harvesting takes place, maintaining enough residual cover in areas that need to regenerate for successful establishment. Generally, 50-60% of the residual cover allows enough light to ground level to stimulate regeneration of desired intermediate shade-tolerant and tolerant species, while preserving protective cover that limits invasion by competition. Uniform distribution of residual seed-trees and spacing between them that allows their crowns to spread out are also essential.

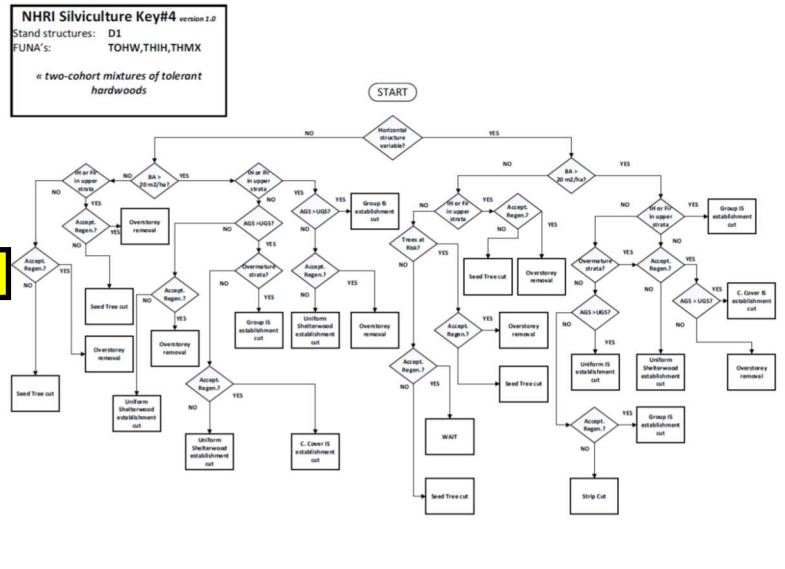
Desired Outcomes:

Immediate	Mid-term	Long-term
Free-to-grow saplings	Recruitment of new cohort of desired species	Full stocking of saplings and saplings
Revised advanced regeneration	Low competition by interfering strata	Low competition
Treated mature patches to promote regeneration	Good seedling survival	Healthy mature strata
No site damage	Establishment of at least 2 cohorts	No loss of merchantable volume
No residual trees at risk	No residual trees at risk	

Key success factors:

- Manage light in order to:
 - Contribute establishment and growth of regeneration of desired species
 - Optimize increase in the diameter of the stems used to produce control spaces for their crowns to spread
- Planned on good seed years
- Expose soil to generate seed germination beds
- Maintain adequate cover to protect saplings

III- treatment determination



V- instructions/cutting orders

	GSH Group Shelterwood Cut	USH Uniform Shelterwood Cut	CCIS, Continuous Cover IR Shelterwood US, Uniform Irregular Shelterwood	GIS Group Irregular Shelterwood	GSC Group Selection Cut	OSR Overstory Removal
Trail Network	width 6m, 12-16m center to center	width 6m, 12-16m center to center	width 5m, 20m center to center	width 5m, 20m center to center	width 5m, 20m center to center	width 5m, 25m center to center
Harvest in System	Full tree system or CTL system	Full tree system	Full tree system	CTL system	Full tree system or CTL system	Aucune préférence
BA	BA/Cover leave 35-40%	BA/Cover leave 35-40%	Keep minimum 40% of cover	Keep minimum 40% of cover	Reduce by 40% but NEVER below 16m2	N/A
cut priority (NHRI)	Cut ALL 48+cm trees with roundwood product, Trees with sawlog at risk of losing value, trees with poor form, Groups of UGS cut ALL (MAX opening 0.2ha), 24-46cm 1/3	Cut ALL 48+cm trees with roundwood product, Trees with sawlog at risk of losing value, trees with poor form (MAX opening 0.2ha), 24-46cm 1/3	Cut ALL 48+ cm trees with roundwood product (Max opening 0.2ha). Trees with sawlog at risk of losing value, Poor form, SW 1/4, MW 1/2, LW 1/2	Cut ALL 48+ cm trees with roundwood product (Max opening 0.2ha). Trees with sawlog at risk of losing value, Poor form, SW 1/4, MW 1/2, LW 1/2	UGS, Trees at risk, Trees with poor form, MW 1/4, LW 1/2	Cut ALL except AGS of 10-22cm (spaced at about 50' apart)

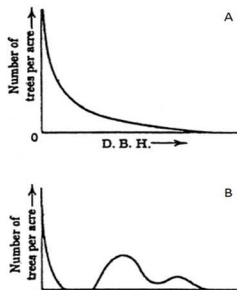


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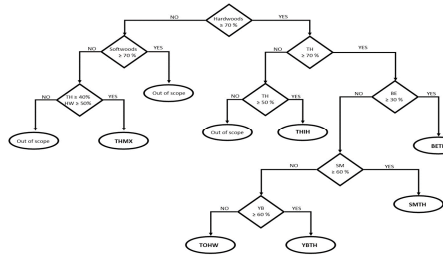
the NHRI Silviculture Prescription System

I- détermination du type de peuplement

Structure diamétrale



Composition espèces



II- choix de régimes sylvicoles



Source: Silvicultural systems, BC gov., 1998

IV- prescription

Method/Treatment: Group Irregular shelterwood

System: Irregular (2-aged) Irregular shelterwood

Sub-system: GIS

Stand Eligibility: FUNK at

- Structure: at
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- Lack of well-established regeneration
- Patchy distribution of trees in stand (groups)

Objectives of system: The irregular high-forest system is characterized by a desire to regenerate the entire treated stand over a long period that is not continuous over time. It uses partial cuts of varying extents, allowing several vertical or horizontal strata of different age classes to be maintained so forest cover is permanent but not necessarily dominated by mature trees throughout.

Description: The pattern adapts to variations in stages of development often encountered in an irregular stand, and depends on recognizing groups of trees that require different treatments as follows:

- Groups of pole-size trees:** cover is partially removed to maintain optimal growing space for enough crop trees (refer to stocking guides for residual targets).
- Groups of regeneration or saplings:** if there are patches of established regeneration (saplings), dominant cover is removed locally (forming a gap) to allow enough light to encourage growth in the regeneration.
- Groups of mature trees:** if a mature high-forest is ready for harvest but regeneration is deficient, partial harvesting takes place, maintaining enough residual cover in areas that need to regenerate for successful establishment. Generally, 50-60% of the residual cover allows enough light to ground level to stimulate regeneration of desired intermediate shade-tolerant and tolerant species, while preserving protective cover that limits invasion by competition. Uniform distribution of residual seed trees and spacing between them that allows their crowns to spread out are also essential.

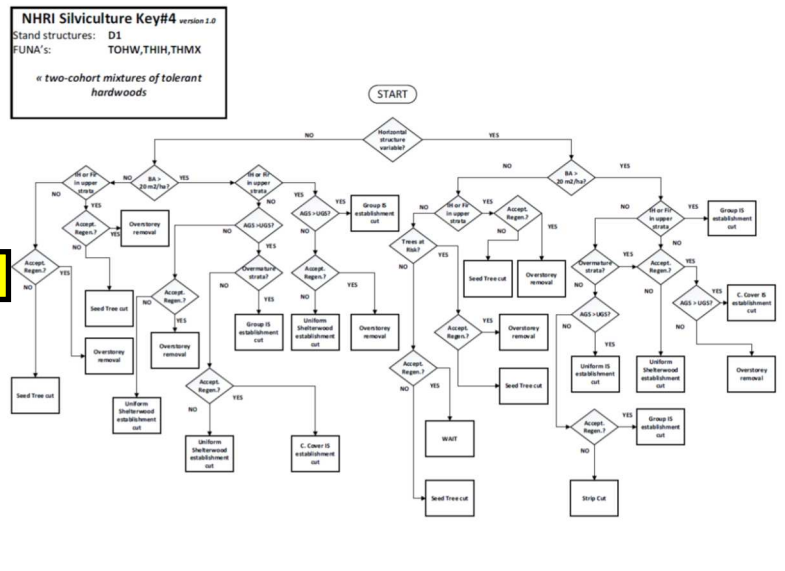
Desired Outcomes:

Immediate	Mid-term	Long-term
Free-to-grow saplings Revised advanced regeneration Treated mature patches to promote regeneration No site damage No residual trees at risk	Recruitment of new cohort of desired species Low competition by interfering strata Good seedling survival Establishment of at least 2 cohorts No residual trees at risk	Full stocking of saplings and saplings Low competition Healthy mature strata No loss of merchantable volume

Key success factors:

- Manage light in order to:
 - Contribute establishment and growth of regeneration of desired species
 - Optimize increase in the diameter of the stems used to provide canopy spaces for their crowns to spread
- Planned on good seed years
- Explore soil to generate seed germination beds
- Maintain adequate cover to protect saplings

III- diagnostique traitement



V- instructions/règles de coupe

	GSH Group Shelterwood Cut	USH Uniform Shelterwood Cut	CCIS, Continuous Cover IR. Shelterwood UGS, Uniform Irregular Shelterwood	GIS Group Irregular Shelterwood	GSC Group Selection Cut	OSR Overstory Removal
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