The Family Forest Network of Nova Scotia

Family Forest Network

An Overview for the 2023 NSWOOA AGM

Outline

- The Project
- Rationale
- The Network
- The Pilot
- Eligibility Requirements
- How Can I Participate?
- Questions

The Project

Over the next four years, FFN will conduct a large-scale pilot of ecological forestry on about 150 woodlots throughout Nova Scotia

- In late September 2021, the Forestry Innovation Transition Trust (FITT) awarded FFN a total of $9.8 million for the pilot and associated activities.
- The pilot will quantify the economic and environmental costs and benefits of forestry based on natural disturbance regimes, and develop recommendations for conducting ecologically sensitive management on small woodlands across a range of forest conditions.
- The project will work only with willing landowners who volunteer to participate. Forest stands to be included in the research must meet rigorous site selection criteria.

Family Forest Network

Rationale

While the techniques of ecological forestry have been the focus of numerous research studies over more than 30 years, there has been no large-scale pilot in Nova Scotia that assesses the costs and benefits of ecologically sensitive management forestry. This research project will study not only the short-term economics of ecological forestry, but also the long-term impacts on forest value, carbon storage, soil nutrients, biodiversity, and other non-timber values.

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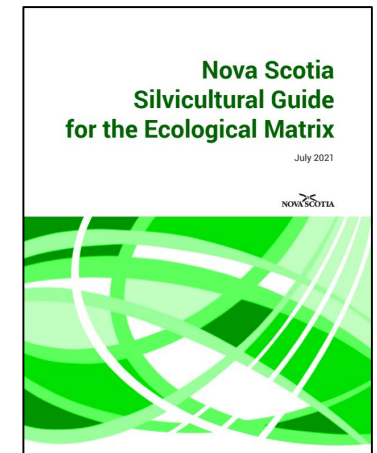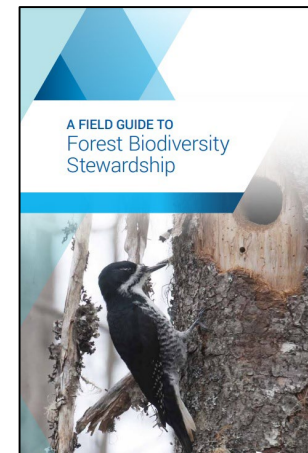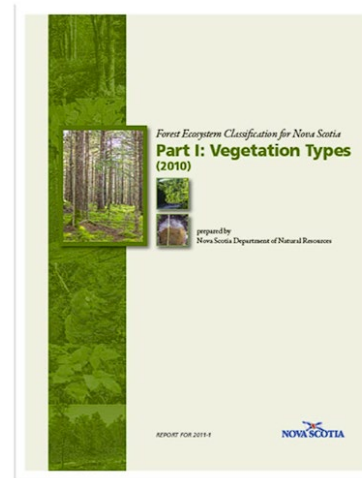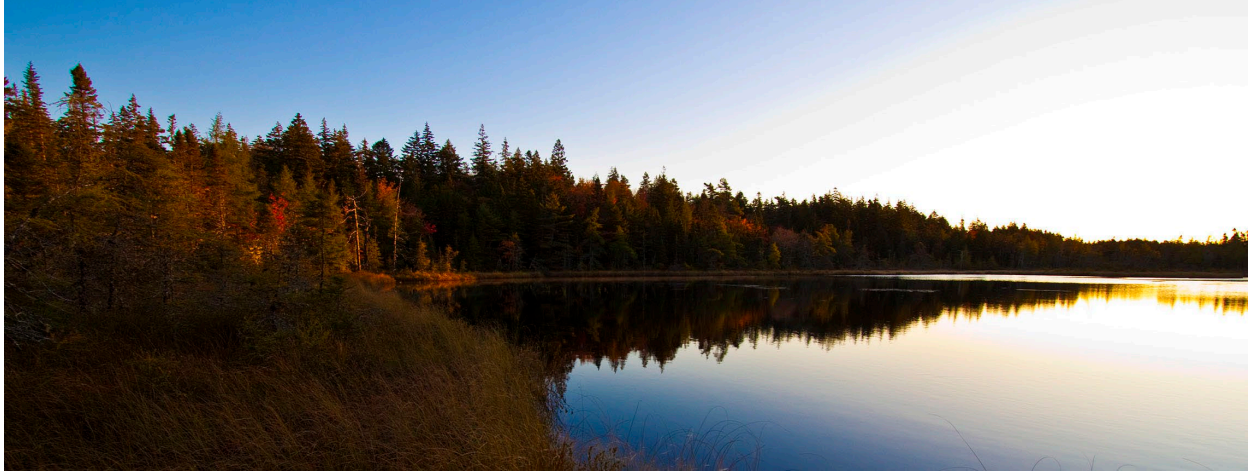Working Together for Nova Scotia's Woodlands
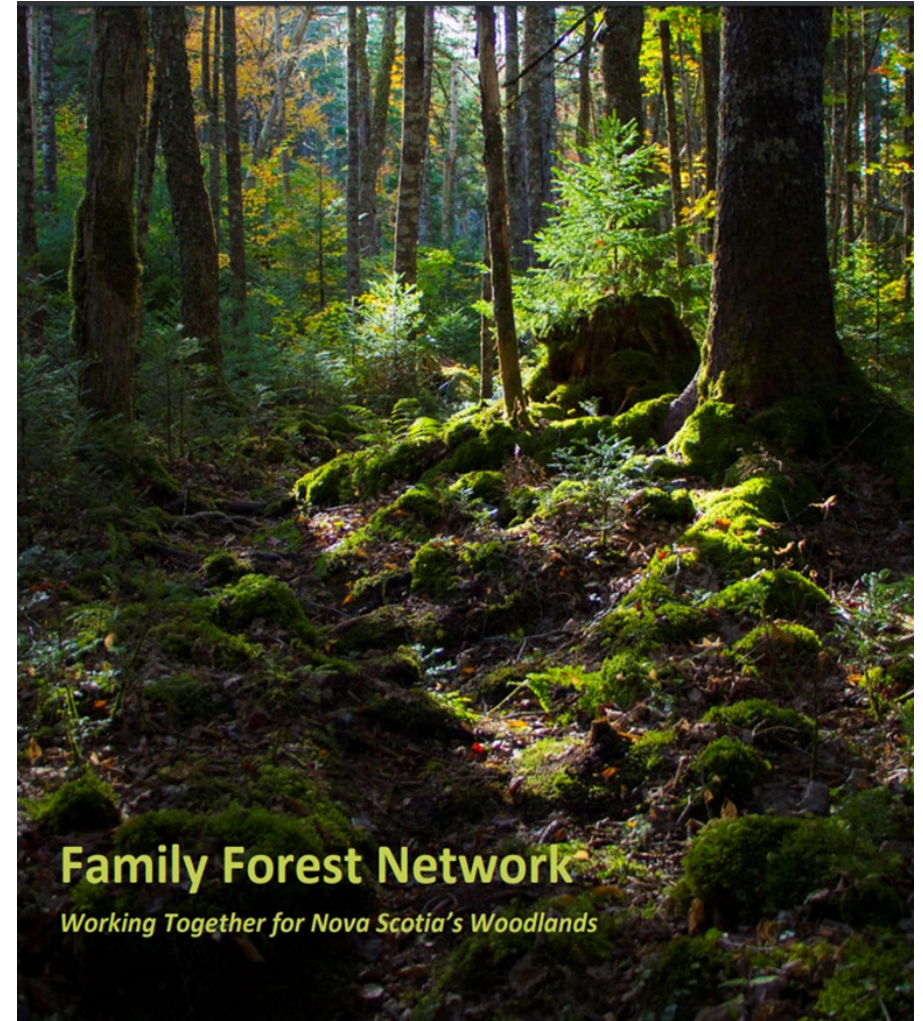
The Network

10 organizations that serve small-woodland owners are working together to develop the Family Forest Network.

The Pilot

For this research, "ecological forestry" aims to promote the restoration of stands to climax forest types appropriate for each parcel's vegetation, soil types and ecosites. Consistent with Palik and D'Amato (2016), we intend to treat forests "in ways that bring them closer … in structure, function, and composition to healthy, natural forests at all stages of successional development." The goals are to build diversity and resilience, ensure ecological integrity, and mitigate the impacts of climate change. To help determine appropriate prescriptions and successional pathways, the project will be rooted in existing NSDNRR publications and protocols (SGEM, FEC, Nutrient Budget Model, PTAs, etc.) adapted to a small-woodland context.

We will focus mainly on applying a mix of irregular gap and continuous cover shelter-wood treatments on sites dominated by early successional species. Robust data collection pre- and post-harvest (timber, biodiversity, carbon, and soil nutrients) will be standardized through a proprietary data management app compatible with new DNRR protocols.

Forest Ecosystem Classification for Nova Scotia
Part I: Vegetation Types (2010)

prepared by
Nova Scotia Department of Natural Resources

REPORT FOR 2011-5

NOVA SCOTIA

A FIELD GUIDE TO
Forest Biodiversity Stewardship

Nova Scotia
Silvicultural Guide
for the Ecological Matrix

July 2021

NOVA SCOTIA

The Pilot II

Determining acceptable and unacceptable growing stock (AGS and UGS) can be very subjective, especially in a restoration context. Instead of trying to redefine these terms to better account for non-economic values, we are considering whether to adopt a new category for Ecological Growing Stock (EGS). This designation could be used for trees that are desirable for retention but don't fit the standard definition for AGS, for example: a long-lived, shade-tolerant tree that doesn't have saw log potential but would be an important seed source; trees with high wildlife value (e.g. mast producers, wolf trees, large-diameter trees soon to become snags); or non-commercial species that are kept purely for diversity. For this project, maintaining or restoring natural diversity is critically important.

HOW DID WE CHOOSE THE VEG TYPES?

Criteria used in the selection process included:

- Does the VT have wide distribution or regional importance?

- Does the VT have ecological management challenges?

- Does the VT have significant climate change adaptation considerations?

- Does the VT have restoration opportunities or challenges?

Table 1. Count of inventory plot vegetation types (VTs) found on small private woodland in Nova Scotia (source: DNRR). VT codes are from the original FEC guide (Neily et al. 2013).

VT Code	Inventory Plot Count	Percent of Total	VT Code	Inventory Plot Count	Percent of Total	VT Code	Inventory Plot Count	Percent of Total
MW2	63	8.4	IH3/IH5	14	1.8	TH1a	6	0.8
MW4	58	7.7	SP4	14	1.8	OF3	4	0.5
SH5/SH6	55	7.3	SH1	13	1.7	IH2a	3	0.4
TH1	50	6.6	IH1	12	1.6	IH6a	3	0.4
OF1	41	5.4	SP5	12	1.6	TH8a	3	0.4
SH4/SH4a	40	5.3	TH7	12	1.6	IH1a	2	0.3
TH8	40	5.3	IH7	11	1.5	SH7	1	0.1
IH6	38	5.0	SH10	11	1.5	SP1	1	0.1
SH8	21	2.8	MW1	10	1.3	SP1a	1	0.1
MW5	19	2.5	OF5	9	1.2	SP3	1	0.1
IH4	18	2.4	IH2	8	1.1	SP8	1	0.1
TH5	18	2.4	SP4a/b	8	1.1	TH6	1	0.1
MW3	17	2.3	MW2a	7	0.9	SP10	1	0.1
TH3	17	2.3	OF2	7	0.9			
OF4	16	2.1	SH2	7	0.9			
SP6	16	2.1	SH3	7	0.9			
SP9	16	2.1	SH9	7	0.9			
SP7	15	2.0						
High			**Moderate**			**Low**		

| Group	VT Code	New VT Name	FEC Ecosite	Successional Stage	Geographic Region	Number of Treatments	Inventory Plot Count	PEM Coverage	Comment
1	MW2	Red spruce – Red maple – White birch / Goldthread	AC10/11(+)	Mid	West/Central	10	High	High	Province wide coverage
	MW6	White spruce – Red maple (White birch) / Starflower / Schreber's moss	AC10/11(+)	Early-Mid	East	5			
2	IH4	Trembling aspen / Wild raisin / Bunchberry	AC10/11	Early	Central	6	High	High	Regionally important VT
3	IH6	White birch – Red maple / Sarsaparilla – Bracken	AC10/11	Early	All	15	High	High	Province wide coverage
4	OF1	White spruce / Aster – Goldenrod / Shaggy moss	AC13/14	Early	Central/East	6	High	Low-High	Regionally important VTs with
	OF3	White pine – Balsam fir / Shinleaf – Pine-sap	AC13/14	Early-Mid	West	6			restoration focus
	OF4	Balsam fir – White spruce / Evergreen wood fern – Wood aster	AC13/14	Early-Mid	Central/East	6			
5	MW7	Balsam fir – Red maple / Wood-sorrel – Goldthread (old MW4)	AC10/11	Early-Mid	Central/East	10	High	High	Regionally important VTs
	MW8	White birch - Balsam fir / Starflower (old MW5)	AC10/11	Early	East	5			
6	MW9	Black spruce - Red maple / Bracken - Sarsasparilla (old SP6)	AC6/7	Early-Mid	West/Central	6	High	High	Common VT with CC adaptation considerations
7	TH1	Sugar maple / Wood fern – Hay-scented fern	AC13/14	Late	All	5	High	High	Common VTs with sugar maple
	TH2	Sugar maple / New York fern – Northern beech fern	AC13/14	Mid-Late		5			re-establishment problems
	TH9	Red maple – Sugar maple / Hay-scented fern – Evergreen wood fern	AC13/14	Mid-Late		5			
8	SH1	Hemlock / Needle carpet	AC10/11	Late	West/Central	5	Moderate	Low-High	Regionally important with HWA
	SH3	Red spruce – Hemlock / Wild lily-of-the-valley	AC10/11	Mid-Late	West/Central	5			adaptation considerations
9	SH6	White spruce – Balsam fir / Broom moss (old SH10)	AC10/11	Mid	East	6	Moderate	High	Regionally important VT with mgmt challenges
10	SP5	Black spruce / Feathermoss	AC6/7	Mid-Late	All	8	Moderate	Moderate	Common VTs with CC adaptation
	SP7	Black spruce / Lambkill – Wild raisin – Mountain holly	AC6/7	Mid-Late		8			considerations
11	MW10	Black spruce - Aspen / Bracken - Sarsasparilla (old SP8)	AC6/7	Early	West/Central	5	Low	Moderate	Regionally important VT with mgmt challenges
12	TH7	Yellow birch - White birch / Evergreen wood fern	AC13/14	Mid	East	5	High	Low-High	Regionally important VT
	TH8	Red maple – Yellow birch / Striped maple	AC13/14	Mid-Late	All	8			Province wide coverage
13	MW11	Red oak - White pine / Teaberry (old SP9)	AC5/6	Mid-Late	West	5	High	Low	Regionally important VTs with mgmt
	MW12	Red maple - White pine / Velvet-leaf blueberry / Bracken	AC5/6	Early-Mid		5			challenges
14	IH3	Large-tooth aspen / Christmas fern – New York fern	AC13/14	Early	West	5	Moderate	Low	Regionally important VTs with mgmt
	IH5	Trembling aspen – White ash / Beaked hazelnut / Christmas fern	AC13/14	Early-Mid	Central/East	5			challenges

High Retention Gap Irregular Shelterwood

FIGURE 5
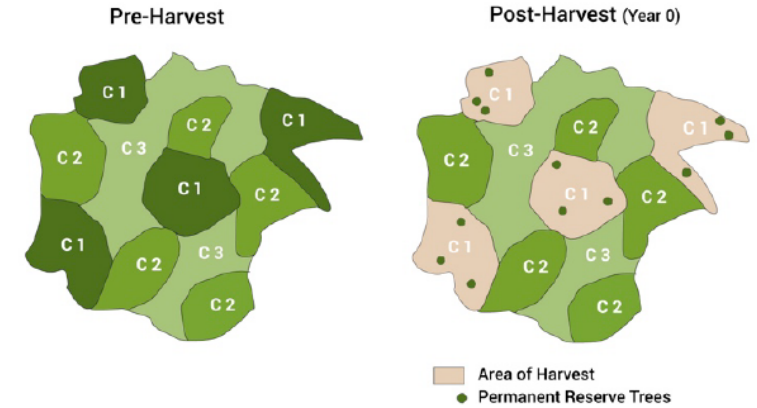
High-Retention Gap Irregular Shelterwood System

Sample of a timeline for a mature, even-age stand in **Zonal Acadian ecosites**

This timeline results in **three** cohorts after **three** harvests
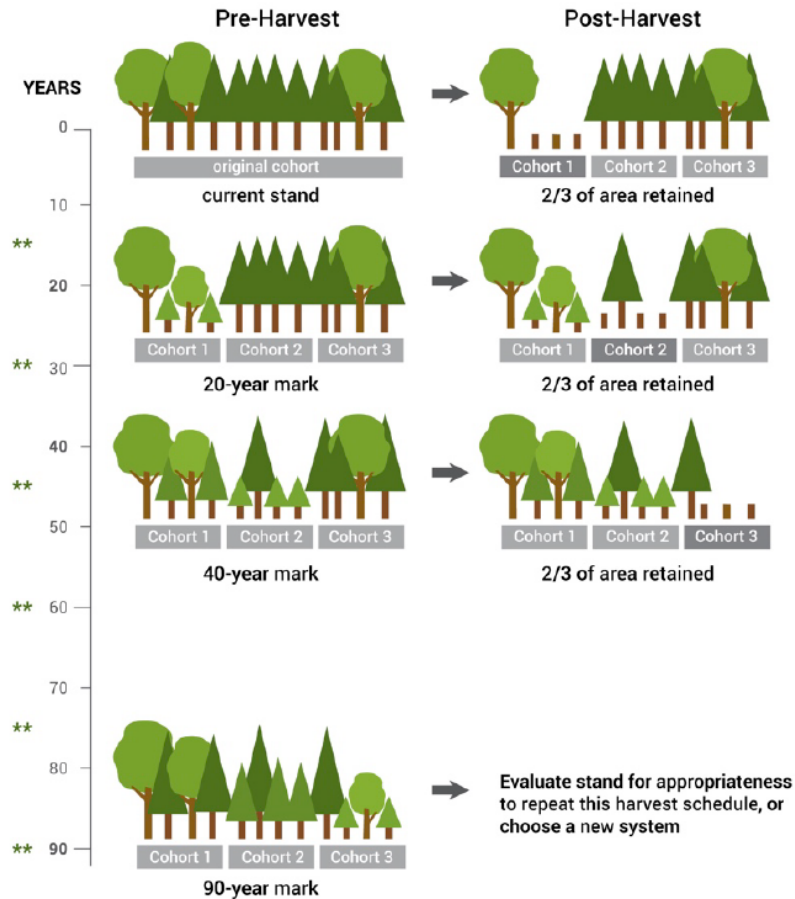
** PCT (pre-commercial thinning) can occur between harvests — commonly at the 15-year mark

Stand: Pre- and Post-Harvest

Area of Harvest
● Permanent Reserve Trees

Harvest Timeline

The cycle could repeat after three harvests.

Time (years)		Cohort 1 — C1 area: 1/3 age (yrs)	Cohort 2 — C2 area: 1/3 age (yrs)	Cohort 3 — C3 area: 1/3 age (yrs)	Permanent Reserves * #/ha	age (years)
0	pre	60	60	60		
**	post	0	60	60	7	60
20	pre	20	80	80		
**	post	20	0	80	14	80
40	pre	40	20	100		
**	post	40	20	0	20	100
90	pre	90	70	50		
	post	0	70	50	20	150

* There will be 10–20% total retention in each gap: 10% for smaller gaps (0.1 ha); 20% for larger gaps (0.2 ha). As part of the retention, 20 of the largest trees per hectare will be permanent reserves; the remaining are available for harvest when the next cohort is harvested.

** PCT (pre-commercial thinning) can occur between harvests — commonly at the 15-year mark.
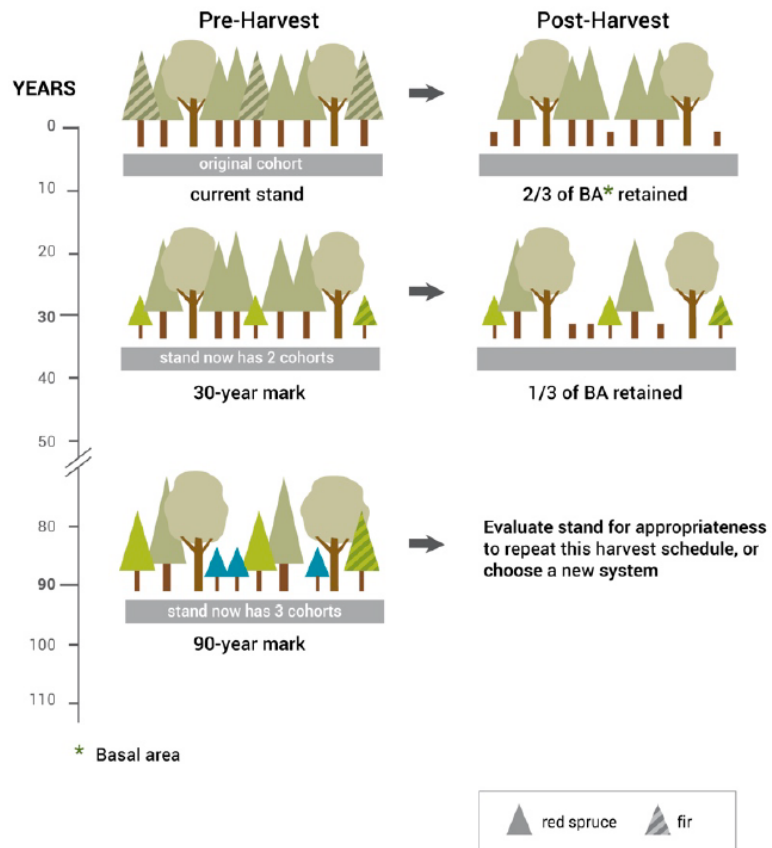
High Retention Continuous Cover Irregular Shelterwood

High Retention Continuous Cover Irregular Shelterwood System

Sample of a timeline for a even-age stand
in **Zonal Acadian ecosites**
This timeline results in **three** cohorts after **two** harvests

Short-lived species (like fir) are removed to transition to longer-lived species.

Pre-Harvest → Post-Harvest

- original cohort — current stand → 2/3 of BA* retained
- stand now has 2 cohorts — 30-year mark → 1/3 of BA retained
- stand now has 3 cohorts — 90-year mark → Evaluate stand for appropriateness to repeat this harvest schedule, or choose a new system

YEARS: 0, 10, 20, 30, 40, 50, 80, 90, 100, 110

* Basal area

red spruce / fir

OTHER REQUIREMENTS & CONSIDERATIONS

➢ Minimum size of 5ha per site
 - does not need to be contiguous, can be in patches

➢ Road building and upgrades cannot be funded through the FITT funding
 - we will look at forwarder dead hauls to reduce the ecological impact on the site

➢ We require that, barring any natural disaster, the site be left undisturbed for a minimum of 10 years post treatment
 - also asking permission to return periodically for monitoring purposes

How Can I Participate?

Because this is a research project, each forested parcel that will be studied must meet clearly defined criteria related to forest types and conditions. Some parcels will not qualify. If you are interested in exploring whether your land is eligible, please contact Ryan Dickie at Dickie.FFN@gmail.com.

The Family Forest Network partners will begin talking with landowners, contractors and forest professionals this spring. Sign up for more information at www.nswoods.ca/family-forest-network

Family Forest Network

Questions

To receive updates on the project, sign up at:
www.nswoods.ca/family-forest-network.html