

Pre-Treatment Assessment Information Bulletin No. 01-2025

Overview

Pre-treatment assessment (PTA) is a system designed to collect site, stand, and biodiversity conditions in order to produce an ecosystem-based treatment recommendation using The Silvicultural Guide for the Ecological Matrix (SGEM; McGrath et al., 2025). PTA is mandated by the Code of Forest Practice (NSDNR, 2012) to be performed prior to silvicultural operations on Crown land. It relies on Nova Scotia's Forest Ecosystem Classification (FEC) system (Neily et al., 2023; Keys et al., 2023). Following recommendations from the Independent Review of Forest Practices (Lahey, 2018), PTA has been expanded to also assess for potential old growth forests and other important biodiversity features. As of 2023, a PTA policy exists that describes the structure and administration of the PTA program.

This information bulletin describes the current PTA procedures with examples and a tally sheet. Each section below describes all the variables required for a PTA by subject area.

General Information

Record the basic information needed for PTA (see tally sheet on page 8).

- **Plot location:** The location of a given PTA plot (e.g., collected using a GPS or Survey123)
- **Cruise ID:** A unique identification number for a given PTA. For example, the two-letter county code, followed by the last two digits of the year collected, followed by a four-number unique identifier.
- **Planner ID:** Name or identification number of PTA practitioner.
- **Ecodistrict:** The ecodistrict where the PTA is situated. See Nova Scotia's [Ecological Land Classification \(ELC\)](#) for details. Ecoregion is needed to determine [nutrient-sustainable harvest levels](#), along with the FEC information described below.
- **Stand origin:** Natural or plantation/pre-commercial thinning stand origin.
- **Old growth potential:** Identification of whether the stand/plot has the potential to be old growth forest, as defined by the [Old-Growth Forest Policy for Nova Scotia](#) (i.e., old-growth predictor scores between 7 and 11).
- **Previous Treatments:** In addition to the stand origin above, which influences windthrow hazard, record any previous treatments that have occurred within the stand/plot.
- **Windthrow Hazard:** A low, moderate, or high hazard ranking for the likelihood of windthrow. Windthrow hazard is typically determined at the desktop after a PTA is completed in the field using the FEC soil type and the provincial [wind exposure map](#).

- **Notes:** Record any notes about unique features and observations around the plot that are relevant to management (e.g., vernal pools, recreation trails).

Forest Ecosystem Classification

The PTA procedures rely on the FEC system, which includes both a [field guide](#) and a [technical guide](#).

- **Ecosite group:** The ecosite group is either Acadian or Maritime Boreal, as defined in the FEC.
- **Soil Type:** The FEC soil type, including any phase (e.g., loamy, stony). Record whether the soil type is an inclusion or generally representative of the stand. It is also useful to record whether the soil type was identified through direct observation or was inferred because measurement was not possible (e.g., frozen-ground conditions).
- **Vegetation Type:** The FEC vegetation type. Record whether the vegetation type is an inclusion or generally representative of the stand. If the vegetation type is within the Planted Forest Group, record whether the plot is located on an Acadian, Maritime Boreal, or Coastal site.
- **Ecosite:** The FEC ecosite. Also identify whether the ecosite is zonal or azonal/edaphic.

Tree Tally

The PTA procedures are based on variable-radius plots done with a basal area factor (BAF) 2 prism.

- **Species:** Tree species. Note that only commercial species will count towards the growing stock of the plot but all species should be recorded. Being able to identify long-lived, intermediate-to-tolerant (LIT) and long-lived, tolerant (LT) species is an essential component of PTA. See Table 1 of the [SGEM](#) below that describes the silvics of common Nova Scotia trees. If the tree is planted, identify whether it is *in situ* or *ex situ*, as described in the [SGEM](#) and [FEC Field Guide](#).
- **Diameter at Breast Height (DBH):** Tree diameter (cm) at 1.3 m. Tally all living trees and dead trees greater than 20 cm DBH within the prism sweep, though only living merchantable trees (i.e., greater than 9 cm DBH) are counted towards the growing stock of the plot. Trees can be tallied in 2-cm diameter classes (e.g., 10, 12, 14). For example, the 20-cm class would include any tree between 19.1-21 cm DBH.
- **Height:** Total tree height (m), in 1-m classes. It is acceptable to use predicted heights from models that predict tree height based on DBH and/or site conditions.

- **Acceptable/Unacceptable Growing Stock (AGS/UGS):** Trees are acceptable or unacceptable growing stock, based on the definitions in Appendix 1 of the [SGEM](#).
- **Biodiversity Features:** Trees with biodiversity features include trees that have cavities, diversity (i.e., uncommon) trees, potential legacy trees, super-canopy trees, and mast trees. See Appendix 1 of the [SGEM](#) for more details.

Deadwood

The deadwood information includes both standing dead trees (i.e., snags) that are tallied in the prism sweep and coarse woody material (CWM) that is measured in a separate transect. The transect should be a straight, 20-m line in a consistent direction (e.g., always north). A dead tree is considered a snag if it is standing at a 45° angle or greater and is CWM when under 45°.

Snags

- **Species Group:** Softwood (SW), hardwood (HW), or unknown species.
- **DBH:** Snag diameter at 1.3 m. Only tally snags that are greater than 20 cm DBH. Snags are tallied in 10-cm diameter classes (e.g., 21-30 cm).
- **Biodiversity Feature:** Snags that contain cavities.

CWM

- **Species Group:** SW, HW, or unknown species.
- **Diameter:** Measure CWM pieces that are greater than 20 cm in diameter where the transect crosses the central axis or pith of the piece. Diameter is measured perpendicular to the pith, not along the transect line. CWM pieces are measured in 20-cm diameter classes (e.g., 21-40 cm).
- **Biodiversity Feature:** CWM pieces that contain cavities.

Table 1. Silvics of common Nova Scotia trees, taken from McGrath et al. (2025).

Table 1. Silvics of Common Nova Scotia Trees.											
Species	Full Seed-Bearing Age (years)	Senescence and/or Onset of Understory Reinitiation (years)	Maximum Longevity/ Oldest Recorded Specimen (years)	Wind-firmness	Shade Tolerance	Rooting Depth	Flowers	Reproduction Method	Seed Dispersal Distance (m)	LIT	LT
Softwoods											
Red Spruce	45	100	335*	M	T	Shallow	M	SE	100	Yes	Yes
Eastern Hemlock	50	100	382*	P	T	Shallow	M	SE	20	Yes	Yes
White Pine	50	100	288*	G	IM	Deep	M	SE	200	Yes	No
White Spruce (OF, CA, CB, HL)	40	60	70	M	IM	Shallow	M	SE	12	No	No
White Spruce (Other FG)	60	80	150	M	IM	Shallow	M	SE	12	Yes	No
Black Spruce/Coastal	30	70	277/150*	P	IM-T	Shallow	M	SE, L	100	No	No
Balsam Fir	30	50	160*	P	T	Shallow	M	SE	30	No	No
Red Pine	50	70	300	M-G	I	Deep	M	SE	12	No	No
Jack Pine	40	60	200	G	I	Deep	M	SE	30	No	No
Eastern Larch	40	60	150	M	I	Shallow	M	SE, L	50	No	No
Hardwoods											
Sugar Maple	80	100	276*	G	T	Deep	Po	SE, SP	100	Yes	Yes
Yellow Birch	70	90	370*	G	IM	Deep	M	SE, SP	150	Yes	No
White Ash	50	80	250	G	IM-T	Deep	D	SE, SP	140	Yes	No
Red Oak	50	80	205*	M	IM	Deep	M	SE, SP	5**	Yes	No
Red Maple (TH)	40	80	188*	M	IM-T	Shallow	Po/D	SE, SP	100	Yes	No
Red Maple (Other FG)	40	60	100	M	IM-T	Shallow	Po/D	SE, SP	100	No	No
White Birch	50	50	120	M	I	Deep	M	SE, SP	150	No	No
Trembling Aspen	30	50	100	M	I	Shallow	D	SE, SU, SP	100	No	No
Large-tooth Aspen	30	50	100	M	I	Shallow	D	SE, SU, SP	100	No	No

Sources: Harrison, Silvics of Common Maritime Softwoods and Hardwoods. Burns and Honkala, Silvics of North America, Volume 1, Conifers, and Volume 2, Hardwoods, 1990. Farrar, Trees in Canada, 1995. Ashton and Kelty, The Practice of Silviculture – Applied Forest Ecology, 2018

Species: White Spruce (OF, CA, CB, HL): White Spruce of Old Field, Coastal Acadian, Coastal Boreal, and Highland forest groups. White Spruce (Other FG): White Spruce in all other forest groups. Red Maple (TH): Red Maple in the Tolerant Hardwood forest group. Red Maple (Other FG): Red Maple in non-Tolerant Hardwood forest groups. **Full Seed-Bearing Age:** Age when trees generally reach full seed production. **Senescence/Onset of Understory Re-initiation:** Age when stand generally begins to regenerate as openings in canopy occur due to tree senescence or natural disturbance of the stand (Ashton & Kelty, 2018). **Maximum Longevity:** Individual trees have the potential to live to these ages. **Windfirmness:** P – Poor; M – Moderate; G – Good. **Shade Tolerance:** I – Intolerant; IM – Intermediate; IM-T – Intermediate to Tolerant; T – Tolerant. **Flowers:** M – Monoecious; D – Dioicous; P – Prefect; Po – Polygamous. **Reproduction Method:** SE – Seed; L – Layering; SU – Suckering; SP – Sprouting. **Seed Dispersal Distance (m):** **Red Oak – Birds and mammals will take seeds over much longer distances. **LIT:** Long-Lived Intermediate-Tolerant species. **LT:** Long-Lived Tolerant species. *Ages modified based on Department FEC and Forest Research Plot Database (NSDLF, 2022. An Old-Growth Forest Policy for Nova Scotia)

Plot Age

A minimum of one tree must be cored with an increment borer and aged for each PTA plot. If the plot is not suspected to be old growth, the age tree is selected as a co-dominant tree of average diameter (e.g., the quadratic mean diameter of the plot). The most abundant, merchantable species should be used and LIT species are preferred. If old growth is suspected, the tree selected to age should be from the most dominant LIT/LT species in the plot and should be representative of the top 20% of the basal area. See the [old growth forest assessment procedures](#) for more details.

- **Species:** Species of the tree selected for aging.
- **Age:** The breast height age of the sampled tree.
- **DBH:** Diameter at 1.3 m of the tree selected for aging.

Regeneration

Regeneration stocking is estimated at 2.44-m (i.e., 8 ft) spacing and includes trees that are at least 30 cm in height and 9 cm DBH or less. Trees should be acceptable growing stock to count towards regeneration estimates. Regeneration estimates should be based on a visual assessment of the area surrounding the PTA plot within the field of vision, not just within the plot.

- **Stocking (All Commercial Species):** Percent stocking of all commercial tree species in 10% stocking classes.
- **Stocking (LIT Species):** Percent stocking of all LIT species in 10% stocking classes.
- **Beech Stocking Greater than 25%:** The stocking of beech regeneration greater than 25%. The highly shade-tolerant beech seedlings and suckers outcompete other hardwoods but are susceptible to beech bark disease and are not preferred growing stock.
- **Softwood LIT Regeneration Height (2-6 m):** Softwood regeneration height is within the suitable window for pre-commercial thinning.
- **Hardwood LIT Regeneration Height (6-9 m):** Hardwood regeneration height is within the suitable window for pre-commercial thinning.

Forest Structure

The vertical and horizontal structure of the stand, along with several other stand attributes, are important for prescribing the appropriate silvicultural treatment and for assessing and conserving biodiversity. These attributes should be based on a visual assessment of the area surrounding the PTA plot within the field of vision, not just within the plot.

- **Blowdown:** Percent blowdown, by basal area. Blowdown includes wind-damaged trees that are uprooted, have broken stems, or are leaning at an angle greater than 15° from vertical.
- **LIT Seed Tree Stocking:** Percent stocking of LIT trees of seed-bearing age (Table 1) at 20-m spacing.
- **Understory Strata:** Percent cover of woody plants in the understory between 1 and 3 m in height, recorded as either trees or shrubs.
- **Horizontal Structure:** The horizontal structure of the stand, recorded as either patchy or uniform. For example, a spruce-fir stand might have patches of balsam fir surrounded by red spruce or the fir might be uniformly mixed with the spruce across the stand.
- **Vertical Structure:** The vertical structure of the stand, recorded as even-aged or uneven-aged. An uneven-aged stand has at least two age classes. Each age class must be at least pole sized (i.e., greater than 20 years of age), with age classes separated by at least 20 years. Vertical canopy height is not necessarily indicative of multiple cohorts. When determining the number of cohorts in a stand, it is best to think of the possible sequence of disturbance events responsible for the varied height classes that may be observed. A distinct cohort has regenerated because of a clearly different disturbance event. These often result in gap or patch openings in the dominant canopy.
- **One Cohort Senescent:** At least one cohort is past the onset age of senescence (Table 1).
- **AGS/Patches of AGS:** The AGS of the stand or patches of AGS within the stand are above the basal area threshold required for selection management. This threshold is specific to the FEC Forest Group and only applies to the Spruce Hemlock, Mixedwood, and Tolerant Hardwood groups.

References

Keys, K., Neily, P., Maston, S., Quigley, E., Basquill, S., & Stewart, B. (2023). *Forest ecosystem classification for Nova Scotia: Technical guide* [Biodiversity Tech Report 2023-003]. Truro, NS: NDSNR.

Lahey, W. (2018). *An independent review of forest practices in Nova Scotia*. Halifax, NS: NSDNRR.

McGrath T., Pulsifer, M., Seymour, R., Doucette, L., Forbes, G., McIntyre, R., Milton, R., Cogan, L., Retallack, M., Crewe, T., Maston, S., Ring, J., Chard, J., Mahoney, M., & Steenberg, J. (2025). *Nova Scotia silvicultural guide for the ecological matrix: Second edition*. Truro, NS: Nova Scotia Department of Natural Resources.

Neily, P., Basquill, S., Quigley, E., Keys, K., Maston, S., & Stewart, B. (2023). *Forest ecosystem classification for Nova Scotia: Field guide* [Biodiversity Tech Report 2023-002]. Truro, NS: NSDNR.

NSDNR. (2012). *Nova Scotia's Code of Forest Practice: A framework for the implementation of sustainable forest management. Guidelines for Crown land* [FOR 2012-3]. Halifax, NS: NSDNR.

Nova Scotia Department of Natural Resources Pre-Treatment Assessment Tally Sheet

Cruise ID:	Planner ID:	Waypoint:
Ecodistrict:	Organization:	Location:

Stand Origin: Natural / Planted/PCT Ecosite Group: Acadian / Maritime Boreal OGF Potential:

Soil Type:	Vegetation Type:	Ecosite:
<input type="checkbox"/> Inclusion	<input type="checkbox"/> Inclusion	Planted: <input type="checkbox"/> Acadian / <input type="checkbox"/> MB / <input type="checkbox"/> Coastal

LIVE TREES

Tree ID	Species	Dbh (cm)	Ht (m)	AGS	LIT	Cavity	Diversity	Legacy	S. Canopy	Mast	PL in situ	PL ex situ
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
Total												

DEAD TREES/SNAGS

Dbh (cm)	SW	HW	Unknown	Cavity
21 - 30				
31 - 40				
41 - 50				
51 - 60				
> 60				

COARSE WOODY MATERIAL

D (cm)	SW	HW	Unknown	Cavity
21 - 40				
41 - 60				
> 60				
Transect Direction:			Length (m):	

Uneven-Aged:	<input type="checkbox"/>
One Cohort Senescent:	<input type="checkbox"/>
AGS/Patches of AGS:	m ² /ha
Horizontal Structure:	
<input type="checkbox"/> Patchy / <input type="checkbox"/> Uniform	

Beech Regeneration Stocking > 25%:	<input type="checkbox"/>
SW LIT Regeneration Height 2 - 6 m:	<input type="checkbox"/>
HW LIT Regeneration Height 6 - 9 m:	<input type="checkbox"/>

Average Sample Tree	
Species	
Age	
Dbh (cm)	

OGF Sample Tree	
Species	
Age	
Dbh (cm)	

Previous Treatments

Regeneration Stocking (%) at 2.44 m (All Commercial Species)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100
Regeneration Stocking (%) at 2.44 m (LIT Species)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100

Blowdown (%)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100
LIT Seed Tree Stocking (%)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100

Understory Strata (%)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100
Understory Dominated By: <input type="checkbox"/> Trees / <input type="checkbox"/> Woody Shrubs

Nova Scotia Department of Natural Resources Pre-Treatment Assessment Tally Sheet

Cruise ID: CO251234	Planner ID: 0529	Waypoint: 500696, 5030501
Ecodistrict: 380	Organization: NSDNR	Location: Riversdale

Stand Origin: Natural / Planted/PCT Ecosite Group: Acadian / Maritime Boreal OGF Potential:

Soil Type: ST2	Vegetation Type: SH5	Ecosite: AC10 (Zonal)
<input type="checkbox"/> Inclusion	<input type="checkbox"/> Inclusion	Planted: <input type="checkbox"/> Acadian / <input type="checkbox"/> MB / <input type="checkbox"/> Coastal

LIVE TREES

Tree ID	Species	Dbh (cm)	Ht (m)	AGS	LIT	Cavity	Diversity	Legacy	S. Canopy	Mast	PL in situ	PL ex situ
1	RS	14	11		Y							
2	BF	20	12	Y								
3	BF	20	13	Y								
4	BF	16	11	Y								
5	RS	10	6	Y	Y							
6	RS	20	11	Y	Y							
7	BF	16	12	Y								
8	RS	10	6	Y	Y							
9	BF	12	9	Y								
10	BF	14	12									
11	RS	10	7	Y	Y							
12	BF	20	11	Y								
13	RS	14	9	Y	Y							
14	RS	38	14	Y	Y	Y		Y				
15	RS	10	8		Y							
16												
17												
18												
19												
20												
21												
22												
23												
24												
Total	15			12	8	1		1				

DEAD TREES/SNAGS

Dbh (cm)	SW	HW	Unknown	Cavity
21 - 30	III			
31 - 40				
41 - 50				
51 - 60		I		Y
> 60				

COARSE WOODY MATERIAL

D (cm)	SW	HW	Unknown	Cavity
21 - 40	II			
41 - 60				
> 60				

Transect Direction: **NE** Length (m): **20**

Uneven-Aged:	<input type="checkbox"/>
One Cohort Senescent:	<input type="checkbox"/>
AGS/Patches of AGS:	24 m ² /ha
Horizontal Structure:	<input type="checkbox"/> Patchy / <input checked="" type="checkbox"/> Uniform

Beech Regeneration Stocking > 25%:	<input type="checkbox"/>
SW LIT Regeneration Height 2 - 6 m:	<input type="checkbox"/>
HW LIT Regeneration Height 6 - 9 m:	<input type="checkbox"/>

Average Sample Tree	
Species	RS
Age	42
Dbh (cm)	17

OGF Sample Tree	
Species	
Age	
Dbh (cm)	

Previous Treatments
PCT

Regeneration Stocking (%) at 2.44 m (All Commercial Species)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100

Regeneration Stocking (%) at 2.44 m (LIT Species)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100

Blowdown (%)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100

LIT Seed Tree Stocking (%)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100

Understory Strata (%)
0 - 10 - 20 - 30 - 40 - 50 - 60 - 70 - 80 - 90 - 100
Understory Dominated By: <input checked="" type="checkbox"/> Trees / <input type="checkbox"/> Woody Shrubs