

Pre-Treatment Assessment Information Bulletin No. 01-2026

Private Land Pre-Treatment Assessment Application

Peter Bishop & James Steenberg

1. Introduction

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). It also relies heavily on Nova Scotia's Forest Ecosystem Classification (FEC) system (Neily et al., 2023; Keys et al., 2023).

PTA is mandated by the Code of Forest Practice (NSDNR, 2012) to be performed prior to silvicultural operations on Crown land. However, there is also a strong demand and existing user base for PTA on the province's private landbase, which comprises approximately two thirds of the province's forests. Moreover, PTA is currently a requirement to access certain types of silviculture funding for private landowners. The current PTA model being used by practitioners on private land is the [FoxPro PTA version 6](#). However, this program is written in an older programming language that is no longer supported by Microsoft or NSDNR.

There is a new PTA program available for Crown licensees developed using Esri software, but it will not be available to the public due to its licensing requirements. Consequently, a new stand-alone and simplified PTA program was developed that is publicly available without cost and intended for use on private land or for educational purposes. It is currently designed to run on a Windows desktop or laptop computer rather than to be used on mobile devices or tablets. An accompanying resource for the program is the [PTA procedures and tally sheets](#) (NSDNR, 2025a), which are intended to be used in the field and in tandem with the program.

The purpose of this information bulletin is to describe and demonstrate the new PTA private-land application and accompanying NSDNR resources to aid in its use.

2. Reference Documents

Recommended reference documents to accompany this PTA application include:

- **FEC:** The FEC is a core reference guide for describing the province's forest ecosystems and information for ecosystem-based silviculture prescriptions using PTA. The Nova Scotia FEC includes both a [field guide](#) (Neily et al., 2023) and a [technical guide](#) (Keys et al., 2023).

- **SGEM:** The PTA application provides users with all the necessary information to use the decision keys within the [SGEM](#) (McGrath et al., 2025) and obtain an ecological silviculture prescription. Unlike previous PTA applications, this program does not automatically calculate a prescription internally; it is designed to be a planning and educational resource for private landowners and to be nimble and adaptable to future changes in provincial silviculture guidelines and landowner values.
- **ELC:** The provincial [Ecological Land Classification](#) (ELC; Neily et al., 2017) is a hierarchical system for mapping regions of enduring features based on climate, elevation, topography, bedrock formation, and vegetation. The identification of ecodistricts from the ELC is part of the PTA process, which enables the determination of nutrient-sustainable harvest levels (see below) and allows for practitioners to connect to any landscape-level objectives (e.g., through [Ecological Landscape Analysis](#)).
- **SusMAI:** Nova Scotia's forest soils were historically impacted by acidic deposition from acid rain, which can threaten the nutrient sustainability of timber harvests. [Nutrient sustainable harvest levels](#) (SusMAI) for all combinations of ecodistrict and FEC soil type and vegetation type were calculated using Nova Scotia's Nutrient Budget Model (Keys & Bockstette, 2023) and can be used in conjunction with PTA.

3. Pre-Treatment Assessment Procedures and Application Overview

A full overview of the PTA procedures that are required on Crown land and recommended for private land can be [found online](#) and should be referenced for effective use of this application (NSDNR, 2025a). Typically, a PTA is conducted with a sampling intensity of one plot per two hectares with plots being either randomly located or located along a regular grid. The program requires variable-radius plots done with a basal area factor (BAF) 2 prism. Note that PTA training is available annually through the Association for Sustainable Forestry (ASF).

Within the PTA procedures information bulletin (NSDNR, 2025a), there is a tally sheet provided that contains all the necessary fields for data collection. The intent of the private-land PTA application is for data to be collected in the field on these tally sheets or other formats preferred by practitioners and then entered into the desktop application after field data collection is completed. However, future programming and releases of the application will investigate the feasibility of mobile applications.

The application requirements are an operating system of Windows 10 version 2004 (build 19041.0), Windows 11, or later, and a minimum screen resolution 1280 x 720. The application relies on .NET 8.0, which is included in the installer and will be automatically installed during the setup if it does not yet exist on the machine.

The application is intended for use on desktop machines, and the current version has not been tested on Windows tablets. It saves data to a file with a .PTA file extension for easy re-opening in the application or sharing with other users/practitioners. The file is an SQLite database and can also be opened with database management software, e.g. DB Browser.

On launch of the application, it will start a new file by default. To open an existing file, click **Open** in the top right. To save your work, click **Save** in the top right and choose a location to save the file (.PTA format). When exiting the program, if you will be prompted to Save all your changes.

4. Application Usage

The following sections describe the necessary information to collect/enter for all the pages or tabs of the private-land PTA application.

4.1. Stand Information

This page collects basic descriptive information for a PTA project (Fig. 1).

- **Stand Number:** A user can select and edit stand numbers. A PTA project file can have more than one stand or block. Using sequential short integers (e.g., 1, 2, 3, etc.) for the stand number is recommended.
- **Cruise ID:** A unique identification number for a given PTA is required. 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:** Enter the name or identification number of the PTA practitioner.
- **Location:** Enter a descriptive location name of a PTA project.
- **Organization:** Make note of the organization responsible for harvest planning.
- **Area:** The total area of the stand in hectares must be provided, as this number is used in summary calculations and should therefore be as accurate as possible.
- **Comment:** This text field provides an opportunity to record any noteworthy comments relevant to the stand level, or the scale of an entire PTA project.

4.2. Plot Information

This page collects descriptive plot information. A PTA project and stand will typically have multiple plots.

- **Plot Number:** A user can select and edit plot numbers. Using sequential short integers (e.g., 1, 2, 3, etc.) for the plot number is recommended.
- **Comment:** This text field provides an opportunity to record any noteworthy comments relevant to the plot level that are relevant to management, such as whether or not the plot is anomalous in the stand (i.e., and inclusion) or is near a noteworthy feature like a vernal pool or a recreational trail.
- **Location:** Enter the easting and northing of a plot location in Universal Transverse Mercator (UTM) coordinates.
- **Plot History:** Identify the plot treatment history and past silviculture. If the plot is planted, identify if it is Acadian or Maritime Boreal, as defined by the FEC.
- **FEC:** The ecosite group (i.e., Acadian or Maritime Boreal), soil type and phase (e.g., loamy, stony), and vegetation type are collected during PTA to facilitate ecological treatment recommendations (Neily et al., 2023; Keys et al., 2023). The application will then display the FEC ecosite based on the provided information.
- **Ecodistrict:** Record the ecodistrict where the PTA project is situated (Neily et al., 2017).
- **Wind Exposure:** Select the exposure class, which refers to the relative openness of a site to weather conditions, particularly wind, and ranges from sheltered to exposed. The GIS layer for wind exposure can be [found online](#) (Keys et al., 2017). Along with soil type, it is used to determine windthrow hazard of a stand using the windthrow hazard rating categories provided in the SGEM (McGrath et al., 2025).
- **Regeneration and Regeneration Stocking:** Assess the regeneration of all commercial species and of LIT species only. All regeneration variables rely on visual estimates of the surrounding area within the field of vision, not just within the plot. Also identify whether the softwood and hardwood LIT species regeneration is within the window suitable for pre-commercial thinning, as well whether beech regeneration is above 25%. See the PTA procedures for additional details.
- **Forest Structure:** Collect a series of variables that describe stand structure and are used in the SGEM decision keys. The first is whether or not the stand is uneven aged, and if it is what is the basal area of acceptable growing stock (uniformly distributed or in patches) and whether one age class is senescent.

Additional variables include the percents of LIT seed tree stocking to 20 m, blowdown, and understory strata. For the understory strata, indicate whether they are dominated by tree or shrub species as well. Lastly, indicate whether the forest's horizontal structure is uniform or patchy. All of these variables are assessed within the field of vision around a PTA plot, not within the plot only. See the PTA procedures for additional details.

- **Age Tree:** Measure the age of a tree of average diameter for each PTA plot and record its species and DBH. If there is potential old growth in the stand, PTA practitioners may also collect plot age using the procedures for old growth scoring and aging. Old growth forest resources can be found [online](#).

4.3. Living Trees

On this page, living trees within the plot are tallied along with their key attributes needed for PTA. Note that if a practitioner encounters a snag during their prism sweep in can be entered into the application's subsequent page.

- **Species:** Enter the species of the tallied tree.
- **DBH (cm):** Enter the diameter at breast height of the tallied tree. Trees are typically 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:** Record the total tree height (m) of the tallied tree.
- **Height:Diam (m/cm):** The program automatically calculates the ratio of tree height to its DBH. This ratio is an important indicator of a tree's vulnerability blowdown or stem breakage from wind.
- **Acceptable/Unacceptable Growing Stock (AGS/UGS):** Record whether tallied trees are acceptable or unacceptable growing stock. Refer to the SGEM for further information on the identification of AGS and UGS (McGrath et al., 2025).
- **Biodiversity Features:** PTA practitioners have the option of recording biodiversity features during the tally, including whether a tree has a cavity, is a diversity (i.e., uncommon) species, or is a mast tree.

To enter tree data into the tally section:

- If the number of trees in the plot is known, enter it in the **Number of Trees In Plot** field and then hit **Refresh**; this will add the corresponding number of rows in the table.

- Click the **Species** text box, and start typing either the species code (e.g., rM for red maple) or the species name (e.g., red maple). Hit **Enter** once the correct species name appears.
- Enter the **DBH** (cm). The **Height** (m) will automatically populate based on provincial averages for predicted heights based on DBH for softwoods and hardwoods. If needed, the **Height** (m) can be overridden if it is measured in the field.
- **LIT/LT** are populated automatically based on the species and the plot's vegetation type.
- To include optional biodiversity fields (**Cavity**, **Diversity**, **Mast**), click **Include Biodiversity**.
- Additional fields for **Planted** type (e.g., In Situ, Ex Situ) will appear if the plot is set as **Planted** in the **Plot History** section of the **Plot** tab.

To advance between text fields, click **Tab**. Clicking **Tab** when the **Height (m)** field is active will add a new row. To add additional rows, either specify the **Number of Trees In Plot** or click the green **+** button in the bottom left. To delete a row, click the red **X on the left**.

4.4. Snags

Standing dead trees (i.e., snags) that are tallied in the prism sweep. Only snags greater than 20 cm DBH are tallied as this is the size when greater biodiversity benefits are achieved. Snags are tallied in 10-cm DBH classes.

- **Species Group:** Simply tally the number of snags in the appropriate DBH class in either the softwood, hardwood, or unknown species group.
- **Cavity:** Identify and record if a snag has a cavity if desired.

4.4. Coarse Woody Material

Coarse woody material (CWM) pieces are measured along a transect at their point of intersection. The default and recommended transect length is 20 m and a default transect orientation of north is in the program, though the user has the option to adjust these values. Again, please consult the [PTA procedures information bulletin](#). The tally page for CWM pieces has the same design as that for snags but with 20-cm diameter classes.

- **Species Group:** Simply tally the number of CWM pieces in the appropriate diameter class in either the softwood, hardwood, or unknown species group.
- **Cavity:** Identify and record if a CWM piece has a cavity if desired.

4.5. Summary

The summary page is the final stage of the private-land PTA application and provides useful information for PTA practitioners that are looking to proceed with planning and decision making on a given project. Within the application itself, there are five summary displays available at both the stand and individual plot level: Cruise, Treatment, Species, Soil, and Vegetation.

- **Cruise:** The cruise summary provides the most detailed information from the PTA project and includes the majority of variables required to identify a silviculture prescription.
- **Treatment:** The treatment summary lists all previous silvicultural treatments identified during the PTA at each plot and their percent across all plots within the PTA.
- **Species:** This is a simple summary of species composition within the data, as a percentage.
- **Soil and Vegetation:** Each of these summaries lists all the FEC vegetation types and soil type identified during the PTA at each plot and their percent across all plots within the PTA, respectively.

Click **Stand Summary** or **Plot Summary** to switch between the two summary types.

Lastly, a more detailed summary can be exported from the application in Microsoft Excel format. It contains all the information above, as well as any additional variables collected during a PTA, including the tally of individual trees. Click **Export All** to export all summaries (at both the **Plot** level and **Stand** level); select the export folder. The exported file name will be assigned the same filename as the Private Land PTA filename (.PTA file extension).

5. Interpretation and Conclusions

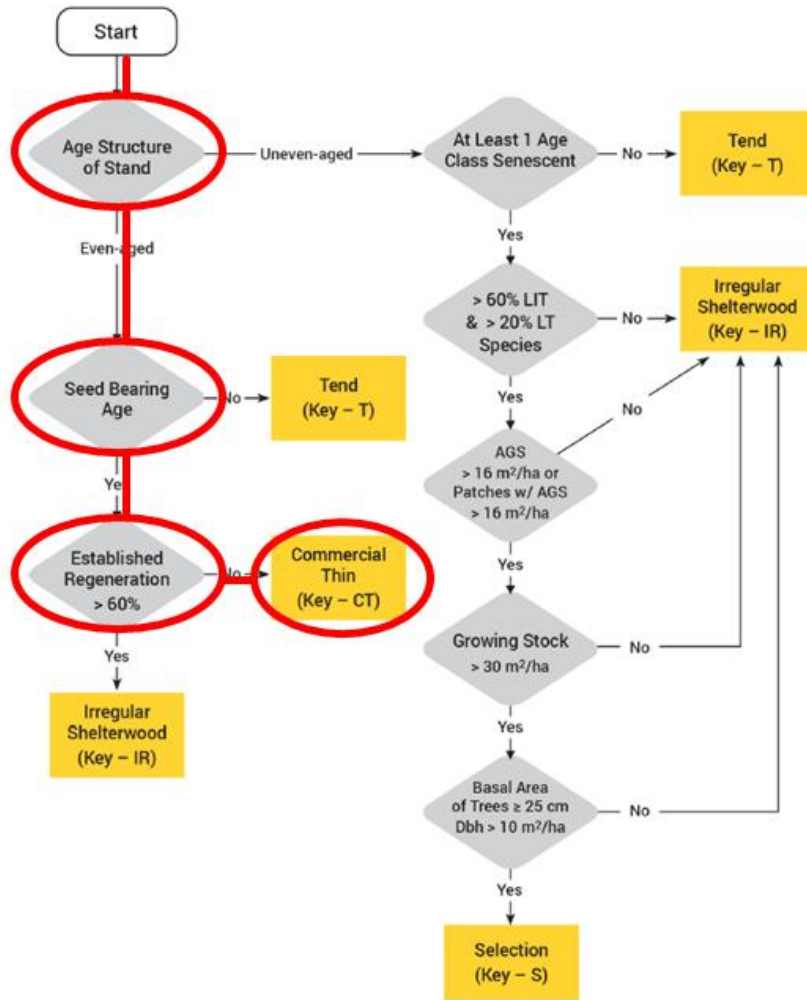
The private-land PTA application can be used in conjunction with several existing DNR tools and reports for sustainable forest management planning. Unlike the previous version of the PTA application, the current version does not produce silvicultural prescriptions from the collected data. It was designed as a planning support tool and to only provide all the information necessary for using the provincial silvicultural guidelines in the SGEM (or other silvicultural guidelines that landowners may wish to consult). Consequently, a key reference to be used in conjunction with this new application is the SGEM and its decision keys (McGrath et al., 2025).

PTA practitioners can use the current PTA procedures (NSDNR, 2025a) and the new application to generate the information needed in the program's summary reports to implement ecological forestry with the SGEM decision keys. Figure 1 provides an example of a forest ecosystem that is commonly encountered in the working forest where the summary information provided by the application can be applied to the SGEM decision keys.

The SGEM decision keys are organized by Forest Group within the FEC (Neily et al., 2023). Because this stand was identified as being an SH5 Red Spruce – Balsam Fir / Schreber's Moss – Stair-Step Moss vegetation type, it would be within the Spruce-Hemlock Forest Group and employ those decision keys (Fig. 1). The decision keys for each Forest Group each have several separate keys/pages (e.g., Main, Commercial Thinning, Irregular Shelterwood) that have gray decision diamonds, yellow references to other keys, and green prescriptions. The example below uses information collected during PTA and compiled by the application to navigate three decision keys and eventually prescribe a medium retention gap irregular shelterwood.

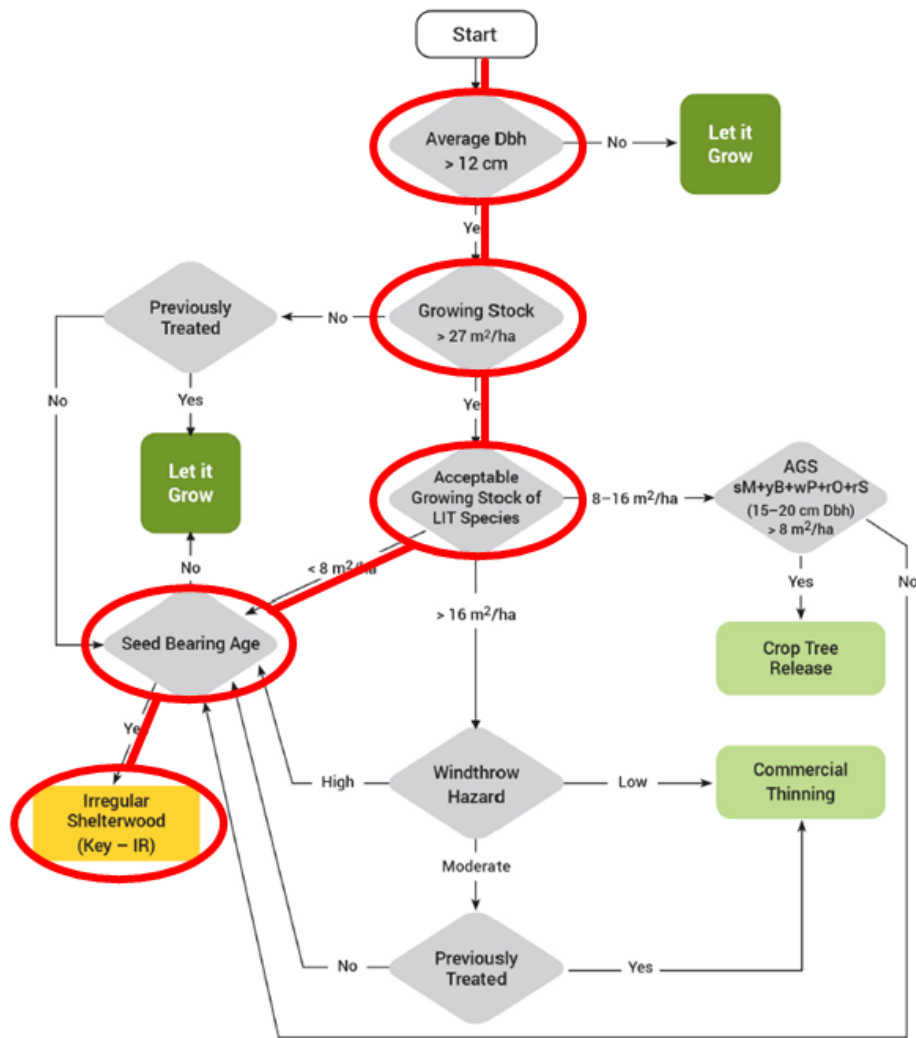
Spruce Hemlock

Key M – Main



Spruce Hemlock

Sub-Key CT – Commercial Thin



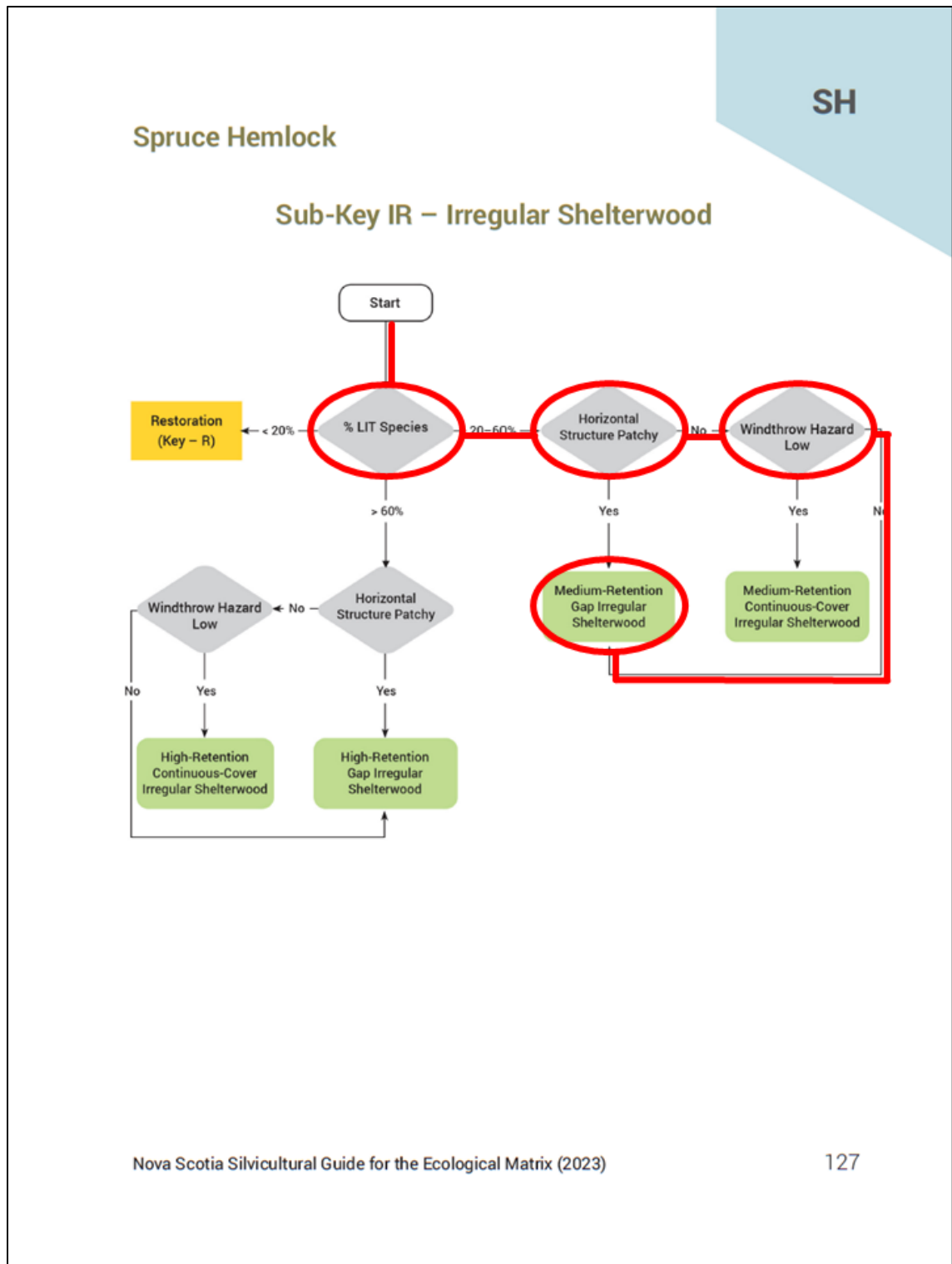


Fig. 1. An example of the PTA private land application summary being used with the SGEM decision keys to obtain a silvicultural prescription.

There are two additional variables that are occasionally needed for the SGEM decision keys. The first is whether a stand is of seed-bearing age (and occasionally if it is senescent); this can be derived from the SGEM, which describes the silvics of Nova Scotia's main tree species (Fig. 2).

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	60	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 Reinitiation:** 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)

Fig. 2. The silvics of common Nova Scotia trees, taking from the SGEM (McGrath et al., 2025, Table 1, p. 25).

Given the province's natural disturbance regimes (Taylor et al., 2020; Maclean et al., 2022) and frequency of wind disturbance, especially in recently treated forest stands, windthrow hazard is an important consideration. The current approach associated with PTA and the SGEM includes the FEC soil type and the wind exposure of a site.

Regarding soil type that is identified in the field during PTA data collection, finer-textured soils and wetter soils increase the vulnerability of windthrow (Keys et al., 2023; McGrath et al., 2025).

Wind exposure refers to certain elevations, aspects, and topographic features that present higher vulnerability for exposure to high winds and certain parts of the province have higher average wind speeds based on local climate. The PTA process relies on the [digital wind exposure map](#) (Keys et al., 2017) for determining the degree of exposure. The combination of soil type and exposure produces a final windthrow hazard rating, as described in the SGEM (Fig. 3). Please also refer to the recent [information bulletin](#) (NSDNR, 2025b) for additional information and considerations regarding the SGEM, silviculture, and wind disturbance.

Soil Type (Keys et al., 2023)	Exposure Class				
	Sheltered	Moderately Sheltered	Moderate	Moderately Exposed	Exposed
1, 2, 5-C, 8					
Stony phases					
3, 5, 6-C, 9, 11					
Stony phases					
6, 12					
Stony phases					
All wet, organic, and moist shallow soil types (ST4, ST7, ST10, ST13, ST14, ST16, ST18)					
Dry shallow soil types (ST15, ST17) with 0-15 cm depth or stony (S) phase					
Dry shallow soil types (ST15, ST17) with 16-30 cm depth and non-stony phase					

^A Soil types listed in table include all possible phases unless stated otherwise (e.g., Stony phases)

Fig. 3. Windthrow hazard rating, taking from the SGEM (McGrath et al., 2025, Table 3, p. 28).

Lastly, another valuable interpretation of PTA that can be helpful for landowners can be derived from the ELC (Neily et al., 2017). Identifying the ecoregion, ecodistrict, and ecosection of a stand that is under consideration for treatment and has PTA information can help landowners better understand the biophysical, climatic, and geographic

context of their ecosystems within Nova Scotia and its Acadian forests. Moreover, ecodistricts are especially valuable for referencing the NSDNR Ecological Landscape Analysis program and landscape-level planning objectives that landowners may wish to be aware of, such as mature forest cover and connectivity.

The ecodistrict identified during PTA can also provide information regarding the nutrient sustainability of timber harvests. A recent body of research conducted by NSDNR examines the legacy effects of acid rain on the province's soils and the associated nutrient sustainability of forest management operations (Keys & Bockstette, 2023). The recent technical report and associated supplementary materials allow PTA practitioners to use the ecodistrict, vegetation type, and soil type of a stand to identify estimates of nutrient sustainable harvest levels. In the example used in this section, the evaluated stand was located in Ecodistrict 780 St. Margarets Bay with FEC vegetation and soil types being SH5 and ST2 has an estimated nutrient sustainable harvest level of 2.5 m³/ha/yr (Keys & Bockstette, 2023). While the private-land PTA application does not currently provide merchantable volume estimates, the example used in this bulletin has a merchantable basal area of 35 m²/ha at an age of 50, which might be expected to have a merchantable volume of 250 m³/ha and thus a mean annual increment (MAI) of 5.0 m³/ha/yr (O'Keefe & McGrath, 2006; Steenberg et al., 2023). The principle of nutrient sustainable harvests is that the sustainable harvest level should be greater than the harvested MAI, which in this example with an MAI of 5.0 m³/ha/yr, nutrient sustainable level of 2.5 m³/ha/yr, and a harvest prescription with 50% retention would be considered nutrient sustainable with a harvested MAI equaling the sustainable level.

In summary, it is hoped that this new private-land PTA application will be a valuable tool in assisting private woodland owners and any other interested stakeholder looking to plan silviculture operations within forests under their stewardship. There is a gap for private-land practitioners regarding PTA and the previous FoxPro program currently in use and this new program will help bridge forestry planning through this transition and the transition to the updated PTA procedures that correspond with the SGEM. NSDNR work in this program will be on-going based on user experience, such as exploring the potential of including merchantable volume estimates. Moreover, users can use this tool in conjunction with other freely available NSDNR forestry models like the [Nova Scotia Growth and Yield Model](#) and the [Nova Scotia Forest Carbon Calculator](#). Nova Scotia's forest sector is in a state of transition and efficient planning tools that are rooted in science can help provide forest practitioners with support and options.

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