Using this Guide

Vegetation keys based on overstory tree species and selected ground vegetation have been developed to aid forest group and Vegetation Type (VT) identification (Figures 1 and 2). Where necessary, site features are also used to aid classification. These keys are designed for use in relatively intact, mature stands (minimum 40 years). However, managed stands can still be assessed as long as users recognize that tree species abundance and diversity may have been altered by silviculture treatments. Younger stands that have reached free-to-grow status can also be assessed, but adjacent older stands on similar sites and soils should be used to confirm results. Plantations are currently excluded from the VT classification system.

Vegetation keys are best used between June and October when understory vegetation is most easily identified. However, since these keys rely mainly on trees and understory species that are identifiable year-round (excluding times with snow coverage), they may be used outside of the ideal season (with appropriate care).

Vegetation keys are designed to be used in sequence. Users first determine forest group using the forest group key (Figure 1). This directs the user to a section of the vegetation type key (Figure 2). Beginning at the top of the appropriate forest group proceed through the key. Each step (number) in both keys involves two decision points labelled a. and b.. Read each statement and choose the one which best fits the stand condition. This statement will lead to another pair of statements or to the name of the forest group or vegetation type. To reduce the likelihood of errors, users are reminded to pay close attention to cover class definitions and thresholds used in the keys.

Once a VT has been keyed out, users should consult the appropriate VT fact sheet to verify the decision. If the fact sheet does not represent the stand being sampled, the unit should be re-assessed. Borderline conditions associated with decision points within the keys could lead to more than one possible VT determination. Therefore, fact sheets should be consulted to make the final call. It is also recognized that some stands may be a complex of more than one VT. In these cases, it is appropriate to list each VT rather than assign an "average" condition.

There are no set rules for sampling intensity when determining VTs. Often one plot is all that is required, but it is important to select a representative area. This will require a quick walk through to be sure the area selected for assessment is typical of the stand. If assessment is part of a systematic cruise, VT can easily be determined at each prism point.

Finally, users of this guide are reminded that information on soil types is also required for complete stand assessment. Benefits from using the FEC system can only be fully realized when both vegetation and soil types are assessed. Users should refer to *Forest Ecosystem Classification for Nova Scotia: Part II Soil Types (2010)* for more details on soil type assessment and interpretation.

Notes:

- Although there are over 100 VTs and variants currently recognized in the FEC system, most users of this guide will only work with (and need to recognize) a fraction of these units. There are several VTs which are regional in nature and/or relatively uncommon.
- For FEC purposes, the province has been divided into two main ecosite groups (Acadian and Maritime Boreal) which are associated with different ELC regions and potential climax species associations. Most VTs are only associated with one of these ecosite groups, but some can be found in either (Table 2). (See *Forest Ecosystem Classification for Nova Scotia: Part III Ecosites (2010)* for more details on ecosite groups).

Terminology and Conventions

Terms used to describe forest group and VT features are defined in Appendix A. For clarification and context, additional information on some of these terms is provided below.

Edatopic Grid

An edatopic grid is a two-dimensional diagram used to plot ecosystems (and subsequently ecosites) with respect to their relative moisture and nutrient regimes.

Moisture Regime

Soil moisture regime represents average moisture availability for plant growth. It is assessed by integrating moisture supply (as related to climate) with soil drainage and moisture holding capacities. In general, very dry to dry moisture regimes are associated with severe to moderate moisture deficits; fresh to moist moisture regimes are associated with little to no moisture deficits; and wet moisture regimes are associated with excess moisture during the growing season (See *Forest Ecosystem Classification for Nova Scotia: Part III Ecosites (2010)* for more details).

Nutrient Regime

Soil nutrient regime represents the relative availability of nutrients for plant growth. Determination of nutrient regime requires consideration and integration of several environmental features including forest floor humus form, soil type, seepage class and ground water characteristics (see *Forest Ecosystem Classification for Nova Scotia: Part III Ecosites (2010)* for more details).

Percent Cover

Percent cover is given by the vertical projection of tree crown or plant shoot area as a percentage of stand area (Dunster and Dunster, 1996). Percent cover is readily determined for understory species by looking downward and estimating the amount of ground covered as a percentage of the total plot area. For tree species, the user must look upward through the canopy and estimate ground cover from below. It is possible for species cover within a layer of overlapping vegetation to total more than 100%. Charts to aid estimation of percent cover are given in Appendix C.

Forest versus Woodland

In this guide, forests have sites which can (and normally do) support a minimum of 30% crown closure by trees. Open woodlands are upland sites where natural disturbances (e.g. frequent fires) and/or site conditions (e.g. sandy soils, excessive surface stoniness, bedrock exposures) generally limit the establishment of trees to less than 30% crown closure. In some cases, open woodlands containing hardwoods (especially red oak) can have more than 30% crown closure despite having low tree densities. These sites may still meet the definition of open woodland with respect to VT determination.

Overstory and Understory Vegetation

Overstory refers to trees which occupy the dominant, co-dominant and intermediate canopy positions. Understory vegetation is grouped into three categories:

Shrub layer: Woody shrubs and regenerating trees usually less than 2 m in height, but occasionally taller.

Herb layer: Dwarf woody plants plus ferns, club mosses and other herbaceous plants.

Bryophytes and Lichens: Mosses, liverworts and lichens.

Karst Sites

In general terms, karst topography refers to surface and subsurface features created by the dissolving of soluble gypsum, limestone or dolomite bedrock (Cauboue et al. 1996). Sinkholes and caverns are common expressions of karst topography. In this guide, Karst Forest (KA) sites are limited to those which have gypsum or limestone/dolomite bedrock exposures in addition to sinkholes and caverns. It has been determined through field sampling that Karst VTs are well correlated with the presence of near-surface bedrock – the influence of which has not been reduced by deep glacial till deposits.

Vegetation Fact Sheets

The following sections contain fact sheets describing 14 forest groups and 88 VTs (with 22 variants). Below is a summary of information found in each forest group and VT fact sheet.

Forest Group Fact Sheet

1. The **forest group code** and **name** is found at the top of the fact sheet along with the **number of plots** (**n**).
2. A **concept** paragraph provides key characteristics that define the forest group.
3. A **vegetation** paragraph describes dominant plants which characterize the forest group.
4. An **environmental setting** paragraph describes general site features and geographic information associated with the forest group.
5. A **successional dynamics** section describes natural disturbance regimes, disturbance agents and general successional status of VTs within the forest group.
6. An **edatopic grid** (or grids) shows the range of moisture and nutrient regime conditions covered within the forest group.
7. A **list of vegetation types** found within the forest group.
8. An **ecological features** section provides special interest information on the forest group landscape setting, stand characteristics, special habitats and/or wildlife use.

Vegetation Type Fact Sheets

1. The **VT code** and **name** are found at the top of the fact sheet along with the **number of plots** (**n**). Species used in VT names provide an insight into site conditions and successional status for each unit, but not necessarily species abundance.
2. A stand **photograph** is used to give a visual representation of the VT.
3. A **concept** paragraph provides key characteristics that define the VT.
4. A **vegetation** paragraph describes dominant plants in the VT by layer.
5. An **environmental setting** paragraph describes general site features and geographic information associated with the VT.
6. A **successional dynamics** section outlines VT successional status, disturbance agents and links to other vegetation types.
7. An **ecological features** section provides special interest information on VT landscape setting, stand characteristics, special habitats and/or wildlife use.

8. A **characteristic plants** list provides information on the most common plants found during field sampling.

Freq. (%)	percentage of plots where species was found
Cover (%)	mean percent cover in plots where species was found
Mean % Cover	mean percent cover of all species in each layer

   A complete list of common and scientific names used in this guide are found in Appendix D.

9. **Distinguishing features** describes the best site and plant features needed to identify the VT.

10. **Site characteristics** summarize VT site data collected during field sampling. (See *Forest Ecosystem Classification for Nova Scotia: Part III Ecosites (2010)* for more details.)

11. **Soil characteristics** summarize VT soil data collected during field sampling. (*See Forest Ecosystem Classification for Nova Scotia: Part II Soil Types (2010)* for more details.)

12. A **distribution map** shows ELC ecodistricts (Appendix E) where the VT has been sampled (green) and where it has not been sampled but is likely to occur (yellow). White areas represent ecodistricts where the VT is not likely to occur.

Notes:

- In some cases, data were not collected for particular features and these are recorded as **nd** (no data) in site summaries.
- Distribution maps are based on ecodistrict boundaries, however only certain sites within these ecodistricts support the VT described (based on site and soil features).