

RESERVE FORESTLAND – MINIMUM ACCEPTABLE STANDARDS FOR FOREST MANAGEMENT

Adopted by Commissioner Snyder December 30, 2022

Reserve Forestland Eligibility

Parcels that have a minimum of 25 total enrolled forestland acres of which 20 acres are forested productive soils (Site Class I, II, or III) may be eligible for enrollment of Reserve Forestland. Of these parcels, the following eligibility thresholds apply:

PARCELS WITH \geq 100 ENROLLED ACRES: 30% or more of the parcel's enrolled acres¹ need to be composed of significant and sensitive conditions, per program standards.

PARCELS WITH $<$ 100 ENROLLED ACRES: 50% or more of the parcel's enrolled acres need to be composed of significant and sensitive conditions, per program standards.

Once a parcel is determined to meet the Reserve Forestland eligibility threshold then some or all of the UVA eligible forestland may be enrolled as Reserve Forestland.

Significant and Sensitive Conditions are defined by the Commissioner of the Department of Forests, Parks, and Recreation and consist of:

Ecologically Significant Treatment Areas (ESTAs),

Steep slopes \geq 35%

Site IV lands, and

Special places and sensitive sites.

Additional details about these conditions are described below.

Significant Sensitive Conditions Eligibility

Significant and Sensitive Conditions confer eligibility and are comprised by Ecologically Significant Treatment Areas, Site IV Lands, Special Places and Sensitive Sites, and Steep Slopes. When "current standards" apply to a significant or sensitive condition, as noted below, the applicable standards for that condition can be found as already existing in the [Use Value Appraisal Manual](#).

Ecologically Significant Treatment Areas

1. Natural Communities of Statewide Significance – *current standards*
2. Rare, Threatened, and Endangered Species – *current standards*
3. Riparian Areas – *current standards with clarification*
 - a. *Clarification* – Riparian Areas along streams are limited to 100' on either side of perennial streams and around lakes and ponds, and 50' on intermittent streams, and

¹ "Enrolled acres" includes all land within a parcel that is or will be enrolled in Use Value Appraisal including Agricultural Land and Managed Forestland acres and includes of any subcategories within these enrollment categories. All calculations to determine eligibility threshold and demonstrating the threshold has been met must use acres prorated to match the grandlist consistent with UVA mapping standards.

wetlands, unless justification for a wider area of riparian function necessitating protective/conservation management is provided.

4. Vernal Pools – *current standards*
5. Forested Wetlands – *current standards*
6. Old Forests – *current standards*

Site IV Lands – current standards

Special Places and Sensitive Sites – current standards

Steep Slopes – NEW

Forested steep slopes (35% slope or more) and associated minor inclusions of inoperable areas that do not otherwise qualify as significant or sensitive conditions as described in the forest management plan and approved by the county forester may contribute to significant and sensitive condition totals for eligibility.

Inclusions of forestland (each 2 acres or less) that are less than 35% slope and fully encompassed within areas of steep slope, may be included in this overlay and contribute to significant and sensitive condition threshold with county forester approval.

Steep slopes do not need to be delineated as separate management units, but the location and acreage of these qualifying conditions must be identified on the UVA map as an overlay of land being enrolled as Reserve Forestland.

Reserve Forestland Plan Standards

Stand Delineation

Forestland enrolled as Reserve Forestland shall be delineated by forested natural communities and related enduring site characteristics. Natural communities shall be further delineated in to stands consistent with the definition of “stand” in the [UVA Manual](#).²

Stand Definition: “A group or groups of trees sufficiently uniform in age class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.”

Significant and Sensitive Conditions

When “current standards” apply to a significant or sensitive condition, as noted below, the applicable standards for that condition can be found in the [Use Value Appraisal Manual](#).

Ecologically Significant Treatment Areas – apply current standards

Special Places and Sensitive Sites – apply current standards

² A stand may encompass minor inclusions of natural communities that are not representative of the stand and do not rise to the scale of a distinguishable management unit. Where this occurs, these inclusions may be mentioned in the stand narrative.

Site IV lands – apply current standards

Steep Slopes – Slopes $\geq 35\%$ and associated inclusions of forestland $<35\%$ slope consistent with standards, must be depicted on the UVA map as an overlay of land enrolled as Reserve Forestland. The acreage of steep slopes and inoperable inclusions comprising land enrolled as Reserve Forestland must be provided in the plan (See *additional stand description elements*).

Reserve Forestland

Plan requirements for Reserve Forestland include all requirements for Productive Forestland with some added specificity and new required descriptive elements. Considerations and options for management of Reserve Forestland differ from Productive Forestland. Details are provided below:

Stand Description Requirements

Added Specificity – Stand Description Elements

Diameter Distribution Table – Increased specificity for diameter increments contained in the table and inclusion of number of trees and snags per acre. Chart must be provided by 2" diameter classes and include:

1. Trees/acre
2. Basal Area/acre
3. Snags/acre

Regeneration Data – Requirement to provide quantitative data for Reserve Forestland. Quantitative regeneration data must be provided including stems/acre, species, and size class.

If evaluation of regeneration for a plan update or initial enrollment of Reserve Forestland of already enrolled land was prevented by snow cover, then review of conditions and associated amendment to the plan may be scheduled to occur within the 12 months following submission of the plan. See "Management Prescriptions" for additional detail.

Invasive Plant Description – Added descriptors of maturity and distribution and refinement of infestation levels. If invasive species are present, clearly, and accurately describe the level of infestation at the stand level. At a minimum, the description shall include the following:

1. Species present – If no invasives are present indicate "No invasives present."
2. Statement on maturity of most mature invasive cohort by species (seedling, immature, seed producers)
3. Cumulative infestation level based on an estimate of the % cover (Light $<5\%$, Medium 5 – 20%, Moderate 21 – 50%, Heavy $>50\%$)
4. Distribution within the stand (along margins, throughout, scattered pockets)

Added Requirements - Stand Description Elements

Natural Community Type of Stand – Provide the Natural Community type likely suited to the site. Natural Community typing of stands that are not Natural Community ESTAs can be based on professional judgement and

do not require detailed documentation. Refer to Wetlands, Woodlands, Wildlands³ for appropriate community types and descriptions.

Steep Slopes – Provide the acres of land in the stand occupied by steep slopes.

Tree Age Classes – Provide the number of age classes of trees present in the stand (1, 2, 3, 4 or more). Include age classes of trees 4.5” DBH and greater.

Basal Area Range – Provide the range of basal areas found among inventory points.

Deer Browse Index – Report the average deer browse index within the stand based on FPR/FWD browse index (see Appendix A).

Deer Browse Pattern – Indicate if deer browse is distributed throughout the stand or if it is localized.

AMP Evaluation – Report on findings of evaluation of AMP implementation as observed during inventory:

1. Meets Standards – AMPs appear to be employed to the maximum practicable extent.
2. Remediation Required – AMPs have not been employed to the maximum practicable extent and deficiencies were observed that warrant a plan to meet standards and prevent future erosion and/or discharges of sediment to surface waters. *Examples include but aren’t limited to failing or insufficient waterbars, undersized culverts, rutting that poses a risk of gullyng, stream crossings lacking waterbars on approaches, temporary stream crossings left in place beyond appropriate timeframe.*
3. Further On-site Review is Needed – If evaluation of the AMPs for a plan update or initial enrollment of Reserve Forestland of already enrolled land was prevented by snow cover, then, in the plan, indicate “Further On-site Review Needed.” Review of conditions and associated amendment to the plan may be scheduled to occur within the 12 months following submission of the plan. See “Management Prescriptions” for additional detail.

If AMPs in the stand are described as, “Remediation Required,” then the management prescription for the stand must include a timeline and a remediation plan to bring the AMPs up to standards. The remediation plan must correspond to mapped points of remediation need.

Coarse Woody Material – Describe the coarse woody material present in the stand using the following table:

Diameter Class	Number of Pieces/Acre	Decay Classes Present
8 - 12”		
14 - 18”		
20+		

1. Number of Pieces – Provide the pieces of down wood per acre (>4’ long) for each diameter class provided.

³ Thompson, E., Sorenson, E., Zaino, R. (2019) **Wetland, Woodland, Wildland**. (Second Edition). Vermont Fish & Wildlife Department, The Nature Conservancy, and Vermont Land Trust.

2. Decay classes present –Indicate all decay classes present for each diameter class within the stand. Decay classes include:
 1. Sound, freshly fallen intact logs,
 2. Sound,
 3. Heartwood sound; piece supports its own weight,
 4. Heartwood rotten; piece does not support its own weight, but maintains its shape,
 5. No structural integrity; piece no longer maintains its shape, it spreads out on the ground.

Decay classification shall utilize the Forest Inventory Analysis method defined and further described on page 12 in Technical Report NC-256, *Sampling Protocol, Estimation and Analysis Procedures for the Down Woody Materials Indicator of the FIA Program*, Woodall, C., and Williams, 2005.

Further Review Needed: If evaluation of the Coarse Woody Material for a plan update or initial enrollment of Reserve Forestland on already enrolled forestland was prevented by snow cover then, in the plan, indicate “Further Review Needed.” Review of conditions and associated amendment to the plan may be scheduled to occur within the 12 months following submission of the plan. See “Management Prescriptions” for additional detail.

Notes on methods: *Various methods may be used to generate reasonable estimates of “number of pieces.” The reporting requirements here are adapted specifically for use in Use Value Appraisal to provide information sufficient to evaluate progress towards old forest characteristics and to inform management actions but have been significantly simplified from widely available approaches to reduce time and cost.*

Condition Description – Provide a narrative description spatial and compositional variability (patchiness) of old forest characteristics in the stand including:

1. Species Composition
2. Age Classes
3. Canopy Closure
4. Regeneration
5. Snags and Coarse Woody Material

Management Prescriptions

Invasive Plants

When invasive plants are present, a management strategy to protect and enhance attainment of old forest functions and values must be prescribed to eradicate or reduce the extent of invasive plants on the parcel and protect the capacity of the forest to regenerate native species consistent with management standards. Provide species to be removed, strategy to be employed, and timeline.

Acceptable Management Practices (AMPs)

When AMPs are not employed to the maximum practicable extent, briefly describe the strategies to address AMP deficiencies corresponding to points or road/trail segments on the UVA map. Provide a timeline for remediation consistent with standards.

Silviculture and Management

The forest management prescribed, whether passive or active, must result in the accrual and protection of old forest characteristics including:

- Species composition reflective of the natural community type
- Multi-aged structure
- Heterogeneous density and cover
- Large trees (see D’Amato & Catanzaro 2022 for useful benchmarks)⁴
- Snags (see D’Amato & Catanzaro 2022 for useful benchmarks)
- Coarse woody material (see D’Amato & Catanzaro 2022 for useful benchmarks)

All treatments prescribed require the same prescription elements as required for Uneven Aged management – retention targets may be required.

Rationale

Passive management strategies must be accompanied by a rationale for how the proposed management will successfully result in the accrual and protection of old forest characteristics.

Further On-site Review Needed:

If Further On-site Review is needed for any of the following elements due to snow cover: Regeneration, AMPs, or Coarse Woody Material; then the management prescription for each stand should read:

“Regeneration will be determined after further on-site review of Regeneration, AMPs, and coarse woody material. An amended plan including assessment of regeneration, AMPs, and coarse woody material assessment will be submitted on or prior to (insert date).”

Provide a specific date, not to exceed 1 year from plan submission, to submit an amended plan to address all standards related to the conditions which could not be adequately evaluated due to snow cover. The amended plan must be submitted on or prior to the approved, prescribed date. If an amended plan containing the required information is not submitted on or prior to the approved prescribed date then the approval of the plan will be withdrawn affecting continued eligibility.

Reserve Forestland Mapping Standards

Current Standards

Map requirements for Reserve Forestland include all requirements for Productive Forestland with some added specificity on the acreage chart and addition of an “eligibility chart.”

Added specificity – Acreage Chart (Sample Chart Below)

The map must demonstrate that the eligibility threshold of significant and sensitive conditions has been met. A specific acreage chart format must be used that provides both the acreage of the stands and a separate column showing the acreage of the conditions contributing to the significant and sensitive conditions.

⁴ D’Amato, A., & Catanzaro, P. (2022) **Restoring Old-Growth Characteristics to New England’s and New York’s Forests**. The University of Vermont and UMass Amherst.

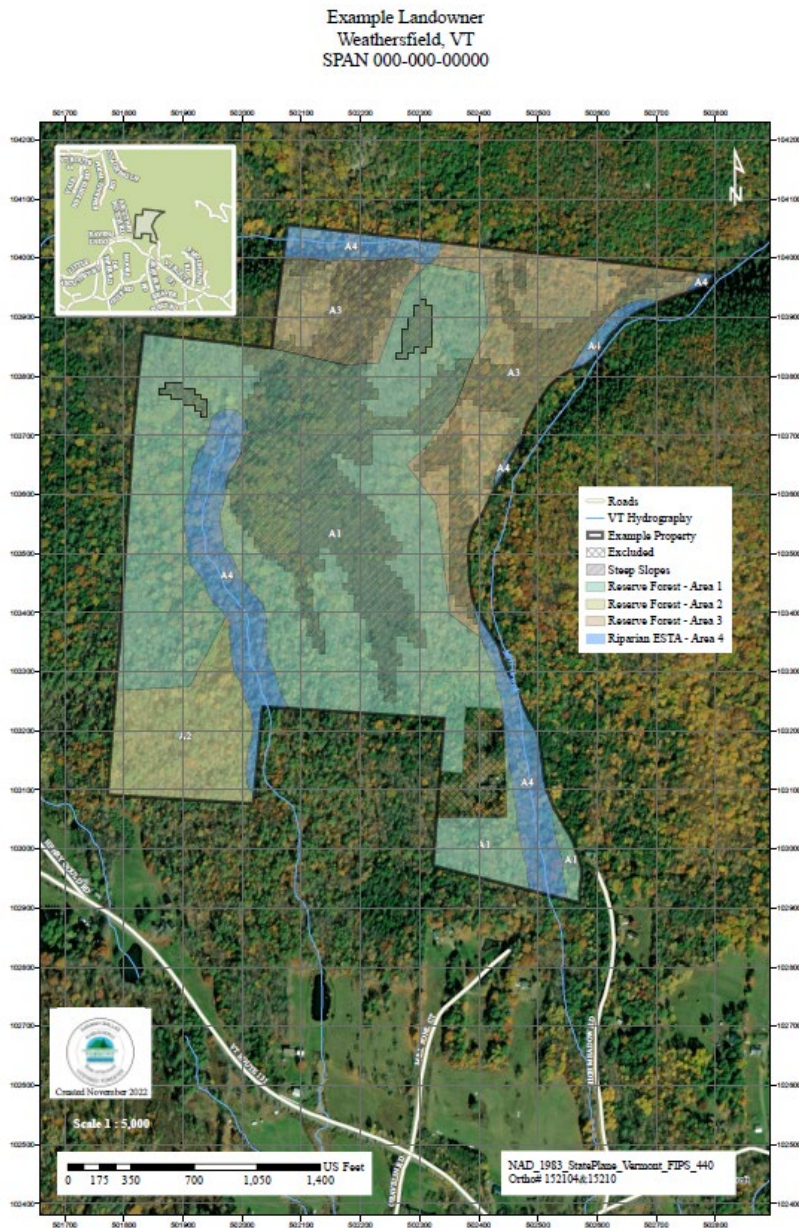
Added Requirement – Eligibility Chart (Sample Chart Below)

In addition to the acreage chart, a separate chart must demonstrate that the eligibility threshold for Reserve Forestland has been met. This is called the Eligibility Chart. This chart will provide:

- a. Total enrolled land
- b. Total significant and sensitive conditions
- c. % of Total Enrolled Comprised by Significant and Sensitive Conditions

$$\text{Formula: } b/a \times 100 = c$$

Sample Map



Sample Acreage Chart

Sample Acreage Chart for Enrollment of Reserve Forestland					
Area	Description	Mapped Acres	Prorated Acres	Mapped Significant Sensitive	Prorated Significant Sensitive
1	Reserve Forestland Stand 1 (inclusive of Steep Slope) – Northern Hardwoods	79	83.1	25.6	*27
2	Reserve Forestland Stand 2 (inclusive of Steep Slope) – White Pine-Northern Hardwoods	11.4	12	0	*0
3	Reserve Forestland Stand 3 (inclusive of Steep Slope) – Hemlock-Northern Hardwoods	30	31.5	15.2	*16
4	Riparian Area	17.6	18.5	17.6	18.5
	Total Forestland	137.9	145.2		
	Total Agricultural Land		0		
	Total Enrolled Land	137.9	145.2		
	Total Significant & Sensitive + Steep Slope Overlay			58.4	61.5
	Excluded Acres		4		-
	Grand List Acres		149.2		
*Steep Slope Contribution (Prorate Factor = 1.05)					

Sample Reserve Forestland Eligibility Chart		
Reserve Forestland Chart	Acres	Percent
Total Enrolled Land (Forestland + Agricultural Land)	145.2	
Total Significant & Sensitive	61.5	
% of Total Enrolled Comprised by Significant and Sensitive		42.4%

Reserve Forestland Management Standards

Reserve Forestland Management Objectives

Reserve Forestland is forested land managed with a primary purpose of accrual and protection of old forest functions, values, and associated characteristics as defined by D’Amato & Catanzaro 2022 or other comparable resources. Management may include active or passive management, inclusive of the range of silvicultural strategies when consistent with all other standards.

Acceptable Management Practices

Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont (AMPs) need to be employed to the maximum practicable extent on enrolled forestland. AMP deficiencies resulting in discharges or likely to result in discharges require immediate attention. When AMP standards are not met, but discharges in the near future are unlikely, deficiencies must be addressed as soon as practicable. Strategies to resolve AMP deficiencies need to be prescribed in the forest management plan.

Invasive Plants

Invasive plants on UVA enrolled land shall be managed to protect and enhance attainment of old forest functions and values of enrolled forestland, including the capacity of the forest to successfully regenerate native species. Where practicable, strategies to prevent and eradicate non-native invasive plants are required. Where eradication is not practicable, ongoing reduction of the extent of invasive plant infestations and reducing the risk of spread must be pursued with demonstrably effective strategies. Control of invasive plants within an enrolled parcel shall be defined by an invasive species management strategy prescribed in the forest management plan.

Required Acceleration of Old Forest Characteristics

Active management to establish regeneration reflective of the natural community type of the site will be required in forest stands where:

1. Forest is dominated by even-aged plantation above B-line stocking in which 80% or more of the basal area is comprised by planted trees and in which 25 ft² (in hardwood stands) or 40 ft² (in softwood stands) is 12 inches d.b.h. or greater, or;
2. Even-aged forest above B-line stocking in which 80% or more of the basal area is comprised by a single species arising from historic non-forest use and in which 25 ft² (in hardwood stands) or 40 ft² (in softwood stands) is 12 inches d.b.h. or greater.

Exemptions may be provided by approval of the County Forester when:

1. The stand was treated in the last 10 years to establish regeneration;
2. 20% or more of the stand area is regenerating and is dominated by regeneration reflective of the natural community type of the site;
3. The area is contributing to the significant and sensitive conditions threshold; or
4. Current species composition is expected to be a significant component of the late successional stage of the natural community (*For example: sugar maple in a northern hardwood natural community type, or white pine in a dry oak white pine forest natural community type*).

Salvage

Salvage of trees on Reserve Forestland is not allowed unless it is the minimum necessary to allow continuation of an approved compatible use (e.g., clearing of trails), or to address human safety or forest health concerns and is approved by the county forester.

Sugaring

Sap collection is not allowed in Reserve Forestland with the exception of small-scale collection for personal use approved by the county forester.

Resources Referenced

D'Amato, A., & Catanzaro, P. (2022) **Restoring Old-Growth Characteristics to New England's and New York's Forests**. The University of Vermont and UMass Amherst.

Thompson, E., Sorenson, E., Zaino, R. (2019) **Wetland, Woodland, Wildland**. (Second Edition). Vermont Fish & Wildlife Department, The Nature Conservancy, and Vermont Land Trust.

Woodall, Christopher, Williams, Michael. 2005. **Sampling protocol, estimation, and analysis procedures for the down woody materials indicator of the FIA program**. Gen. Tech. Rep. NC-256. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 47 p.

BROWSING SITE CONDITIONS FOR MANAGED NORTHERN HARDWOODS

Site conditions by presence and life form of species under different browsing intensities

Tall Woody Species (3' to 15' saplings)	Low Intensity (*None to Light)	Moderate Intensity (Moderate)	Intensive Browsing Evidence of Regeneration Impacts (Heavy)	High Intensity Historically Intense Browsing (Severe)
	1	2	3	4
Condition of Forest	Diverse mix of tree saplings, shrubs, forbes, ferns, and grasses of varying heights. Little sign of browsing.	Preferred forage species show some signs of browsing, but not affecting height growth. No browse lines.	Unpalatable species show increase in density while others decline in number and occur in poor form. Mostly beech and striped maple and other unpalatable species in understory in stems >1 ft. in height.	In later stages, New York and hayscented ferns, sedges occupy opening as an almost complete mat with only occasional tree sapling showing. Browse line evident throughout forest. Mid-story if present dominated by 1 or 2 unpalatable woody species (black, birch, beech, red spruce, buckthorn, etc.).
White Ash Red Oak	Occasional sign of browsing.	Frequently browsed, reduced heights relative to other species.	Reduced density, all misshapen or hedged, few have any leaves remaining.	Absent or present as dead and dying whips.
Sugar Maple Yellow Birch	Occasional sign of browsing.	Light * to moderate browsing showing minor changes in form.	Heights impaired relative to unpalatable species.	"Hedged" in form.
Hemlock Balsam Fir	Unbrowsed except near DWAs.	Well formed, present at different heights. Browsing may be heavy near DWAs.	Obvious browsing of lower branches, some bark stripping.	Reduction in density noted, heavily browsed plants with poor form.
Striped Maple Black Cherry	Unbrowsed.	Browsing of some laterals and terminals.	Browsing impacting form on most stems.	Poor form and height suppression.
Beech Black Birch Ironwood	Unbrowsed.	No indication of browsing or light browsing only.	Light to moderate browsing especially on stump sprouts.	Moderate to heavy browsing on most plants. Reduction in density noted. Poor form and height suppression.
White Pine	Present, no sign of browsing.	No indication of browsing.	Browsing on some branches and terminals.	Reduction in density, most in poor form and height suppression.
Hobblebush Pin Cherry White Birch	Unbrowsed, common in understory.	Some branches browsed lightly – no reduction in density.	Most plants show browsing, reduction in density.	Plants sparse with poor form & height suppression.

This rating system was designed cooperatively by The Woodland Owners Association, VT Dept. of Forest, Parks and Recreation and VT Fish & Wildlife Dept.

BROWSING SITE CONDITIONS FOR MANAGED NORTHERN HARDWOODS

Site conditions by presence and life form of species under different browsing intensities

Short Woody Species (.5' to <3' Seedlings)	Low Intensity (*None to Light)	Moderate Intensity (Moderate)	Intensive Browsing Evidence of Regeneration Impacts (Heavy)	High Intensity Historically Intense Browsing (Severe)
	1	2	3	4
White Ash Red Oak	Light browsing to moderate.	Heavily browsed.	Seedlings and saplings >.5' mostly absent in understory. Some whips mostly lacking leaves.	Occurs only as (<.5') seedlings and as mature trees.
Sugar Maple Yellow Birch	Light browsing.	Light browsing, still well formed in short & tall woody forms.	Moderate browsing, some misshapen plants. Reduced density obvious.	Occur only as (<.5') seedlings and as mature trees.
Hemlock Balsam Fir	None to light browsing.	Light to moderate browsing.	Moderate to heavy browsing. Mostly misshapen plants.	Occur only as (<.5') seedlings and as mature trees.
Striped Maple	Not browsed.	None or light browsing.	Heavy browsing.	Severe browsing. Limited and poor form.
Beech Black Birch Ironwood	Not browsed.	Not browsed or areas with light browsing.	Light to moderate browsing on branches and terminal shoot.	Heavy to severe browsing or limited and poor form. Many misshapen plants.
White Pine	Not browsed.	Not browsed.	Frequent terminal shoot browsing.	Most browsed, lacking terminal shoot. Reduced density and poor in form.
Hobblebush	Unbrowsed to light, varying heights and density.	Light to moderate browsing, stems occur to waist height.	Suppressed heights and reduced density noted.	Limited in number. All poorly formed.
Rubus	None to light browsing. Present, varying heights.	Light to moderate browsing on current year's growth.	Moderate to heavy browsing. Reduction in density noted.	Severe browsing. Few present. All heavily browsed.

Herbaceous Layer	Low Intensity (*None to Light)	Moderate Intensity (Moderate)	Intensive Browsing Evidence of Regeneration Impacts (Heavy)	High Intensity Historically Intense Browsing (Severe)
	1	2	3	4
Orchids** Lilies	Present, flowering different heights.	Nearly absent, occasional species.	Rare.	Absent.
Asters** Twisted Stalk Wild Nettles Jewelweed Trillium Meadow rue	High density, mix of species of varying heights. Most flowering or possessing buds.	Moderately browsed. Some flowering stems. Low in height..	Low density, many browsed stems lacking flowering parts. Few flowering individuals.	Absent or rare.
New York & Hay-scented Ferns***	Infrequent in small patches.	Frequent in understory.	Forming dense patches.	High density to complete carpets that suppress other species.

** *In higher BA areas with little cutting in past.*

*** *In more recently cut or disturbed areas or areas with a history of overbrowsing*