

Ecological site F142XB005VT Clayplain

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 142X--St. Lawrence-Champlain Plain

The St. Lawrence-Champlain Plain MLRA is a glaciated area of low relief dominated by broad expanses of nearly level, sandy deltas and shallow lacustrine basins or plains punctuated by low hills of glacial till. Rivers and streams have cut relatively deep but narrow valleys across the plain. Elevation ranges from 80 to 1,000 feet (25 to 305 meters), increasing gradually from the St. Lawrence River southward and from Lake Champlain to the east and west.

LRU notes

Land Resource Unit (LRU): Mesic Soil Temperature Regime

The lower St. Lawrence and Champlain Valleys are characterized with soils in the mesic soil temperature regime (mean annual soil temperature between 46°F and 59°F) at 20 inches below the surface or at a densic, lithic, or paralithic contact, whichever is shallower.

The Mesic Soil Temperature Regime (STR) will have a longer growing season than the upper St. Lawrence and Champlain Valleys which are characterized with soils in the frigid STR. Species more tolerant of milder year round temperatures would also be evident in the mesic LRU.

Classification relationships

USDA-NRCS

LRR: D-Northeastern Forage and Forest Region

MLRA: 142-St. Lawrence-Champlain Plain.

LRU: TBD

EPA (Ecoregions)

Level III: 83-Eastern Great Lakes Lowlands

Level IV: 83b-Champlain Lowlands

USDA-USFS

Province: Laurentian Mixed Forest

Section: 212E--St. Lawrence and Champlain Valley

Sub-section: 212Ec Champlain Glacial Lake and Marine Plains

Ecological site concept

Landform:

The site occurs on within a broad expanse of nearly level to steep glacial lake plains and terraces. The elevation range varies from 25 to 305 meters (80 to 100 feet) with low relief generally less than 10 meters (30 feet). Slopes

are typically less than or equal to 15 percent but can range up to 50 percent.

Soils:
The site consists of very deep and moderately well and somewhat poorly drained soils that are clayey throughout their profile. They formed in calcareous estuarine and glaciolacustrine clays. Representative soils are Vergennes, Wilpoint, Kingsbury, Hudson, Cayuga, Chaumont, Churchville, and Rhinebeck.

Vegetation:
Remnant clayplain forests are scarce, characterized by a mixed forest of deciduous and coniferous trees, often with an understory containing invasive shrubs such as bush honeysuckles and common buckthorn. Regularly occurring trees include white pine, red maple, white and red oak, and shagbark hickory. The shrub layer can be diverse, with varying coverage of sapling trees, witchhazel, mapleleaf viburnum, and American hornbeam, all depending on the length of time since agricultural abandonment. Herbaceous associates include barren strawberry, rosy sedge, wild sarsaparilla, Enchanter’s nightshade, shorthusk, and others.

Associated sites

F142XB007VT	Wet Clayplain Depression
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

The site occurs on within a broad expanse of nearly level to steep glacial lake plains and terraces. The elevation range varies from 25 to 305 meters (80 to 100 feet) with low relief generally less than 10 meters (30 feet). Typically, slopes are not steep but range from 0 to 50 percent.

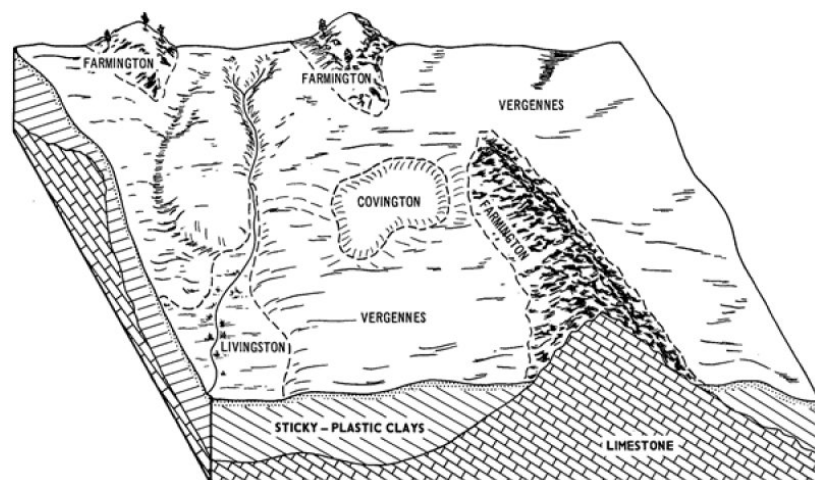


Figure 1. Block diagram of Clayplain ES (Vergennes soils)

Table 2. Representative physiographic features

Landforms	(1) Lake plain (2) Lake terrace
Flooding frequency	None
Ponding frequency	None
Elevation	27–305 m
Slope	0–50%

Aspect	Aspect is not a significant factor
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Climatic features

The Lake Champlain Valley has a humid climate with cold winters and warm summers. Average annual precipitation ranges from 750 to 900 mm (30- 35 inches) with peaks in summer (July) and autumn (October). Snowfall averages 1020 to 1520 mm (40 to 60 in) in the Champlain Valley Average monthly temperature for the warmest month (July) is 28 °C (82.4 °F) and average monthly temperature for the coldest month (January) is -11.9 °C (10.6 °F). The frost free-season is 140 days. The area falls within USDA Hardiness zones 5a (and to a small extent, 5b). The Lake influences the climate of the Valley by moderating temperatures enough with offshore winds to delay the onset of fall, and similarly, to delay the advance of spring. Climate change scenarios for the Northeastern US predict an overall increase in temperature, particularly in the winter and predict a slight increase in annual precipitation.

Table 3. Representative climatic features

Frost-free period (average)	140 days
Freeze-free period (average)	160 days
Precipitation total (average)	991 mm

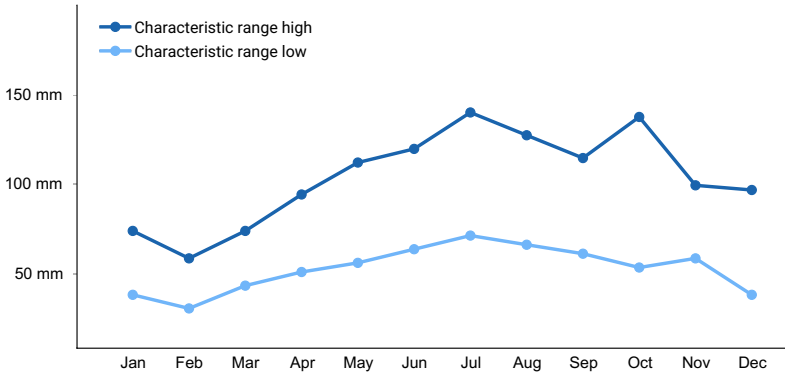


Figure 2. Monthly precipitation range

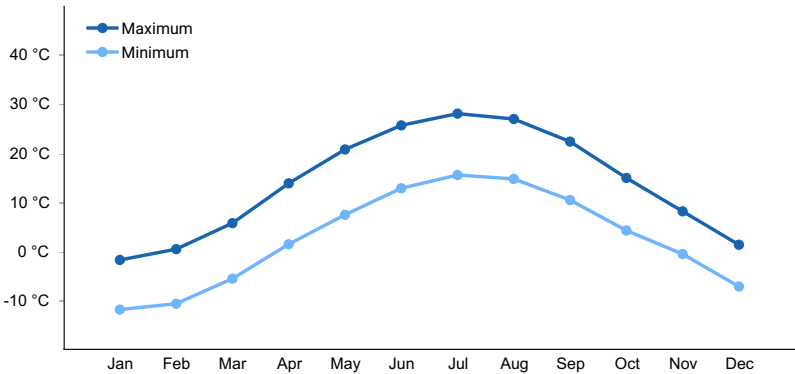


Figure 3. Monthly average minimum and maximum temperature

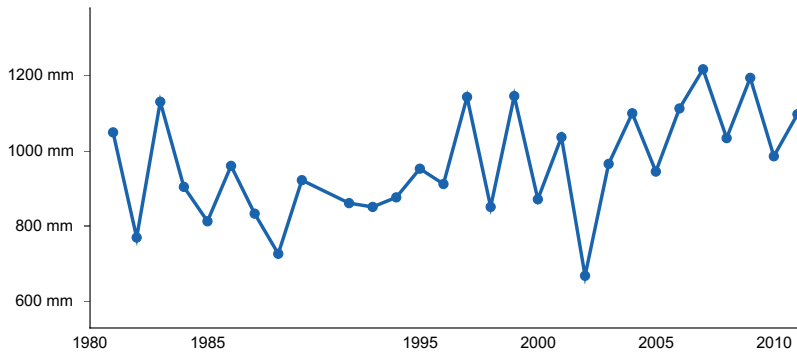


Figure 4. Annual precipitation pattern

Climate stations used

- (1) BURLINGTON INTL AP [USW00014742], South Burlington, VT
- (2) SOUTH HERO [USC00437607], South Hero, VT
- (3) WHITEHALL [USC00309389], Whitehall, NY
- (4) SALISBURY 2 N [USC00437098], Salisbury, VT

Influencing water features

Soil features

The site consists of very deep and moderately well drained soils that are clayey throughout their profile. They formed in calcareous estuarine and glaciolacustrine clays.

The soils have very high natural fertility and a moderately high available moisture capacity. Their permeability is very slow. These soils have only faint mottles in the lower part of the subsoil, but mottles are more distinct as depth increases. This pattern of mottling indicates that the upper part of the subsoil is not frequently wet but that the lower part is saturated for significant periods. From late in fall to early in spring, water is less than 2 feet below the soil surface. It recedes to a depth of 2 feet or more during drier periods. These soils puddle if worked when wet, and they crust and become cloddy when they dry. The dry clods are very hard and are very difficult to crush. These soils are slow to warm in the spring. These soils have a moderate or high shrink-swell potential.

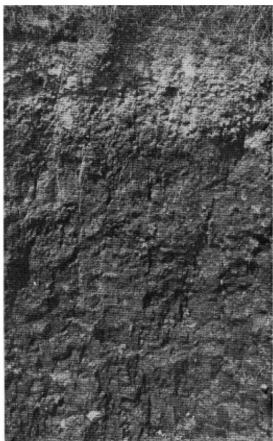


Figure 11.—Profile of a Vergennes clay showing a light-colored surface layer and a blocky, clayey subsoil and substratum. Profile extends to a depth of 3 feet.

Figure 6. Profile of Vergennes Clay

Table 4. Representative soil features

Parent material	(1) Glaciolacustrine deposits—limestone
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Surface texture	(1) Clay (2) Sandy clay (3) Silty clay loam
Family particle size	(1) Clayey
Drainage class	Moderately well drained
Permeability class	Very slow
Soil depth	152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	10.16–15.24 cm
Calcium carbonate equivalent (0-101.6cm)	2–8%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	4.5–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–2%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

In the reference condition, this site is characterized by mature trees, well-developed strata, and high species diversity. Because soils are fertile, much of this site has been lost to agriculture, and only a few small patches of mature forest remain in the US. More research is needed to determine the extent in the nearby eastern Ontario Plain and adjacent Canada. Complete removal of all vegetation and tilling of soils converts the site for agricultural crops, usually corn. Cessation of agriculture allows for the establishment of fallow meadow, often characterized by non-native grasses and forbs, as well as scattered shrubs. This state is short-lived unless mowed or burned at least annually, in which case, the state can persist indefinitely. If unmanaged, early successional native and non-native trees and shrubs become established. These are characterized by wind- or bird-dispersed seeds. If no active management is employed, the site converts gradually to early successional forest comprising young trees, shrubs, and herbs in a patchy mosaic, and is highly variable among locations. If invasive species are present, and in most cases they are, only manual removal, close monitoring for newly established invasive plants, and judicious planting of native trees and shrubs can convert the site to a semblance of the reference state.

State and transition model

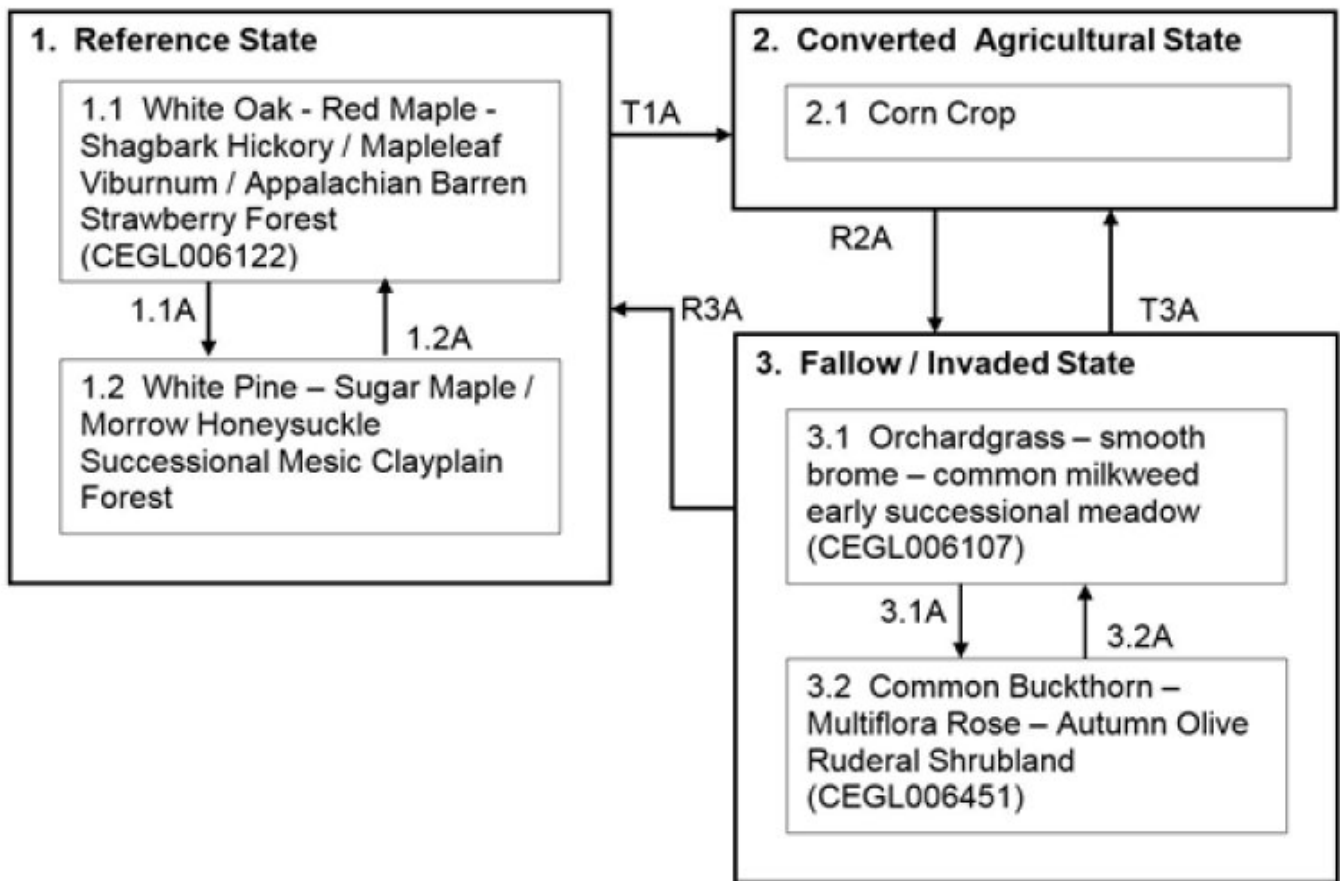


Figure 7. F142XY001VT Mesic clayplains

Code	Activity, Process
1.1A	Tree removal, soil disturbance
T1A, T3A	Removal of all vegetation, soil disturbance and planting of crops
3.2A	Manual removal of invasives, shrub removal
1.2A, 3.1A, R2A	Natural Succession
R2A	Cessation of agriculture, natural succession
R3A	Manual removal of invasives and planting of native species

Figure 8. F142XY001VT; Mesic clayplains

State 1 Reference

This state represents the mesic clayplain forest, characterized by green ash and slippery elm. Associated trees may include northern white cedar, basswood, eastern hemlock, red maple, shagbark hickory, and white pine. The tree canopy is generally closed to partially open. Shrub and herb layers are of variable cover; American hornbeam and southern arrowwood form an open shrub layer. Common herbaceous species include sensitive fern, jack-in-the-pulpit, jewelweed, slender sedge, enchanter's nightshade, and parasol whitetop aster.

Community 1.1

Green ash – Swamp white oak / Graceful sedge Wet Clayplain Forest (*Fraxinus pennsylvanica* – *Quercus*



Figure 9. Mature Mesic Clayplain Forest

This wet, deciduous forest occurs in wet, fertile clay and silt plains. The closed canopy is typically green ash (*Fraxinus pennsylvanica*) and swamp white oak (*Quercus bicolor*). The shrub layer is quite variable and dominated by musclewood aka American hornbeam (*Carpinus caroliniana*). Several wetland plants are found in the understory including the graceful sedge (*Carex gracillima*), Inland sedge (*Carex interior*), and jewelweed (*Impatiens capensis*).

Forest overstory. The closed canopy is Green ash, and Swamp white oak admixed with slippery elm and red maple. Occasional trees include white pine and eastern hemlock. Northern white cedar is sometimes present.

Forest understory. Forest understory includes a variously developed shrub layer of musclewood aka American hornbeam.

The herb layer is rich with ferns, sedges, and herbs - characteristically the graceful sedge, interior sedge, and jewelweed.

Table 5. Soil surface cover

Tree basal cover	2%
Shrub/vine/liana basal cover	1%
Grass/grasslike basal cover	0-1%
Forb basal cover	1-3%
Non-vascular plants	0-5%
Biological crusts	0%
Litter	87-96%
Surface fragments >0.25" and ≤3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

Table 6. Woody ground cover

Downed wood, fine-small (<0.40" diameter; 1-hour fuels)	5-36%
Downed wood, fine-medium (0.40-0.99" diameter; 10-hour fuels)	2-10%
Downed wood, fine-large (1.00-2.99" diameter; 100-hour fuels)	2-5%
Downed wood, coarse-small (3.00-8.99" diameter; 1,000-hour fuels)	1-3%
Downed wood, coarse-large (>9.00" diameter; 10,000-hour fuels)	1-2%
Tree snags** (hard***)	—

Tree snags** (soft***)	-
Tree snag count** (hard***)	
Tree snag count** (hard***)	

* Decomposition Classes: N - no or little integration with the soil surface; I - partial to nearly full integration with the soil surface.

** >10.16cm diameter at 1.3716m above ground and >1.8288m height--if less diameter OR height use applicable down wood type; for pinyon and juniper, use 0.3048m above ground.

*** Hard - tree is dead with most or all of bark intact; Soft - most of bark has sloughed off.

Table 7. Canopy structure (% cover)

Height Above Ground (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	-	-	-	-
>0.15 <= 0.3	-	-	-	-
>0.3 <= 0.6	-	-	-	-
>0.6 <= 1.4	-	-	0-15%	25-60%
>1.4 <= 4	-	15-15%	-	-
>4 <= 12	0-5%	-	-	-
>12 <= 24	60-80%	-	-	-
>24 <= 37	-	-	-	-
>37	-	-	-	-

Community 1.2

White pine - sugar maple / Morrow honeysuckle Successional Mesic

This phase is variable in structure and composition. It is often dominated by white pine, but also supports species characteristic of the mature state in the understory. Other early successional trees include trembling aspen and eastern red-cedar. Invasive species are often present in quantity, including autumn olive, multiflora rose, honeysuckle, and common buckthorn.

Pathway 1.1A

Community 1.1 to 1.2

This pathway results from tree removal and soil disturbance.

Conservation practices

Brush Management
Upland Wildlife Habitat Management

Pathway 1.2A

Community 1.2 to 1.1

Natural succession.

Conservation practices

Upland Wildlife Habitat Management

State 2

Converted to Agriculture

This state bears no resemblance to the reference state or earlier successional states. All native vegetation has been

removed, and soils have been severely disturbed by tilling. Corn is a typical agricultural crop on this site.

State 3

Fallow / Invaded State

This state is short-lived without active management, and arises from natural succession following cessation of agriculture. Early successional species, including exotic invasives, become established on bare soil.

Community 3.1

Orchardgrass - smooth brome - common milkweed early successional meadow



Figure 10. open, sucesional old field

This phase becomes established on bare soil after cessation of agriculture, and is short-lived without annual mowing, but persists indefinitely when actively managed. The dominant plants are orchardgrass (*Dactylis glomerulata*), smooth brome (*Bromus inermis*), and common milkweed (*Asclepias syriaca*) as well as a few incursive shrubs like silky dogwood (*Cornus amomum*).

Table 8. Canopy structure (% cover)

Height Above Ground (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	–	–	–	–
>0.15 <= 0.3	–	–	–	–
>0.3 <= 0.6	–	0-5%	0-100%	0-50%
>0.6 <= 1.4	–	–	–	–
>1.4 <= 4	–	–	–	–
>4 <= 12	–	–	–	–
>12 <= 24	–	–	–	–
>24 <= 37	–	–	–	–
>37	–	–	–	–

Community 3.2

Common buckthorn - silky dogwood - autumn olive ruderal shrubland

This vegetation comprises shrubby old fields dominated by thickets. Variable amounts of invasive plants are present. Notable shrubs include: *Elaeagnus angustifolia*, *Cornus racemosa*, *Viburnum prunifolium*, *Lonicera japonica*, *Lonicera morrowii*, *Ligustrum vulgare*, *Euonymus alatus*, *Rosa multiflora*, *Rhus glabra*, and *Rhus typhina*, with patches of herbaceous vegetation among the shrubs. Shorter shrubs include *Berberis thunbergii* and *Rubus* spp. Small trees are often present but form <25% cover; they include *Juniperus virginiana*, *Betula populifolia*, *Prunus virginiana*, *Acer rubrum*, *Prunus serotina*, and *Fraxinus americana*. The herbaceous layer is variable depending on the density of shrub cover. Typical species are those associated with old fields, grasslands, and

agricultural sites. Common species include *Solidago rugosa*, *Solidago gigantea*, *Solidago nemoralis*, *Anthoxanthum odoratum*, *Poa pratensis*, *Oxalis stricta*, *Viola sororia*, *Euthamia graminifolia*, *Festuca rubra*, *Schizachyrium scoparium*, *Pycnanthemum virginianum*, *Alliaria petiolata*, *Galium mollugo*, *Potentilla simplex*, *Achillea millefolium*, *Daucus carota*, *Trifolium repens*, *Bromus inermis*, *Agrostis gigantea*, and *Elymus repens* (= *Elytrigia repens*), among many others. Vines can be absent or dominant, sometimes covering the tall and short shrubs. Common vines are *Vitis aestivalis*, *Vitis labrusca*, *Toxicodendron radicans*, *Celastrus orbiculata*, *Parthenocissus quinquefolia*, and *Lonicera japonica* (NatureServe 2015). This phase is characterized by an abundance of fleshy fruited shrubs, both native and non-native, that become established by bird and small mammal dispersal. Many of the successional meadow species remain in openings, usually forming a patchy mosaic (NatureServe 2015).

Pathway 3.1A **Community 3.1 to 3.2**

succession to predominately invasive and incursive shrubs

Pathway 3.2A **Community 3.2 to 3.1**

Cutting and removal of invasive and incursive shrubs.

Conservation practices

Brush Management
Invasive Plant Species Control

Transition T1A **State 1 to 2**

This transition occurs as a result of agriculture. All native vegetation is removed, and soils are tilled and planted with crops, usually corn.

Transition R2A **State 2 to 3**

Cessation of agriculture; natural succession.

Restoration pathway R3A **State 3 to 1**

This transition requires the manual removal of invasive species and possibly planting, followed by natural succession to the reference state.

Conservation practices

Tree/Shrub Establishment
Upland Wildlife Habitat Management
Native Plant Community Restoration and Management
Herbaceous Weed Control

Transition T3A **State 3 to 2**

This transition occurs as a result of agriculture. All native vegetation is removed, and soils are tilled and planted with crops, usually corn.

Additional community tables

Table 9. Community 1.1 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)	Diameter (Cm)	Basal Area (Square M/Hectare)
Tree							
eastern white pine	PIST	<i>Pinus strobus</i>	Native	10.1–20.1	10–25	–	–
eastern hemlock	TSCA	<i>Tsuga canadensis</i>	Native	10.1–20.1	10–25	–	–
white ash	FRAM2	<i>Fraxinus americana</i>	Native	10.1–20.1	5–10	–	–
northern red oak	QURU	<i>Quercus rubra</i>	Native	10.1–20.1	5–10	–	–
bigtooth aspen	POGR4	<i>Populus grandidentata</i>	Native	10.1–20.1	5–10	–	–
white oak	QUAL	<i>Quercus alba</i>	Native	10.1–20.1	2–5	–	–
hophornbeam	OSVI	<i>Ostrya virginiana</i>	Native	–	–	–	–
shagbark hickory	CAOV2	<i>Carya ovata</i>	Native	–	–	–	–
red maple	ACRU	<i>Acer rubrum</i>	Native	–	–	–	–
bitternut hickory	CACO15	<i>Carya cordiformis</i>	Native	–	–	–	–
American beech	FAGR	<i>Fagus grandifolia</i>	Native	–	–	–	–
American basswood	TIAM	<i>Tilia americana</i>	Native	–	–	–	–
quaking aspen	POTR5	<i>Populus tremuloides</i>	Native	–	–	–	–
shagbark hickory	CAOV2	<i>Carya ovata</i>	–	–	–	–	–

Table 10. Community 1.1 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)
Grass/grass-like (Graminoids)					
longstalk sedge	CAPE4	<i>Carex pedunculata</i>	Native	0.1–0.5	0.5–1
handsome sedge	CAFO4	<i>Carex formosa</i>	Native	–	–
plantainleaf sedge	CAPL4	<i>Carex plantaginea</i>	Native	–	–
rosy sedge	CARO22	<i>Carex rosea</i>	Native	–	–
whitegrass	LEVI2	<i>Leersia virginica</i>	Native	–	–
Pennsylvania sedge	CAPE6	<i>Carex pensylvanica</i>	Native	–	–
Forb/Herb					
wild sarsaparilla	ARNU2	<i>Aralia nudicaulis</i>	Native	0.1–0.5	0.5–1
Appalachian barren strawberry	WAFR	<i>Waldsteinia fragarioides</i>	Native	0.1–0.5	0.5–1
pointedleaf ticktrefoil	DEGL5	<i>Desmodium glutinosum</i>	Native	0.1–0.5	0.5–1
broadleaf helleborine	EPHE	<i>Epipactis helleborine</i>	Introduced	0.1–0.5	0.5–1
longstyle sweetroot	OSLO	<i>Osmorhiza longistylis</i>	Native	0.1–0.5	0.5–1
broadleaf enchanter's nightshade	CILUC	<i>Circaea lutetiana ssp. canadensis</i>	Native	–	–
spotted geranium	GEMA	<i>Geranium maculatum</i>	Native	–	–
white snakeroot	AGAL5	<i>Ageratina altissima</i>	Native	–	–
American hogpeanut	AMBR2	<i>Amphicarpaea bracteata</i>	Native	–	–

Canadian woodnettle	LACA3	<i>Laportea canadensis</i>	Native	–	–
woodland sunflower	HEDI2	<i>Helianthus divaricatus</i>	Native	–	–
gaywings	POPA5	<i>Polygala paucifolia</i>	Native	–	–
white baneberry	ACPA	<i>Actaea pachypoda</i>	Native	–	–
largefruit blacksnakeroot	SATR4	<i>Sanicula trifoliata</i>	Native	–	–
wreath goldenrod	SOCA4	<i>Solidago caesia</i>	Native	–	–
Fern/fern ally					
intermediate woodfern	DRIN5	<i>Dryopteris intermedia</i>	Native	0.1–0.5	0.5–1
Christmas fern	POAC4	<i>Polystichum acrostichoides</i>	Native	0.1–0.5	0.5–1
northern maidenhair	ADPE	<i>Adiantum pedatum</i>	Native	–	–
Shrub/Subshrub					
American witchhazel	HAVI4	<i>Hamamelis virginiana</i>	Native	2.1–4.9	5–10
American hornbeam	CACA18	<i>Carpinus caroliniana</i>	Native	0.9–4.9	2–5
mapleleaf viburnum	VIAC	<i>Viburnum acerifolium</i>	Native	–	–
eastern leatherwood	DIPA9	<i>Dirca palustris</i>	Native	–	–
alternatleaf dogwood	COAL2	<i>Cornus alternifolia</i>	Native	–	–
American witchhazel	HAVI4	<i>Hamamelis virginiana</i>	Native	–	–
Tree					
striped maple	ACPE	<i>Acer pensylvanicum</i>	Native	2.1–4.9	5–10
American beech	FAGR	<i>Fagus grandifolia</i>	Native	2.1–4.9	1–2
white ash	FRAM2	<i>Fraxinus americana</i>	Native	0.9–4.9	1–2
quaking aspen	POTR5	<i>Populus tremuloides</i>	Native	–	–
sweet birch	BELE	<i>Betula lenta</i>	Native	–	–
Vine/Liana					
eastern poison ivy	TORA2	<i>Toxicodendron radicans</i>	Native	0.1–0.5	0.5–1
Virginia creeper	PAQU2	<i>Parthenocissus quinquefolia</i>	Native	0.1–0.5	0.5–1

Table 11. Community 3.1 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)
Grass/grass-like (Graminoids)					
orchardgrass	DAGL	<i>Dactylis glomerata</i>	Introduced	0–0.9	0–100
smooth brome	BRIN2	<i>Bromus inermis</i>	Introduced	0–0.9	0–50
Forb/Herb					
common milkweed	ASSY	<i>Asclepias syriaca</i>	Native	0–0.9	0–10
wrinkleleaf goldenrod	SORU2	<i>Solidago rugosa</i>	Native	0–0.9	0–10
oxeye daisy	LEVU	<i>Leucanthemum vulgare</i>	Introduced	0–0.9	0–10
Canada goldenrod	SOAL6	<i>Solidago altissima</i>	Native	0–0.9	0–10
Shrub/Subshrub					
Morrow's honeysuckle	LOMO2	<i>Lonicera morrowii</i>	Introduced	0–0.9	0–1
silky dogwood	COAM2	<i>Cornus amomum</i>	Native	0–0.9	0–1
nannyberry	VILE	<i>Viburnum lentago</i>	–	0–0.9	0–1
gray dogwood	CORA6	<i>Cornus racemosa</i>	Native	0–0.9	0–1
Tree					
eastern white pine	PIST	<i>Pinus strobus</i>	Native	0–0.9	0–1
swamp white oak	QUBI	<i>Quercus bicolor</i>	Native	0–0.9	0–1

Table 12. Community 3.2 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)
Grass/grass-like (Graminoids)					
Kentucky bluegrass	POPR	<i>Poa pratensis</i>	Introduced	–	–
redtop	AGGI2	<i>Agrostis gigantea</i>	Unknown	–	–
quackgrass	ELRE4	<i>Elymus repens</i>	Introduced	–	–
red fescue	FERU2	<i>Festuca rubra</i>	Native	–	–
little bluestem	SCSC	<i>Schizachyrium scoparium</i>	Native	–	–
sweet vernalgrass	ANOD	<i>Anthoxanthum odoratum</i>	Introduced	–	–
smooth brome	BRIN2	<i>Bromus inermis</i>	Introduced	–	–
Forb/Herb					
common yellow oxalis	OXST	<i>Oxalis stricta</i>	Native	–	–
common blue violet	VISO	<i>Viola sororia</i>	Native	–	–
flat-top goldentop	EUGR5	<i>Euthamia graminifolia</i>	Native	–	–
common yarrow	ACMI2	<i>Achillea millefolium</i>	Native	–	–
common yarrow	ACMI2	<i>Achillea millefolium</i>	Introduced	–	–
Queen Anne's lace	DACA6	<i>Daucus carota</i>	Introduced	–	–
white clover	TRRE3	<i>Trifolium repens</i>	Introduced	–	–
wrinkleleaf goldenrod	SORU2	<i>Solidago rugosa</i>	Native	–	–
Virginia mountainmint	PYVI	<i>Pycnanthemum virginianum</i>	Native	–	–
garlic mustard	ALPE4	<i>Alliaria petiolata</i>	Introduced	–	–
false baby's breath	GAMO	<i>Galium mollugo</i>	Introduced	–	–
common cinquefoil	POSI2	<i>Potentilla simplex</i>	Native	–	–
giant goldenrod	SOGI	<i>Solidago gigantea</i>	Native	–	–
gray goldenrod	SONE	<i>Solidago nemoralis</i>	Native	–	–
Shrub/Subshrub					

Russian olive	ELAN	<i>Elaeagnus angustifolia</i>	Introduced	-	-
gray dogwood	CORA6	<i>Cornus racemosa</i>	Native	-	-
blackhaw	VIPR	<i>Viburnum prunifolium</i>	Native	-	-
Morrow's honeysuckle	LOMO2	<i>Lonicera morrowii</i>	Introduced	-	-
European privet	LIVU	<i>Ligustrum vulgare</i>	Introduced	-	-
burningbush	EUAL13	<i>Euonymus alatus</i>	Introduced	-	-
multiflora rose	ROMU	<i>Rosa multiflora</i>	Introduced	-	-
smooth sumac	RHGL	<i>Rhus glabra</i>	Native	-	-
staghorn sumac	RHTY	<i>Rhus typhina</i>	Introduced	-	-
Japanese barberry	BETH	<i>Berberis thunbergii</i>	Introduced	-	-
blackberry	RUBUS	<i>Rubus</i>	Native	-	-
common buckthorn	RHCA3	<i>Rhamnus cathartica</i>	Introduced	-	-
Japanese honeysuckle	LOJA	<i>Lonicera japonica</i>	Introduced	-	-
Tree					
American elm	ULAM	<i>Ulmus americana</i>	Native	-	-
eastern redcedar	JUVI	<i>Juniperus virginiana</i>	Native	-	-
gray birch	BEPO	<i>Betula populifolia</i>	Native	-	-
chokecherry	PRVI	<i>Prunus virginiana</i>	Native	-	-
red maple	ACRU	<i>Acer rubrum</i>	Native	-	-
black cherry	PRSE2	<i>Prunus serotina</i>	Native	-	-
white ash	FRAM2	<i>Fraxinus americana</i>	Native	-	-
Vine/Liana					
summer grape	VIAE	<i>Vitis aestivalis</i>	Native	-	-
fox grape	VILA8	<i>Vitis labrusca</i>	Native	-	-
eastern poison ivy	TORA2	<i>Toxicodendron radicans</i>	Native	-	-
eastern poison ivy	TORA2	<i>Toxicodendron radicans</i>	Native	-	-
American ginseng	PAQU	<i>Panax quinquefolius</i>	Native	-	-

Animal community

(Source: Thompson and Sorenson 2000) Mammals characteristic of this site include gray squirrel, eastern chipmunk, raccoon, and white-tailed deer. Beaver also frequent this site where it is associated with standing water. Common birds include wood thrush, eastern wood peewee, ovenbird, northern oriole, and downy woodpecker. Amphibians associated with this site include blue-spotted salamander, American toad, wood frog, and green treefrog.

Hydrological functions

Surface water can pool in areas where soils are poorly drained, but there are no water features associated with this site.

Recreational uses

This site has limited use for recreation other than occasional hiking.

Other products

This site has deep, fertile soils that are heavily used for agriculture.

Inventory data references

K. Metzler, N. Barrett; 2015VT021003, 20151004; Rutland VT

Other references

South Burlington Natural Resources Committee. 2011. Wheeler Nature Park, South Burlington, Vermont, management plan. Draft prepared for the City of South Burlington.

Thompson, E. H., and E. R. Sorenson. 2000. Wetland, woodland, wildland: A guide to the natural communities of Vermont. The Nature Conservancy and the Vermont Department of Fish and Wildlife. University Press of New England, Hanover, NH. 456 pp.

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	05/20/2024
Approved by	Nels Barrett
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

-
5. **Number of gullies and erosion associated with gullies:**
-
6. **Extent of wind scoured, blowouts and/or depositional areas:**
-
7. **Amount of litter movement (describe size and distance expected to travel):**
-
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**
-
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**
-
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**
-
12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**
- Dominant:
- Sub-dominant:
- Other:
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
-
14. **Average percent litter cover (%) and depth (in):**
-
15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
-
16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize**

degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:

17. **Perennial plant reproductive capability:**
