Key to Vegetation Associations at Ozark National Scenic Riverways and Surrounding Area

Key structure: The key is divided into two sections. The first covers natural and semi-natural communities that receive local and global descriptions consistent with the National Vegetation Classification System (USNVC). The second covers cultural and significantly altered community types that were selected for mapping based upon the needs of the resource management staff at Ozark National Scenic Riverways (ONSR). Some community types are represented in both of sections, as they exhibit characteristics that suggest classification as both natural and altered. Subsequently, the key follows the structure of the USNVC hierarchy through the initial levels:

I. Physiognomic type (forests, woodlands, shrublands, herbaceous and sparse herbaceous), then
   A. Woody leaf phenology, if community is a forest, woodland or shrubland, or
   B. Habitat or substrate type, if community is herbaceous (or management activity, for cultural types)

A quick reference key through the hierarchical levels above begins on the next page (page 2). This key allows one to quickly access the appropriate group of vegetation associations based upon physiognomic type and leaf phenology, habitat or growing substrate.

Beyond these divisions, communities are generally grouped together in a manner that parallels the USNVC hierarchy. Therefore, associations that are closely related in the USNVC hierarchy (i.e. within the same alliance) tend to be closely grouped in the key.

THIS KEY IS NOT DICHOTOMOUS. In some sections, there are many choices. USERS SHOULD READ ALL OPTIONS WITHIN THE SAME HIERARCHICAL LEVEL BEFORE PROCEEDING IN THE KEY.

Frequent reference is made to plants that thrive in acid soils (also called “acidiphiles” in this key) and plants that thrive in more basic soils (also called “calciphiles”). Lists of common acidiphiles and calciphiles are included after the key.

Key Results: Successful use of this key will yield two pieces of information: 1) a four digit code and 2) a local common name. For natural and semi-natural communities, the four digit code corresponds exactly to the last four digits of the USNVC identifier for a given association. Within ONSR, the format of that identifier for all natural and semi-natural associations is “CEGL00####”. For cultural and significantly altered communities, the key yields a four character code in the format “SA##” and a common name, both of which are unique to this study and correspond in no way to the USNVC. Descriptions of USNVC vegetation associations are in **Appendices 15-ONSR USNVC Natural Community Descriptions,** while those for and significantly altered communities are in **Appendix 16-ONSR Altered Community Descriptions**.

Appendix 17. Field Key to ONSR Vegetation Communities

Quick Key to Major Groups of Communities Based on Physiognomy and Leaf Phenology, Habitat or Substrate **Page #**

Appendix 17. Field Key to ONSR Vegetation Communities

Quick Key to Major Groups of Communities Based on Physiognomy and Leaf Phenology, Habitat or Substrate **Page #**

SECTION ONE—NATURAL AND SEMI-NATURAL COMMUNITIES

I. FORESTS—Communities with the uppermost stratum composed of large trees, generally more than 15 m tall. Canopy foliar cover is greater than 60%, usually with crowns touching or overlapping and little visible sky between crowns. Other than tree-fall gaps, canopy height and cover are fairly uniform, creating more or less complete shade. Tree and shrub layers generally discreet, forming a multi-layered community.

A. Evergreen vegetation providing more than 75% of canopy foliar cover

1. *Pinus echinata* forest. Canopy cover often at or near 60%, creating a woodland-like appearance. Deciduous trees present in small amounts in canopy and subcanopy. Shrubs and groundflora sparse, dominated by plants that thrive in acid soils. **2400 Pine/Blueberry Forest**

2. *Juniperus virginiana* dominated forests with scattered hardwoods. *Quercus muehlenbergii* and *Q. stellata* often present in the canopy, with plants that thrive in basic soils common in the shrub and groundflora layers. **2108 Cedar-Hardwood Forest/Woodland**

B. Deciduous vegetation providing more than 75% of canopy foliar cover

1. Upland forests of summits, slopes, and small drains and intermittent streams not dominated by annual flooding activity

   a. Communities with post oak providing at least 20% cover, usually dominating with *Quercus velutina, Q. marilandica* and *Carya texana*, on dry, acidic summits, shoulders and slopes. Except on igneous substrates where they can be abundant, *Q. alba* and *Q rubra* few or absent. Cover from 60-80%. Understory and groundflora sparse, dominated by acidiphiles, though can be diverse and thick if upslope from dolomite bedrock outcrops.

      i. Dry acid forest dominated by *Quercus stellata, Q. velutina* and/or *Q. marilandica*. On igneous substrates *Q. alba* and *Q. rubra* may be abundant. Shrub and groundflora layers usually sparse, dominated by plants that thrive in acid soils. **2075 Post-Black-(Blackjack) Oak Forest**

      ii. Dry to dry-mesic igneous forest with often emergent scattered *Quercus velutina* and *Q. stellata* above *Carya texana* canopy. *Q. alba*, *Q. rubra* and *Q. coccinea* may be present. *Cornus florida* in understory. Acidiphiles and generalists in groundflora. **2075i Post-Black Oak-Black Hickory Forest**

      iii. *Quercus stellata*-dominated forests on broad flat, dry-mesic summits. Extremely rare. Groundflora may be dense and/or diverse due to clay hardpan below surface. **2405 Post Oak Flatwoods**

   b. Dry, ultic, *Quercus velutina* forests with variable amounts of *Q. alba* and *Q. coccinea*. *Q. stellata* generally absent. *Carya texana* may be abundant in dry ultic sites. *C. tomentosa* and *C. glabra* may be present in more mesic sites, but generally compose only a fraction of the canopy. *Vaccinium* spp. and/or *Cornus florida* below and plants that thrive in acid soils with or without generalists in the groundflora.

      i. Dry, *Quercus velutina* and *Q. coccinea* dominated forests. *Q. alba* and *Carya* spp. may be present but are generally subdominant and provide little canopy cover. Canopy cover about 60-80%. *C. texana, Vaccinium* spp. and less commonly *Cornus florida* dominate lower layers. Herbs sparse, mostly plants that thrive in acid soils. Dry slopes and summits. **2399 Black-Scarlet Oak/Blueberry Forest**

ii. Dry-mesic forests with mixed *Quercus* spp. and *Carya* spp. predominant. Canopy cover is generally more than 80%. *Cornus florida* and *Nyssa sylvatica* (sometimes *Vaccinium* spp.) below. Groundflora variable; plants that thrive in acid soils and generalists. Moist soil pockets can create dense shrub and groundflora layers. Found throughout landscape. **2076 Mixed Oak-Hickory/Dogwood Forest**

c. Alphic forests dominated by *Quercus alba* alone or in combination with *Q. muehlenbergii* and/or *Q. rubra*. Combination of above species with *Fraxinus americana* greater than 50%. Occasionally, *Carya tomentosa* and/or *C. glabra* will displace these oaks as dominant species. Generalists and/or mesic species in understory and groundflora. *Acer saccharum, Juglans nigra* and *C. cordiformis* may occur but should occupy only a small fraction of the canopy.

i. *Quercus alba, Q. rubra, Carya tomentosa* and *C. glabra* greater than 75% of canopy cover with *Q. muehlenbergii, Fraxinus americana, Juglans nigra* and *C. cordiformis* absent or low in abundance in the canopy and subcanopy. Understory *Cornus florida* dominated with dense shrub and groundflora layer. *Asimina triloba* and *Lindera benzoin* may be patchily distributed in wet areas, but should not dominate shrubs. Communities with few calciphiles. **2066 White Oak/Dogwood Forest**

ii. *Quercus alba, Q. rubra,* and *Q. muehlenbergii and Fraxinus americana* dominated communities with other calciphiles in all layers. *Q. muehlenbergii and Fraxinus americana* may be more important in lower layers than in canopy, where cover by these species may be sparse. *Ulmus* spp. and *Acer saccharum* may be abundant in the understory. *Asimina triloba* and *Lindera benzoin* usually abundant in understory/shrub layer, along with *Acer saccharum*. In upland drains where bedrock is near the surface, *Platanus occidentalis* may be a good indicator of this type. **2070 White Oak Dolomite Forest**

d. Rich, mesic upland forests in low landscape position where *Quercus alba* and *Q. rubra* usually share dominance with *Carya cordiformis, Acer saccharum,* and *Juglans nigra*. Calciphiles may be abundant in the canopy but should not dominate. Understory, shrub and groundflora layers are usually dense and diverse. Moisture-loving calciphiles are often present, and may dominate the shrub and groundflora layers. **2058 Mesic Upland Forest**

e. Early successional species such as *Ulmus* spp., *Acer negundo,* and *Prunus* spp prominent woody component in all layers, along with hardwoods that respond favorably to human disturbance, such as *Juglans nigra* and *Gleditsia triacanthos.* Often, large open-grown *Quercus* spp. may be present. Early successional species are usually found in the shrub and groundflora layers. These may include members of the genera *Prunus, Rubus* and *Rhus*. **SA10 Deciduous Forested Old Field**

2. Bottomland forests associated with major rivers and perennial creeks, dominated by annual flooding activity

a. Floodplain forests dominated by *Platanus occidentalis* and/or *Fraxinus* spp., with *Celtis occidentalis, Ulmus* spp. and sometimes *Quercus macrocarpa* or *Q. alba*. Box elder not dominant, though often present. Groundflora usually not diverse.

i. Floodplain levee forest usually dominated by *Platanus occidentalis, Ulmus* spp., *Celtis occidentalis* and *Acer saccharinum* and other early-successional species. *Fraxinus* spp. and *Juglans nigra* often present in low quantities, *Quercus* spp. generally absent. Occurs close to river and at high flood intensity upper end of floodplains. **7334 Sycamore Floodplain Forest**

ii. *Fraxinus americana* and hardwood dominated communities on stable floodplains, often with *Quercus* spp. Early successional species often abundant, but usually less than 50% of cover of uppermost stratum. Groundflora somewhat more diverse than above, especially in higher, more stable areas. Generally restricted to protected floodplains. **2410 Ash-Oak-Sycamore Forest**

b. Early successional species such as *Ulmus spp.*, *Acer negundo*, and *Prunus* spp prominent woody component in all layers, along with hardwoods that respond favorably to human disturbance, such as *Juglans nigra* and *Gleditsia triacanthos*.. Often, large open-grown *Quercus* spp. may be present. Early successional species are usually found in the shrub and groundflora layers. These may include members of the genera *Prunus, Rubus* and *Rhus*.

i. *Acer negundo* cover less than 40% or generally not dominant. Forest usually multi-layered, diverse. **SA10 Deciduous Forested Old Field**

ii. *Acer negundo* cover greater than 40% or generally very abundant. Forest usually simple in structure with dense, short canopy. Not very diverse. **5033 Box Elder Forest**

c. Terrace and high floodplain forests dominated by various mixes of *Acer saccharum, Juglans nigra, Tilia americana, Carya cordiformis, Quercus macrocarpa, Q. rubra and Q. alba*. *Aesculus glabra*, *Asimina triloba* and *Lindera benzoin* often dense below. Groundflora diverse. **2060 Mesic Bottomland Forest**

3. Saturated Deciduous Forest

a. *Acer rubrum* dominated with dense understory and shrub layers of *Lindera benzoin*. Ferns and nonvascular plants abundant. Soil saturated, with mossy hummocks. **2407 Red Maple Forested Seep**

b. *Quercus lyrata* forests associated with sinkhole ponds or with moist soiled sinkhole areas **4642 Overcup Oak Pond Forest**

C. Mixed forests with both deciduous and evergreen vegetation providing at least 25% of canopy foliar cover

1. *Pinus echinata* and *Quercus* spp. dominated forests

a. Dry, usually somewhat open *Quercus velutina* and *Q. coccinea* dominated forests. Canopy cover about 60-80%. *Quercus stellata* may be abundant in this type, but where coverage is near 60%, classification as woodland might be more appropriate. *Q. alba, Carya tomentosa* and *C. glabra* may be present but are generally subdominant and provide little canopy cover. *C. texana* may be abundant. Shrubs and groundflora usually sparse, mostly plants that thrive in acid soils. *C texana, Vaccinium* spp. and less commonly *Cornus florida* dominate lower layers. Herbs sparse, mostly plants that thrive in acid soils. Dry slopes and summits. **2401 Pine-Black Oak/Blueberry Forest**

b. Dry-mesic, usually full-canopied *Pinus echinata*, mixed-*Quercus* and *Carya* spp. forests. Cover generally more than 80%. *Q. alba*, *Carya tomentosa* and *C. glabra* may be abundant. Mix of generalists and plants that thrive in acid soils in lower layers. *Cornus florida* and *Nyssa sylvatica* (sometimes *Vaccinium*) common below. Groundflora variable; plants that thrive in acid soils and generalists, usually with lots of *Desmodium nudiflorum*. Moist soil pockets can create dense shrub and groundflora layers. **7489 Pine-Mixed Oak/Dogwood Forest**

2. *Juniperus virginiana* and *Quercus (muehlenbergii* and/or *stellata)* dominated forests **2108 Cedar-Hardwood Forest/Woodland**

II. WOODLANDS—Communities with 15- 60 % canopy cover composed of either a) widely spaced, large trees with often spreading limbs, a poorly developed shrub layer (except where fire damage has caused resprouting), and vigorous herbaceous growth or, b) stunted trees of varying heights where identification of the canopy may be difficult due to intermingling between trees and a dense shrub layer, and where groundflora can be diverse and of variable cover. In the latter example, timber quality is generally poor.

A. Evergreen vegetation providing more than 75% of canopy foliar cover

1. *Juniperus virginiana* dominated dry to dry-mesic woodlands generally restricted to areas with dolomite bedrock near the surface. Hardwoods may be abundant. Species that thrive in basic soils dominate. **2108 Cedar-Hardwood Woodland**

2. *Pinus echinata* dominated woodlands, usually restricted to acidic soils and often associated with igneous or sandstone bedrock at or near the surface. *Juniperus virginiana* may be present, though *Pinus echinata* usually forms an emergent layer above. **2402 Pine/Rock Outcrop Woodland**

B. Deciduous vegetation providing more than 75% of canopy foliar cover

1. Xeric to dry woodlands dominated by *Quercus stellata* and *Q. marilandica*, usually with *Carya texana*. Varying amounts of *Q. velutina*. In igneous substrates, *Q. alba, Q. rubra and or Q. shumardii* may be abundant.

   a. Mixed *Quercus* that excel in xeric conditions, such as *Q. stellata* and *Q. velutina* dominate, often with *Carya texana*. *Q. marilandica* may or may not be present. **2149 Post-Black-(Blackjack) Oak Wdland**

   b. Stunted, though often dense, canopy of predominately *Quercus marilandica* and/or *Carya texana*. **2425 Blackjack Oak Scrub Woodland**

2. Dry to dry-mesic woodlands restricted to dolomite outcrops and dominated by *Quercus muehlenbergii, Fraxinus americana* and other calciphiles. Dominated by calciphiles in all layers. *Juniperus virginiana* may be present. May be quite dense in shrub layer due to open canopy, especially where fire has been absent. **2143 Chinkapin Oak-Ash Woodland**

C. Mixed woodlands with both deciduous and evergreen providing at least 25% of canopy foliar cover

1. Dry to dry-mesic woodlands generally restricted to areas with dolomite bedrock near the surface. Calciphiles dominate. **2108 Cedar-Hardwood Woodland**

2. Dry to xeric forests with more ultic soils. Often found above previous community, so can have *Juniperus virginiana*, though generally in low quantities and without other calciphiles. **2393 Pine-Post Oak-Black Oak Woodland**

III. SHRUBLANDS—Uppermost stratum is primarily shrub species or cane. Trees covering < 15% of the sampling area may be present.

A. Evergreen cane brakes

1. Dense stands of *Arundinaria gigantea* without a tree canopy above—limited to river bottoms. **3836 Floodplain Canebrake**

B. Deciduous vegetation is more than 75% of the uppermost stratum

1. Gravel bar/gravel washes

   a. *Hamamelis virginiana*, *Cornus drummondii*, and *Amorpha fruticosa* dominated communities, often with *platanus occidentalis*, *Salix* and *Fraxinus* spp. present but less dominant. Generally in gravel washes along minor waterways and drains, but can occur on protected gravel bars. **3998 Witchhazel-Dogwood Gravel Wash**

   b. *Salix* spp. and/or young *Platanus occidentalis* dominated. Generally restricted to gravel bars on larger rivers. **3899 Willow-Sycamore Gravel Bar**

2. Sinkhole ponds dominated by *Cephalanthus occidentalis* and *Hibiscus muscheutos*. **4742 Buttonbush Sinkhole Pond Swamp**

IV. HERBACEOUS COMMUNITIES—Uppermost stratum primarily herbaceous species, > 25% cover.

A. Fens and marshes

1. Sinkhole ponds marshes with standing water dominated by sedges (Cyperaceae).	**2413**	**Sinkhole Pond Marsh**
2. Fens (saturated soils areas associated with seeps on dolomite substrate)		
a. Short (usually < 1 ft), often patchy herbs and sedges on marl soils near bedrock.	**2404**	**Ozark Fen**
b. Tall (Usually > 3 ft), dense herbs and grasses. Soils can be deep or marl.	**2416**	**Ozark Prairie Fen**

B. Glades

1. Dolomite glades—Open areas dominated by grasses and forbs on dolomite substrate	**2398**	**Dolomite Glade**
2. Igneous glades—Open areas dominated by grasses and forbs on igneous substrate	**2243**	**Igneous Glade**

C. Sloughs and gravel bars

1. Gravel bars and floodplains	**2049**	**Herbaceous Gravel Bar**
2. *Nyphaea odorata* dominated sloughs	**2386**	**Water Lily Aquatic Wetland**

V. SPARSE HERBACEOUS COMMUNITIES—Uppermost stratum primarily herbaceous species, < 25% cover

A. Cliff sparse vegetation

1. Limestone-Dolostone Midwest Dry Cliff Sparse Vegetation	**2291**	**Dry Dolomite Cliff**
2. Limestone-Dolostone Midwest Moist Cliff Sparse Vegetation	**2292**	**Moist Dolomite Cliff**
3. Igneous Ozark Dry Cliff Sparse Vegetation	**2286**	**Dry Igneous Cliff**
4. Igneous Ozark Moist Cliff Sparse Vegetation	**2289**	**Moist Igneous Cliff**

B. Talus sparse vegetation

1. Slopes covered by dolomite talus and dominated by herbaceous calciphiles; Rare.	**2308**	**Dolomite Talus**
2. Slopes covered by igneous talus. Very rare, dominated by herbaceous plants that thrive in acid soils.	**5203**	**Igneous Talus**

C. Sparse Vegetated Gravel/Cobble

1. Riverine Sand Flats-Bars Sparse Vegetation	**2049**	**Herbaceous Gravel Bar**

SECTION TWO—CULTURAL AND SIGNIFICANTLY ALTERED COMMUNITIES

I. FORESTS AND WOODLANDS— Uppermost stratum composed of large trees (generally more than 10 m tall). Canopy cover ranges from about 25 % to 100 %.

A. Evergreen Forests and Woodlands—Evergreen vegetation is more than 75% of the canopy

1. Timber management—Deciduous foliar cover generally represented by *Quercus* and *Carya* spp. limited to the subcanopy and tall shrub layers, but not the canopy. *Prunus* spp., *Rhus* spp. and *Rubus* spp. and *Symphoricarpos orbiculatus* may be present in the shrubs layers, but usually in limited to canopy gaps created by harvest. Stumps and slash may be present

    a. Nearly complete domination by *Pinus echinata*, with practically no deciduous cover in the canopy or subcanopy. Trees densely packed and uniform in height, with little understory growth. Often with little spatial heterogeneity and dense shading. **SA07 Pine Plantation/Timber Management Area**

    b. *Pinus echinata* clearly dominant, but deciduous species usually present in either the canopy or subcanopy. Somewhat open communities, with trees of variable height and a heterogeneous spatial distribution. Undergrowth variable. **SA08 Pine Pole Stand**

2. Old Field—Species that respond well to human disturbance, including *Juglans nigra, Diospyros virginiana, Fraxinus americana, Gleditsia tricanthos,* and *Acer negundo* usually abundant in the subcanopy and tall shrub layers, rather than oaks and hickories. *Prunus* spp., *Rhus* spp. and *Rubus* spp. and *Symphoricarpos orbiculatus* usually high in abundance throughout the shrub layers. Stumps and slash should be absent

    a. *Juniperus virginiana* dominated communities (*Pinus echinata* may be present, too). **SA15 Cedar Old Field**

    b. *Pinus echinata* dominated communities (*Juniperus virginiana* may be present, too). **SA14 Pine Old Field**

3. Residential **SA18 Evergreen Wooded Residence**

B. Deciduous Forests and Woodlands—Deciduous vegetation is more than 75% of the canopy

1. Timber management—Canopy dominated by oaks and hickories. Species that respond well to human disturbance, including *Juglans nigra, Diospyros virginiana, Fraxinus americana, Gleditsia tricanthos,* and *Acer negundo* usually absent or in low abundance in the canopy. *Prunus* spp., *Rhus* spp. and *Rubus* spp. and *Symphoricarpos orbiculatus* may be present in the shrubs layers, but usually limited to canopy gaps created by harvest. Stumps and slash may be present.

    a. Stands dominated by immature trees, usually between 10 and 20 meters tall, and of uniform height and diameter. Scattered large trees may be present, though canopy not characterized by gaps. Shading by tree species generally limits shrub development. Groundflora generally sparse due to dense shading **SA03 Oak-Hickory Pole Stand.**

b. Stands of mature trees characterized by gaps where harvesting has occurred. Canopy cover from mature trees ranges from about 25-80 %. Immature trees usually diverse in height and diameter. Canopy usually somewhat open and woodland-like due to gaps created by harvest. Shrubs and groundflora may be abundant, particularly below canopy gaps **SA01 Oak-Hickory Shelterwood/Select Harvest**

2. Old Fields—Species that respond well to human disturbance, including *Juglans nigra, Diospyros virginiana, Fraxinus americana, Gleditsia tricanthos,* and *Acer negundo* usually abundant in the canopy. *Prunus* spp., *Rhus* spp. and *Rubus* spp. and *Symphoricarpos orbiculatus* usually high in abundance throughout the shrub layers. Stumps and slash should be absent.

a. Mixed early successional trees abundant, including *Prunus* spp., *Juglans nigra, Diospyros virginiana, Fraxinus americana, Gleditsia tricanthos, Acer negundo, Juniperus virginiana,* and *Ulmus* spp. Understory, shrub and groundflora variable, often with lots of non-natives. **SA10 Deciduous Forested Old Field**

b. Floodplain forests where *Acer negundo* dominates. *Platanus occidentalis, Acer saccharinum, Gleditsia triacanthos* and *Fraxinus* and *Prunus* spp. frequently abundant. Usually evidence of human disturbance present. Groundflora usually not diverse. **5033 Box Elder Forest**

3. Residential **SA16 Deciduous Wooded Residence**

C. Mixed Forests and Woodlands—Both deciduous and evergreen vegetation provide at least 25% of canopy foliar cover

1. Timber management—Canopy dominated by *Pinus echinata,* and *Quercus* and *Carya* spp. Species that respond well to human disturbance, including *Juglans nigra, Diospyros virginiana, Fraxinus americana, Gleditsia tricanthos,* and *Acer negundo* usually absent or in low abundance in the canopy. *Prunus* spp., *Rhus* spp. and *Rubus* spp. and *Symphoricarpos orbiculatus* may be present in the shrubs layers, but usually limited to canopy gaps created by harvest. Stumps and slash may be present.

a. Stands of mature trees characterized by gaps where harvesting has occurred. Canopy cover from mature trees ranges from about 25-80 %. Immature trees usually diverse in height and diameter. Canopy usually somewhat open and woodland-like due to gaps created by harvest. Shrubs and groundflora may be abundant, particularly below canopy gaps **SA04 Pine-Oak Shelterwood/Select Harvest**

b. Stands dominated by immature trees, usually between 10 and 20 meters tall, and of uniform height and diameter. Scattered large trees may be present, though canopy not characterized by gaps. Shrubs generally absent due to crowding by tree species, but generally uniform in abundance. Groundflora generally sparse due to dense shading **SA06 Pine-Oak Pole Stand**

2. Old Fields—Species that respond well to human disturbance, including *Juglans nigra, Diospyros virginiana, Fraxinus americana, Gleditsia tricanthos,* and *Acer negundo* usually

abundant in the canopy. *Prunus* spp., *Rhus* spp. and *Rubus* spp. and *Symphoricarpos orbiculatus* usually high in abundance throughout the shrub layers. Stumps and slash should be absent.

a. *Juniperus virginiana* and deciduous species co-dominate — **SA13** **Cedar-Deciduous Wooded Old Field**

b. *Pinus echinata* and deciduous species co-dominate — **SA11** **Pine-Deciduous Wooded Old Field**

3. Residential — **SA17** **Evergreen-Deciduous Wooded Residence**

II. SHRUBLANDS—Uppermost stratum primarily tree and shrub species of generally less than 5 meters, but sometimes up to 10 m. Large trees greater than 10 meters tall may be present but should provide less than 25 % foliar cover

A. Evergreen Shrublands—Evergreen vegetation is more than 75% of the canopy

1. *Juniperus virginiana* dominated communities, though *Pinus echinata* may be present, too. — **SA15** **Cedar Old Field**

2. *Pinus echinata* dominated communities, though *Juniperus virginiana* may be present, too. — **SA14** **Pine Old Field**

B. Deciduous Shrublands—Deciduous vegetation is more than 75% of the uppermost stratum

1. Timber management—Tallest shrubs dominated by hardwoods, perhaps with some *Prunus* spp. *Rhus* spp. and *Rubus* spp. and *Symphoricarpos orbiculatus* may be abundant in the shrub layers. Stumps and slash may be present. — **SA02** **Oak-Hickory Regeneration Stand**

2. Old Fields—Species that respond well to human disturbance, including *Juglans nigra, Diospyros virginiana, Fraxinus americana, Gleditsia tricanthos,* and *Acer negundo* usually abundant in the canopy. *Prunus* spp., *Rhus* spp. and *Rubus* spp. and *Symphoricarpos orbiculatus* usually high in abundance throughout the shrub layers. Stumps and slash should be absent. — **SA09** **Deciduous Shrubby Old Field**

C. Mixed Shrublands—Both deciduous and evergreen vegetation provide ate least 25% of shrub canopy cover

1. Timber management—Tallest shrubs dominated by *Pinus echinata* and hardwoods, perhaps with some *Prunus, Rhus* and *Rubus* spp. and *Symphoricarpos orbiculatus* may be abundant in the shrub layers. Stumps and slash may be present. — **SA05** **Pine-Oak Regeneration Stand**

2. Old Fields—Species that respond well to human disturbance, including *Juglans nigra, Diospyros virginiana, Fraxinus americana, Gleditsia tricanthos,* and *Acer negundo* usually abundant in the canopy. *Prunus* spp., *Rhus* spp. and *Rubus* spp. and *Symphoricarpos orbiculatus* usually high in abundance throughout the shrub layers. Stumps and slash should be absent.

a. *Juniperus virginiana* and deciduous species co-dominate — **SA36** **Cedar-Deciduous Shrubby Old Field**

b. *Pinus echinata* and deciduous species co-dominate — **SA12** **Pine-Deciduous Shrubby Old Field**

III. HERBACEOUS COMMUNITIES—Uppermost stratum herbaceous, foliar cover at least 25%

A. Actively managed herbaceous communities

1. Lawn	**SA19**	**Lawn**
2. Active agricultural		
a. Hay fields/Grazing lands	**SA20**	**Hay fields/Grazing lands**
b. Croplands		
i. Agricultural close grown	**SA21**	**Close grown monoculture**
ii. Agricultural row crop	**SA22**	**Row crop**

B. Herbaceous communities not actively managed

1. Inactive agricultural	**SA23**	**Herbaceous Old Field**

IV. OTHER CULTURAL FEATURES—Non-vegetated features and vegetated utility and transportation corridors

C. Industrial, commercial or residential development

1. Non-vegetated Residential	**SA35**	**Residential**
2. Industrial	**SA26**	**Industrial**
3. Industrial/Commercial	**SA27**	**Industrial/Commercial**
4. Commercial	**SA28**	**Commercial**
5. Commercial/Services	**SA29**	**Commercial/Services**
6. Mixed	**SA30**	**Mixed**
7. Other	**SA31**	**Other**

D. Other development or minimally developed features

1. Lakes, ponds and hatcheries		
a. Regular in shape, repeating	**SA24**	**Hatchery**
b. Irregular in shape	**SA25**	**Lake or Pond**
2. Roads and associated clearings	**SA32**	**Transportation Corridor**
3. Utility corridors		
a. Dominated by woody vegetation	**SA33**	**Shrubby Utility Corridor**
b. Dominated by herbaceous vegetation	**SA34**	**Herbaceous Utility Corridor**

COMMON ACID INDICATOR PLANTS AT ONSR

Trees

Quercus marilandica—blackjack oak
Carya texana—black hickory
Quercus velutina—black oak
Q. coccinea—scarlet oak
Q. stellata—post oak
Pinus echinata—shortleaf pine

Shrubs

Vaccineum—blueberry, all species, especially *V. arboreum*
Rhus aromatica—aromatic sumac
Ceanothus americana—New Jersey tea
Ulmus alata—winged elm
Sassafras albidum—sassafras

Grasses and Grass-like species

Panicum linearifolium—linear-leaved panic grass
Panicum laxifolium—lax-leaved panic grass
Carex nigromarginata—black-margined sedge
Carex umbellata—umbellate sedge
Panicum cummutatum var. *hispidum*
Danthonia spicata—poverty oat grass

Forbs

Parthenium integrifolium—wild quinine
Solidago radula—rough-leaved goldenrod
Solidaga nemoralis—old field gorldenrod
Antennaria plantaginifolia—pussy's toes
Gnaphaleum purpureum—cudweed
Aster patens—spreading aster
Coreopsis palmata—tickseed coreopsis
Aster linearifolius—linear-leaved aster
Solidago hispida—hairy leaved goldenrod
Apocynum cannibinum—dogbane
Ascyrum hypericoides—St. Andrew's cross
Amorpha canescens—lead plant

Legumes

Lespedeza repens—creeping bush clover
Lespedeza procumbens—trailing bush clover
Lespedeza hirta—hairy bush clover
Lespedeza rotundifolia—round-leaved lespedeza
Desmodium nuttallii—Nuttall's tick trefoil
Desmodium laevigatum—smooth-leaved tick trefoil
*Tephrosia virginian*a—goat's rue
Clitoria mariana—climbing butterfly pea

COMMON BASE INDICATOR SPECIES AT ONSR

Drier, open communities

Trees

Quercus rubra—red oak
Q. muehlenbergii—chinkapin oak
Q. shumardii—Shumard's oak
Fraxinus quadrangulata—blue ash
Juniperus virginiana—eastern red cedar
Cercis canadense—redbud

Shrubs

Ptelea trifoliata—hop tree
Celtis tenuifolia—dwarf hackberry
Bumelia lanuginosa—gum bumelia
Rhamnus caroliniana—Carolina buckthorn

Herbaceous

Smilax bona-nox—catbrier
Lithospermum canescens—hoary puccoon
Aster serecia—silky aster
Berlandiera texana—green eyes
Solidago drummondii—Drummond's goldenrod
Aster laevis—smooth-leaved aster
Silphium terebinthenaceum—Prairie dock
Ruellia humilis—hairy petunia
Scleria triglomerata—tall nut rush
Anemone virginiana—tall anemone
Satureja arkansana—calamint
Houstonia nigricans—bluets
Coreopsis lanceolata—lance-leaved coreopsis

Mesic, forested communities

Trees

Quercus rubra—red oak
Q. muehlenbergii—chinkapin oak
Fraxinus americana—green ash
Acer saccharum—sugar maple
Juglans nigra—black walnut
Juglans cinerea—white walnut
Carya cordiformis—bitternut hickory
Platanus occidentalis—eastern sycamore

Shrubs

Carpinus caroliniana—musclewood
Staphylea trifolia—bladdernut
Lindera benzoin—spice bush
Asimina triloba—paw paw
Dirca palustris—leatherwood
Hydrangea arborescens--Hydrangea

Herbaceous

Cimicifuga racemosa—black cohosh
Uvularia grandiflora—bellwort
Hepatica nobilis—liverleaf
Asarum canadense—wild ginger
Geranium maculatum—wild geranium
Cryptotaenia canadense—honewort
Solidago caesia—zig-zag goldenrod
Solidago flexicaulis—broad-leaved goldenrod
Aquilegia canadense—columbine
Desmodium glutinosum—fat-leaved tick trefoil
Desmodium pauciflorum—few-flowered tick trefoil
Anemone virginiana—tall anemone