

## Vegetation Keys

The field keys to the vegetation types will be developed on a park by park basis using the distinguishing physiognomic characteristics and species composition of the vegetation. Because each park will contain a different subset of communities and because individual vegetation types often exhibit local variation, different characteristics may be used to distinguish the same vegetation type from one park to another park.

The features that will generally be used to develop keys will be the structure and cover of the vegetation, along with the dominant and diagnostic species. Use of environmental factors in the key should be done sparingly, since it is expected that the vegetation data will normally be sufficient and because users may not be experts in recognizing more subtle environmental factors such as soil, geology, and hydrology. Environmental factors may be used as ancillary aids to field identification, but should not be the primary criteria. Where used, the criteria used should be both obvious and reasonably interpretable by a non-ecologist. For example: "vegetation is on a slope" versus "vegetation is on a relatively level surface" will generally be clear to users, but "vegetation is influenced by tides" versus "vegetation is not influenced by tides" may not be clear if the vegetation is a long way from the water's edge and the tide is out. Even asking a user to distinguish between a wetland and a non-wetland may be problematic for some vegetation stands.

Technical terms used in a key or terms that may be interpreted differently by different users (e.g., "subcanopy," "dominant") should be defined in a key glossary.

The key should be hierarchical, but need not follow a vegetation hierarchy (e.g., the National Vegetation Classification hierarchy). Often, the factors that best distinguish local expressions of vegetation types are technical criteria, rather than strictly taxonomic criteria.

***ATTACHMENT: Two Example Field Keys***

EXAMPLE 1

**ASSATEAGUE ISLAND NATIONAL SEASHORE**

## VEGETATION FIELD KEYS ASSATEAGUE ISLAND NATIONAL SEASHORE

Instructions on use of keys:

These keys are dichotomous and hierarchical. The user is directed through a number of couplets, starting with couplet 1 and should select whichever side of the couplet (a or b) fits the vegetation best. The user should read *both* sides of the couplet (both a and b) before evaluating and proceeding. At several places in the keys, the user is asked to consider multiple (2-4) criteria on each side of the couplet. Where multiple, independent criteria are evaluated, criteria on both sides of the couplet may prove to be correct (ie, the criteria on each couplet side are not necessarily mutually exclusive), and the user should evaluate each individual criterion independently from the others, consider all criteria on each side of the couplet, and select the couplet side that *best* represents the vegetation before proceeding. Each couplet will either lead to either another couplet to be evaluated in progression or at a vegetation type.

In some individual statements, the user is asked to estimate the combined (aggregate) cover of several species. In these cases, one, some or all of the named species may be present. For purposes of estimating cover, these multiple species should be considered a single species; if a part of the cover of species B is overtopped by part of the cover for species A, this portion of the cover for species B should not be counted.

There may be more than one path through the keys to arriving at an individual vegetation type.

These keys are designed to be used in relatively homogeneous stands of vegetation within Assateague Island National Seashore and to be optimally accurate when vegetation is observed at a scale of 0.1 to 1.0 hectares (this range is somewhat dependent on the physiognomic class and the species diversity of the vegetation type). It will become progressively less reliable at smaller scales. It may not be reliable outside of Assateague Island National Seashore.

It is expected that users can identify all species named in the keys (and potential species with which they may be confused at Assateague Island National Seashore). For users with more limited knowledge of the full flora of this site, the keys will likely work adequately if the user omits evaluating all key criteria (eg., shrub and herbaceous species for someone who recognizes only trees) that refer to any species unknown to him/her (do not use a criterion, if you know some, but not all, individual species named in a single criterion). The keys also assume that the user can estimate plant cover relatively accurately and precisely.

Keys are imperfect. The user should confirm a keyed answer by

### **GLOSSARY OF TERMS USED IN THESE KEYS:**

**Absolute cover:** The proportion of an observed area that is underneath (covered by) the canopy of an individual plant species (or a group of plant species). “Underneath” means under the vertical projection down to the ground of the horizontal outline of the foliar crown of the plant species or group. It is often thought of the area outlined by the “drip line” of the crown; small openings between branches and leaves within this outline are generally not subtracted from the canopy cover. Canopy cover of individuals of the same applicable species (or the same applicable group) that is overtopped by canopy cover of that same species or group is not counted. If the observation area is 0.25 hectare (2,500 square meters), and the

canopy of any eastern red cedar (*Juniperus virginiana*) occurs over 150 square meters of this area, then the absolute cover of eastern red cedar over this observation area is 6% (150 divided by/ 2,500).

**Relative cover:** The proportion of the total of all absolute cover (all species in the observation area or all species within a specified layer in the observation area) area that is comprised of the species or species group. If a tree layer is comprised of 40% absolute cover of boxelder (*Acer negundo*), 20% cover of sweet gum (*Acer negundo*) and 20 % cover of American sycamore (*Platanus occidentalis*), then the *relative* cover of boxelder for the observed area is 50% (40% divided by the sum of 40% + 20% + 20%) and the relative cover of the other two species is 25% each. The relative cover for all species for an observation area, or for a specified vegetation layer in an observation area must sum to 100%.

**Dominant (dominated by):** For purposes of these keys, having the highest cover (the plurality of all cover) of any species or species group within the observation area.

**Co-dominant:**

**Layer:** A grouping of plants within a vegetation stand that have a similar life form and height range. The layers used in these keys are tree, shrub, vine, and herbaceous, with the life form groups are defined individually below. Layer is synonymous with stratum.

**Trees:** For purposes of these keys, woody plants generally more than 5 meters tall and usually have multiple stems only in response to past physical damage to the main stem.

**Vines:** For purposes of these keys, woody or herbaceous plants with elongated (generally more than 1 meter) aerial stems that are not self-supporting. Vines are supported by other plants or creep along the ground.

**Shrubs:** For purposes of these keys, woody plants generally less than 5 meters tall. Often produce multiple stems in the absence of physical damage to a main stem.

**Herbaceous:** Non-woody vascular plant species. For purposes of these keys, seedlings of shrubs and trees that are less than 0.5 meter tall are included in the herbaceous layer.

**Forbs:** Broad-leaved herbaceous plant species (excludes grasses, sedges, and rushes).

**Graminoids:** For purposes of these keys, species in the families Poaceae (grasses), Cyperaceae (sedges), or Juncaceae (rushes).

**Wetlands:** Areas with wetland plant species (those ranked OBL or FACW on National List of plants that occur in wetlands) dominant.

**Uplands:** Areas with non-wetland plant species (those ranked FAC, FACU, or UPL (not listed) on National List of plants that occur in wetlands) dominant.

# ASSATEAGUE ISLAND NATIONAL SEASHORE VEGETATION KEY – MASTER KEY

1a. Vegetation not apparent during growing season (NVCS Unvegetated Division).....go to 2

1b. Vegetation apparent during growing season (may be very sparse) (includes submerged vegetation).....  
.....  
...go to 4

2a. Anthropogenic surfaces, including pavement, buildings, unvegetated fill.....Built Up Areas

2b. Not as above, natural surfaces.....go to 3

3a. Water surfaces (bays, tidal creeks, ponds, marsh pools).....Water

3b. Sandy or muddy surfaces regularly inundated by tides.....Sandy Intertidal (Unvegetated)

4a. Submerged hydromorphic vegetation of bays, tidal creeks, and occasionally salt marsh pools (Herbaceous Vegetation, in part).....go to 5

4b. Terrestrial or emergent vegetation of wetlands or uplands.....go to 6

5a. *Zostera marina* is dominant or co-dominant with *Ruppia maritima*.....  
.....*Zostera marina* Herbaceous Vegetation [4336]

5b. *Ruppia maritima* is dominant; *Zostera marina* is absent or is present at low relative cover.....  
.....*Ruppia maritima* Acadian/Virginian Zone Temperate Herbaceous Vegetation [6167]

6a. Vegetation woody, tall. The combined absolute cover of vegetation that is more than 2 meters tall is greater than or equal to 25%.....go to Key A (Forests, Woodlands, Shrublands (in part))

6b. Vegetation generally shorter (combined absolute cover of vegetation that is more than 2 meters tall is less than 25%)..... go to 7

7a. Vegetation is characterized by shrubs less than 2 meters tall, dwarf-shrubs (*Hudsonia tomentosa*), and/or vines (ie., all shrub and vine species combined account for less than 25% absolute cover)..... go to Key B (Shrublands, (in part) and Dwarf Shrublands)

7b. Vegetation is characterized by herbs (all shrub and vine species combined account for less than 25% absolute cover)..go to Key C (Shrublands (in part), Herbaceous Vegetation (in part), Sparse Vegetation)

**KEY A**  
**Forests, Woodlands, Shrublands (in part)**

8a. *Pinus taeda* has greater than or equal to 25% absolute cover *and* has greatest cover of any species that is 2 meters tall or taller.....go to 9

8b. *Pinus taeda* has less than 25% absolute cover *or* is exceeded in cover among woody species that are 2 meters tall or taller by at least one other species.....go to 11

9a. Vegetation has a rather open tree canopy, with patches of bare sand prevalent; *Pinus taeda* occurs at less than 60% absolute cover; the combined absolute cover of the vines of the vines *Smilax rotundifolia*, *Vitis rotundifolia*, *Toxicodendron radicans*, and/or *Parthenocissus quinquefolia* is less than 15 %; *Morella cerifera* is absent or present at less than 1% absolute cover; the grasses *Dichanthelium acuminatum* and/or *Andropogon virginicus* var. *virginicus* are absent or are present in trace amounts (less than 0.5% in combined absolute cover).....  
.....*Pinus taeda* / *Hudsonia tomentosa* **Woodland** [6052]

9b. Vegetation is more or less densely shaded; *Pinus taeda* occurs at greater than or equal to 60% absolute cover; the combined absolute cover of the vines *Smilax rotundifolia*, *Vitis rotundifolia*, *Toxicodendron radicans*, and/or *Parthenocissus quinquefolia* is greater than or equal to 15 %; *Morella cerifera* is present at greater than or equal to 1% absolute cover; the grasses *Dichanthelium acuminatum* and/or *Andropogon virginicus* var. *virginicus* are present and usually greater than 0.5% combined absolute cover..... go to 10

10a. Soils are characterized by moderately deep muck, surface water often present; understory layer dominated by hydrophytes (eg., *Woodwardia areolata*, *Osmunda regalis*, *Osmunda cinnamomea*, *Polygonum pensylvanicum* and/or others  
.....  
.....*Pinus taeda* / *Morella cerifera* / *Osmunda regalis* var. *spectabilis*  
**Forest** [6137]

10b. Soils are characterized by duff overlying sands; not influenced by water table; understory layer is not dominated by hydrophytes.....  
...*Pinus taeda* – *Quercus (falcata, nigra)* / *Morella cerifera* / *Vitis rotundifolia*  
**Forest** [6040]

11a. *Spartina patens* is present at greater than or equal to 25% absolute cover.....go to 12

11b. *Spartina patens* present at less than 25% absolute cover.....go to 14

12a. *Iva frutescens* is present at greater than or equal to 10% absolute cover; *Morella cerifera* is present at less than 20% absolute cover.....  
.....*Iva frutescens* / *Spartina patens*  
**Shrubland** [6848]

12b. *Iva frutescens* is absent or present at less than 10% absolute cover; *Morella cerifera* is present at greater than or equal to 20% absolute cover.....go to 13

13a. *Iva frutescens* is present; the combined absolute cover of *Schoenoplectus pungens*, *Setaria parviflora*, *Fimbristylis castanea*, *Pluchea odorata*, and/or *Panicum virgatum* is greater than or equal to 20%; wetland vegetation of upper margins of tidal marshes..... *Morella cerifera* - *Baccharis halimifolia* / *Eleocharis fallax* Shrubland [6846]

13b. *Iva frutescens* is absent; the combined absolute cover of *Schoenoplectus pungens*, *Setaria parviflora*, *Fimbristylis castanea*, *Pluchea odorata*, and/or *Panicum virgatum* is less than 20%; upland vegetation...*Morella cerifera* / *Spartina patens* Shrubland [3839]

14a. *Morella pensylvanica* is present at greater than or equal to 1% absolute cover and is often co-dominant or dominant..... *Morella pensylvanica* / *Diodia teres* Shrubland [3881]

14b. *Morella pensylvanica* is absent or is present at less than 1% absolute cover).....go to 15

15a. Canopy is somewhat open; the absolute cover of woody vegetation that is more than 2 meters tall is less than 75%; the absolute cover of *Spartina patens* is and greater than or equal to 3%; total graminoid cover is greater than or equal to 60%, *Solidago sempervirens* is usually present, *Parthenocissus quinquefolia* is absent.....

.....*Morella cerifera* / *Spartina patens* Shrubland [3839]

15b. Canopy is more or less closed; the absolute cover of woody vegetation that is more than 2 meters tall is greater than or equal to 75%; the absolute cover of *Spartina patens* is absent or present at less than 3%; total graminoid cover < 60%, *Solidago sempervirens* is usually absent, *Parthenocissus quinquefolia* may be present.....go to 16

16a. *Morella cerifera* is strongly dominant (greater than or equal to 75% relative cover of woody cover that is taller than 2 meters); the combined absolute cover of all trees or shrubs taller than 2 meters other than *Morella cerifera* and *Baccharis halimifolia* is less than 10%; *Smilax rotundifolia* is either absent or present at less than 3% absolute cover; hydrophytes are frequent to dominant in the herbaceous layer.....*Morella cerifera* / *Hydrocotyle verticillata* Shrubland [3840]

16b. *Morella cerifera* is not dominant or is co-dominant with other tall woody species (less than 75% relative cover of woody cover that is taller than 2 meters). The combined absolute cover of all trees or shrubs that are taller than 2 meters other than *Morella cerifera* and *Baccharis halimifolia* is greater than or equal to 10% (such species may include, but are not limited to, *Prunus serotina*, *Photinia pyrifolia*, *Vaccinium corymbosum*, *Acer rubrum*, *Diospyros virginiana*, *Pinus taeda*, and/or *Amelanchier canadensis*); *Smilax rotundifolia* is present at greater than or equal to 3% absolute cover; either upland species or hydrophytes are frequent to

dominant in the herbaceous  
layer.....go to 17

17a. Soils are often wet and are influenced by water table; hydrophytic vegetation dominates; *Prunus serotina* is absent or unimportant (less than 3% absolute cover); the combined absolute cover of *Prunus serotina*, *Photinia pyrifolia*, *Amelanchier canadensis* and/or *Diospyros virginiana* is less than 10%.....*Acer rubrum* - *Nyssa sylvatica* - *Magnolia virginiana* / *Viburnum nudum var. nudum* / *Osmunda cinnamomea* - *Woodwardia areolata* Forest [6238]

17b. Soils are usually dry to mesic and are not influenced by water table; hydrophytic vegetation is not important. *Prunus serotina* is present at greater than or equal to 3% absolute cover. The combined absolute cover of *Prunus serotina*, *Photinia pyrifolia*, *Amelanchier canadensis* and/or *Diospyros virginiana* is greater than or equal to 10%

.....  
.....*Prunus serotina* / *Morella cerifera* / *Smilax rotundifolia* Forest

**KEY B**  
**Shrublands, (in part) and Dwarf Shrublands**

18a. The combined absolute cover of all vine species (*Smilax* spp., *Toxicodendron radicans*, *Rubus* spp., *Vitis rotundifolia*, and/or *Parthenocissus quinquefolia*, and others) is greater than or equal to 40%.....*Smilax glauca* - *Toxicodendron radicans* **Vine-Shrubland** [3886]

18b. The combined absolute cover of all vine species is less than 40% (though sometimes exceeding shrub and/or dwarf-shrub species cover).....go to 19

19a. The absolute cover of the dwarf-shrub *Hudsonia tomentosa* is equal to or exceeds 20% and exceeds that of all other individual woody species.....*Hudsonia tomentosa* / *Panicum amarum* var. *amarulum* **Dwarf-shrubland** [3950]

19b. The absolute cover of the dwarf-shrub *Hudsonia tomentosa* is less than 20% or is exceeded in by the absolute cover of at least one other woody species.....go to 20

20a. *Morella pensylvanica* is present.....go to 21

20b. *Morella pensylvanica* is absent.....go to 23

21a. Vegetation of seasonally wet areas, with at least three of the following species present: *Schoenoplectus pungens*, *Drosera intermedia*, *Vaccinium corymbosum*, *Juncus canadensis*, *Panicum virgatum*; the combined absolute cover of all of these species is greater than or equal to 15%.....*Morella cerifera* - *Vaccinium corymbosum* **Shrubland** [3906]

21b. Vegetation of dry areas, with no more than two of the above mentioned five species present; the combined absolute cover of all of these species is less than 15%.....go to 22

22a. Vegetation of foredunes or of stabilized anthropogenic spoil deposits; the combined absolute cover of the perennial graminoids *Spartina patens*, *Schizachyrium littorale*, *Andropogon virginicus* var. *virginicus*, *Ammophila breviligulata*, *Juncus dichotomus*, and/or *Panicum amarum* var. *amarulum* is less than 25%; no more than one of the following species is present: *Rhus copallinum*, *Dichanthelium scoparium*, *Eupatorium hyssopifolium*, *Eupatorium rotundifolium*, *Pseudognaphalium obtusifolium*; the combined absolute cover of these species is less than 2%.....*Morella pensylvanica* / *Diodia teres* **Shrubland** [3881]

22b. Vegetation of areas other than foredunes or stabilized anthropogenic spoil deposits, with some combination of the perennial graminoids *Spartina patens*, *Schizachyrium littorale*, *Andropogon virginicus* var. *virginicus*, *Ammophila breviligulata*, *Juncus dichotomus*, and/or *Panicum amarum* var. *amarulum*

present at greater than or equal to 25% combined absolute cover; at least two of the following five species are present: *Rhus copallinum*, *Dichanthelium scoparium*, *Eupatorium hyssopifolium*, *Eupatorium rotundifolium*, *Pseudognaphalium obtusifolium*; the combined absolute cover of any combination of these five species is greater than or equal to 2%.....

*Morella (pensylvanica, cerifera) / Schizachyrium littorale - Eupatorium hyssopifolium* Shrub Herbaceous Vegetation [4240]

23a. *Iva frutescens* is present at greater than or equal to 10% in absolute cover; the absolute cover of *Morella cerifera* is less than 20%

.....  
.....*Iva frutescens / Spartina patens*  
**Shrubland** [6848]

23b. *Iva frutescens* is absent or present at less than 10% in absolute cover; the absolute cover of *Morella cerifera* is less than 20%

.....go to 24

24a. *Baccharis halimifolia* is absent or is present at less than 1% in absolute cover; *Spartina patens* is absent or present at less than 3% absolute cover; the combined cover of the species *Drosera intermedia*, *Juncus dichotomus*, and/or *Juncus canadensis* is greater than or equal to 3%, and at least two of these species are present.....

.....*Morella cerifera - Vaccinium corymbosum*  
**Shrubland** [3906]

24b. *Baccharis halimifolia* is present at greater than or equal to 1% in absolute cover; *Spartina patens* is present at greater than or equal to 3% in absolute cover; the combined absolute cover of the species *Drosera intermedia*, *Juncus dichotomus*, and/or *Juncus canadensis* is less than 3%, and no more than one of these three species is present.go to 25

25a. *Iva frutescens* is present; the combined absolute cover of *Schoenoplectus pungens*, *Setaria parviflora*, *Fimbristylis castanea*, *Pluchea odorata*, and/or *Panicum virgatum* is greater than or equal to 20%; wetland vegetation of upper margins of tidal marshes.....

.....*Morella cerifera - Baccharis halimifolia / Eleocharis fallax*  
**Shrubland** [6846]

25b. *Iva frutescens* is absent; the combined absolute cover of *Schoenoplectus pungens*, *Setaria parviflora*, *Fimbristylis castanea*, *Pluchea odorata*, and/or *Panicum virgatum* is less than 20%; upland vegetation.....

.....*Morella cerifera / Spartina patens* **Shrubland** [3839]

**KEY C**

**(Shrublands (in part), Herbaceous Vegetation (in part), and Sparse Vegetation)**

26a. The combined absolute cover of *Spartina alterniflora*, *Salicornia* spp., and/or *Juncus roemerianus* is greater than or equal to 10%; *Limonium carolinianum* may be present or not; vegetation of salt marshes or salt pannes.....go to 27

26b. The combined absolute cover of *Spartina alterniflora*, *Salicornia* spp., and/or *Juncus roemerianus* is less than 10%; *Limonium carolinianum* is absent; vegetation of salt marshes, salt pannes, or other habitats.....go to 30

27a. The cover of *Juncus roemerianus* exceeds that of any other species (usually strongly dominant)..... ***Juncus roemerianus* Herbaceous Vegetation** [4186]

27b. *Juncus roemerianus* is absent, or if present, is exceeded in cover by at least one other species.....go to 28

28a. *Spartina alterniflora* is monotypic with little bare substrate.....  
***Spartina alterniflora* / (*Ascophyllum nodosum*) Acadian/Virginian Zone Herbaceous Vegetation** [4192]

28b. Vegetation is not as above.....go to 29

29a. *Distichlis spicata* has the highest absolute cover of any herbaceous species...  
***Spartina alterniflora* / (*Ascophyllum nodosum*) Acadian/Virginian Zone Herbaceous Vegetation** [4192] (*Distichlis spicata* variant)

29b. The combined cover of *Salicornia* spp. exceeds the combined cover of *Distichlis spicata* and/or *Spartina alterniflora*.....  
***Salicornia* (*virginica*, *bigelovii*, *maritima*) - *Spartina alterniflora* Herbaceous Vegetation** [4308]

30a. *Phragmites australis* is present at equal to or greater than 50% relative cover of all herbaceous species combined.....***Phragmites australis* Herbaceous Vegetation** [4187]

30b. *Phragmites australis* is absent or, if present, comprises less than 50% of the relative cover of all herbaceous species combined.....go to 31

31a. The absolute cover of *Typha angustifolia* is greater than or equal to 20%.....

...*Typha angustifolia* / *Hibiscus moschuetos* **Herbaceous Vegetation**  
[4201]

31b. *Typha angustifolia* is absent or is present at less than 20% absolute cover....

.....  
go to 32

32a. The absolute cover of *Panicum virgatum* is greater than or equal to 30% and the relative cover of *Panicum virgatum* (for herbaceous layer) is greater than or equal to 40%.....

**(*Morella cerifera*) / *Panicum virgatum* - *Spartina patens***  
**Herbaceous Vegetation CEG004129**

32b. The absolute cover of *Panicum virgatum* is less than 30% or the relative cover of *Panicum virgatum* (for herbaceous layer) is less than 40%.....

.....  
...go to 33

33a. *Ammophila breviligulata* is present at greater than or equal to 0.5% absolute cover.....go to 34

33b. *Ammophila breviligulata* is absent, or is present at less than 0.5% absolute cover; sparse vegetation of sand flats and upper beaches.....

.....  
.go to 38

34a. The combined absolute cover of annual forb species (*Cakile edentula*, *Salsola kali* ssp. *kali*, *Chamaesyce polygonifolia*, *Sesuvium maritimum*, *Atriplex cristata*, *Salicornia* spp. and/or others) exceeds or equals that of *Ammophila breviligulata*.....

.....  
go to 35

34b. Absolute cover of *Ammophila breviligulata* exceeds that of all annual forb species combined.....go to 36

35a. The combined absolute cover of the species *Salsola kali* ssp. *kali*, *Chamaesyce polygonifolia*, *Amaranthus pumilus*, *Oenothera humifusa*, and/or *Ammophila breviligulata* is more than twice that of *Sesuvium maritimum*, *Salicornia* spp., *Atriplex* spp., *Suaeda* spp., and/or *Spartina alterniflora* .....  
***Cakile edentula* ssp. *edentula* - *Chamaesyce polygonifolia* Sparse Vegetation [4400]**

35b. The combined absolute cover of the of the species *Sesuvium maritimum*, *Salicornia* spp. *Atriplex* spp., *Suaeda* spp., and/or *Spartina alterniflora* is at least one-half that of *Salsola kali* ssp. *kali*, *Chamaesyce polygonifolia*, *Amaranthus pumilus*, *Oenothera humifusa*, and/or *Ammophila breviligulata*.....  
*Sesuvium portulacastrum* – *Atriplex* spp. – *Suaeda* spp. **Sparse Vegetation** [4406]

36a. The relative cover of *Ammophila breviligulata* is at least 40% of the total herbaceous species cover; the combined absolute cover of all woody species cover is less than or equal to 1%, vegetation of foredunes.....  
*Ammophila breviligulata* - *Panicum amarum* var. *amarum* **Herbaceous Vegetation** [4403]

36b. The relative cover of *Ammophila breviligulata* is less than 40% of the total herbaceous species cover; the combined absolute cover of all woody species cover is greater than 1%, vegetation of foredunes or of stabilized spoil deposits.....go to 37

37a. Vegetation of foredunes or of stabilized anthropogenic spoil deposits; the combined absolute cover of the perennial graminoids *Spartina patens*, *Schizachyrium littorale*, *Andropogon virginicus* var. *virginicus*, *Ammophila breviligulata*, *Juncus dichotomus*, and/or *Panicum amarum* var. *amarulum* is less than 25%; no more than one of the following species is present: *Rhus copallinum*, *Dichanthelium scoparium*, *Eupatorium hyssopifolium*, *Eupatorium rotundifolium*, *Gnaphalium obtusifolium*; the combined absolute cover of these species is less than 2%....*Morella pensylvanica* / *Diodia teres* **Shrubland** [3881]

37b. Vegetation of areas other than foredunes or stabilized anthropogenic spoil deposits, with some combination of the perennial graminoids *Spartina patens*, *Schizachyrium littorale*, *Andropogon virginicus* var. *virginicus*, *Ammophila breviligulata*, *Juncus dichotomus*, and/or *Panicum amarum* var. *amarulum* present at greater than or equal to 25% combined absolute cover; at least two of the following five species are present: *Rhus copallinum*, *Dichanthelium scoparium*, *Eupatorium hyssopifolium*, *Eupatorium rotundifolium*, *Gnaphalium obtusifolium*; the combined absolute cover of any combination of these five species is greater than or equal to 2%.....

***Morella (pensylvanica, cerifera) / Schizachyrium littorale - Eupatorium hyssopifolium* Shrub Herbaceous Vegetation [4240]**

38a. The relative cover of *Schoenoplectus pungens* is less than 65% of the herbaceous vegetation cover.....g  
o to 39

38b. The relative cover of *Schoenoplectus pungens* is greater than or equal to 65% of the herbaceous vegetation cover.....go to 40

39a. The absolute cover of *Eleocharis* spp. and /or *Fimbristylis* spp. combined is greater than 5%; species richness is modest (averages more than 5 species per 100 m<sup>2</sup>); vegetation of fresh water wetlands.....

...  
***Schoenoplectus pungens - Fimbristylis (castanea, caroliniana)* Herbaceous Vegetation [4117]**

39b. The absolute cover of *Eleocharis* spp. and /or *Fimbristylis* spp. combined is less than 5%; species richness is low (averages 5 species or fewer per 100 m<sup>2</sup>); vegetation of sandy overwash flats.....

***Spartina patens - Schoenoplectus pungens - Solidago sempervirens* Herbaceous Vegetation [4097]**

40a. *Juncus dichotomus* is present at greater than or equal to 20% absolute cover; at least two of the following three species are present (*Juncus canadensis*, *Linum medium*, *Drosera intermedia*, *Lycopodiella appressa*); vegetation of seasonally flooded wetlands.....

.....***Juncus (dichotomus, scirpioides) - Drosera intermedia* Herbaceous Vegetation [4111]**

40. *Juncus dichotomus* is absent or is present at less than 20% absolute cover. No more than one of the following three species is present (*Juncus canadensis*, *Linum medium*, *Drosera intermedia*, *Lycopodiella appressa*); vegetation of uplands or tidal marshes.....go to 41

41a. The combined relative cover of the graminoid species *Spartina patens*, *Distichlis spicata*, *Eleocharis rostellata*, *Schoenoplectus pungens* and/or *Scirpus robustus* equals or exceeds 75% of all herbaceous cover; *Morella pensylvanica* is absent .....go to 42

41b. The above named graminoid species account for less than 75% of relative herbaceous cover and only *Spartina patens* occurs at more than 1% absolute cover; *Morella pensylvanica* is present.....

***Morella (pensylvanica, cerifera) / Schizachyrium littorale -Eupatorium hyssopifolium* Shrub Herbaceous Vegetation [4240]**

42a. At least two of the following species present: *Distichlis spicata*, *Eleocharis rostellata*, *Lythrum lineare*, *Kosteletzkya virginica*, *Spartina*

*alterniflora*, and/or *Scirpus robustus* (may be at low cover).....go to 43

42b. No more than one of the above named six species is present.....go to 44

43a. The relative cover of *Eleocharis rostellata* is greater than or equal to 50%.....*Eleocharis rostellata* - *Spartina patens* **Herbaceous Vegetation** [6611]

43b. The relative cover of *Eleocharis rostellata* is less than 50%; ..... *Spartina patens* - *Distichlis spicata* – (*Juncus roemerianus*) **Herbaceous Vegetation** [4197]

44a. *Spartina patens* is associated with *Schoenoplectus pungens* on sandy overwash flats or *Spartina patens* occurs without other graminoids, but at less than 60% absolute cover.....  
*Spartina patens* - *Schoenoplectus pungens* - *Solidago sempervirens* **Herbaceous Vegetation** [4097]

44b. Dense *Spartina patens* (greater than or equal to 60% absolute cover) associated with sparse shrubs of *Morella cerifera* and/or *Baccharis halimifolia* on more elevated and stable substrates.....  
..... *Morella cerifera* / *Spartina patens* **Shrubland** [3839]

EXAMPLE 2

**VICKSBURG NATIONAL MILITARY PARK**

## **VEGETATION FIELD KEY VICKSBURG NATIONAL MILITARY PARK**

Instructions on use of key:

This key is dichotomous and hierarchical. The user is directed through a number of couplets, starting with couplet 1 and should select whichever side of the couplet (a or b) fits the vegetation best. The user should read *both* sides of the couplet (both a and b) before evaluating and proceeding. At several places in this key, the user is asked to consider multiple (2-4) criteria on each side of the couplet. Where these multiple, independent criteria are to be evaluated, criteria on both sides of the couplet may prove to be correct (ie, the criteria on each couplet side are not necessarily mutually exclusive). In these cases, the user should evaluate each individual criterion independently from the others, consider all criteria on each side of the couplet, and select the couplet side that *best* represents the vegetation before proceeding. Answers to couplets will lead to either another couplet to be evaluated in progression or to a vegetation type (final answer). Note that there may be more than one path through the key to arriving at an individual vegetation type.

In some individual statements, the user is asked to estimate the combined (aggregate) cover of several species. In these cases, one, some or all of the named species may be present. For purposes of estimating cover, these multiple species should be considered a single species; if A and B are both species in such a species aggregate, and a part of the cover of species B is overtopped by part of the cover for species A, this portion of the cover for species B should not be counted.

This key is designed to be used in relatively homogeneous stands of vegetation within Vicksburg National Military Park and to be optimally accurate when vegetation is observed at a scale of 0.25 to 1.0 hectares. It will become progressively less reliable at smaller scales. It may not be reliable outside of Vicksburg National Military Park.

It is expected that users of the key can identify all species named in the key (and potential species with which they may be confused at Vicksburg National Military Park). For users with more limited knowledge of the full flora of this site, the keys will likely work adequately if the user omits evaluating all key criteria (eg., shrub, vine, and herbaceous species for someone who recognizes only trees) that refer to any species unknown to him/her. Do not use a criterion, if you know some, but not all, individual species named in a single criterion. The key also assumes that the user can estimate plant cover relatively accurately and precisely (repeatably).

Keys are imperfect. It is always a good idea to confirm a final keyed answer by reading the corresponding vegetation description corresponding to the keyed type. If an answer seems implausible, one should re-key the stand, examining other possible couplets from those selected the first time through the key.

## **GLOSSARY OF TERMS USED IN THIS KEY:**

**Absolute cover:** The proportion of an observed area that is underneath (covered by) the canopy of an individual plant species (or a group of plant species). “Underneath” means under the vertical projection down to the ground of the horizontal outline of the foliar crown of the plant species or group. Absolute cover is often regarded as the area outlined by the “drip line” of the crown; small openings between branches and leaves within this outline are generally not subtracted from this area in estimating cover. Cover of individuals of the same applicable species (or the same applicable group) that is overtopped by cover of that same species or group is not counted. As an example of how to estimate absolute cover, if the observation area is 0.25 hectare (2,500 square meters), and the canopy of any eastern red cedar (*Juniperus virginiana*) covers an estimated 150 square meters of this area, then the absolute cover of eastern red cedar over this observation area is calculated and recorded as 6% (150 divided by/ 2,500). Absolute cover for an individual species may not exceed 100% for an observation area (or an individual stratum within an observation area), but the combined absolute cover of multiple or all species may exceed 100%.

**Relative cover:** The proportion of the total of all absolute cover (all species in the observation area or all species within a specified layer in the observation area) area that is comprised of the species or species group. If a tree layer is comprised of 40% absolute cover of boxelder (*Acer negundo*), 20% cover of sweet gum (*Acer negundo*) and 20% cover of American sycamore (*Platanus occidentalis*), then the **relative** cover of boxelder for the observed area is 50% (40% divided by the sum of 40% + 20% + 20%) and the relative cover of the other two species is 25% each. The relative cover for all species for an observation area, or for a specified stratum in an observation area must sum to 100%.

**Dominant (dominated by):** For purposes of this key, the individual species (or species group) having the highest absolute or relative cover (ie., the plurality of all cover) of any species or species group within the observation area.

**Layer:** A grouping of plants within a vegetation stand that have a similar life form and height range. The layers used in this key are tree, shrub, vine, and herbaceous, with the life form groups are defined individually below. Layer is synonymous with stratum.

**Trees:** For purposes of this key, woody plants generally more than 5 meters tall and usually have multiple stems only in response to past physical damage to the main stem.

**Vines:** Woody or herbaceous plants with elongated (eg., more than 1 meter) aerial stems that are not self-supporting. Vines are supported by other plants or creep on the ground.

**Shrubs:** For purposes of this key, woody plants generally less than 5 meters tall. Shrubs often produce multiple stems in the absence of physical damage to a main stem.

**Herbaceous:** Non-woody vascular plant species. For purposes of this key, seedlings of woody species that are less than 0.5 meter tall also are included in the herbaceous layer.

**Forbs:** For purposes of this key, broad-leaved herbaceous plant species (excludes grasses, sedges, and rushes).

**Wetlands:** Vegetation types in which wetland plant species (those ranked OBL or FACW on National List of plants that occur in wetlands) have higher total cover than do upland plant species (see below).

**Uplands:** Vegetation types in which non-wetland plant species (those ranked FAC, FACU, or UPL (not listed) on National List of plants that occur in wetlands) have higher total cover than do wetland plant species (see below).

## **GENERAL KEY**

1a. Vegetation is dominated by trees (absolute cover of all tree species combined is greater than or equal to 25%).....go to couplet 2 (Forests Key)

1b. Vegetation is not dominated by trees (absolute cover of all tree species combined is less than 25%.....go to couplet 13 (Shrublands and Herbaceous Vegetation Key)

### FORESTS KEY (1A)

2a. Combined absolute cover of all evergreen tree species exceeds combined absolute cover of all deciduous tree species. Combined absolute cover of evergreens (loblolly pine (*Pinus taeda*) and/or eastern red cedar (*Juniperus virginiana*)) is greater than or equal to 25%. Vegetation is an open canopy of evergreen trees over a herbaceous layer that is dominated by low (less than 0.5 meters tall) grasses.....  
.....***Pinus taeda* Planted Forest**

2b. Vegetation is not as above. Combined absolute cover of all deciduous tree species exceeds combined absolute cover of all evergreen species. Combined absolute cover of evergreens (loblolly pine (*Pinus taeda*) and/or eastern red cedar (*Juniperus virginiana*)) is less than 25%. Tree layer is closed to partially open. Herbaceous layer dominated by the tall grass giant cane (*Arundinaria gigantea*) or by some mix of grasses and forbs .....go to 3

3a. Black willow (*Salix nigra*) is the most abundant species in the tree layer  
.....***Salix nigra* Large River Floodplain Forest**

3b. Not as above. Black willow (*Salix nigra*) is absent or unimportant.....go to 4

4a. Combined absolute cover of black locust (*Robinia pseudoacacia*) and/or paper mulberry (*Broussonetia papyrifera*) is greater than or equal to 35%.....***Robinia pseudoacacia* Forest**

4b. Combined absolute cover of black locust (*Robinia pseudoacacia*) and/or paper mulberry (*Broussonetia papyrifera*) is less than 35%.....go to 5

5a. Boxelder (*Acer negundo*) is the most abundant species in the tree layer.....go to 6

6a. Boxelder (*Acer negundo*) has greater than or equal to 40% relative cover and greater than or equal to 40% absolute cover).....  
.....***Acer negundo* Forest**

6b. Either the absolute or relative cover of boxelder (*Acer negundo*) or both is less than 40%.....go to 7

7a. Absolute cover of tulip tree (*Liriodendron tulipifera*) is greater than or equal to 25%.....  
***Liriodendron tulipifera* / (*Cercis canadensis*) / (*Lindera benzoin*) Forest**

7b. Absolute cover of tulip tree (*Liriodendron tulipifera*) is less than 25%.....

**Liquidambar styraciflua - Carya illinoensis - Quercus nigra Forest**

5b. A species other than boxelder (*Acer negundo*) has the highest absolute cover of any species in the tree layer.....go to 8

8a. Sweet gum (*Liquidambar styraciflua*) has greater than or equal to 50% relative cover and greater than or equal to 60% absolute cover .....go to 9

9a. Absolute cover of tulip tree (*Liriodendron tulipifera*) is greater than or equal to 25%.....

**Liriodendron tulipifera / (Cercis canadensis) / (Lindera benzoin) Forest**

9b. Absolute cover of tulip tree (*Liriodendron tulipifera*) is less than 25%.....**Liquidambar styraciflua Forest**

8b. Sweet gum (*Liquidambar styraciflua*) has less than 50% relative cover or less than 60% absolute cover or both.....go to 10

10a. Consider all three of the following criteria:

(1) Absolute cover of tulip tree (*Liriodendron tulipifera*) is greater than or equal to 25%.

(2) Combined absolute cover of American sycamore (*Platanus occidentalis*), pecan (*Carya illinoensis*), and/or water oak (*Quercus nigra*) is less than 20%.

(3) At least three of the following five shrub or herbaceous species are present: northern spicebush (*Lindera benzoin*), wild hydrangea (*Hydrangea arborescens*), oakleaf hydrangea (*Hydrangea quercifolia*), bristly greenbrier (*Smilax tamnoides*), lowland bladder fern (*Cystopteris protrusa*) .....

**Liriodendron tulipifera / (Cercis canadensis) / (Lindera benzoin) Forest**

10b. Consider all three of the following criteria:

- 1) Absolute cover of tulip tree (*Liriodendron tulipifera*) is less than 25%.
- (2) Combined absolute cover of American sycamore (*Platanus occidentalis*), pecan (*Carya illinoensis*), and/or water oak (*Quercus nigra*) is greater than or equal to than 20%.
- (3) No more than two of the following five shrub or herbaceous species are present: northern spicebush (*Lindera benzoin*), wild hydrangea (*Hydrangea arborescens*), oakleaf hydrangea (*Hydrangea quercifolia*), bristly greenbrier (*Smilax tamnoides*), lowland bladder fern (*Cystopteris protrusa*).....go to 11

11a. Consider all four of the following criteria:

- (1) Combined absolute cover of American sycamore (*Platanus occidentalis*), boxelder (*Acer negundo*), and/or red mulberry (*Morus rubra*) is greater than or equal to 20%.
- (2) Combined absolute cover of all oaks (*Quercus* spp.) is less than 40%.
- (3) Combined absolute cover of oakleaf hydrangea (*Hydrangea quercifolia*), eastern redbud (*Cercis canadensis*), and/or dogwoods (*Cornus* spp.) is less than 5%.
- (4) Jumpseed (*Polygonum virginianum*) and/or common ladyfern (*Athyrium filix-femina*) are present.....

***Platanus occidentalis* - *Liquidambar styraciflua* - (*Ulmus americana*) / (*Crataegus viridis*) Forest**

11b. Consider all four of the following criteria:

- 1) Combined absolute cover of American sycamore (*Platanus occidentalis*), boxelder (*Acer negundo*), and/or red mulberry (*Morus rubra*) is less than 20%.
- (2) Combined absolute cover of all oaks (*Quercus* spp.) is greater than or equal to 40%.
- (3) Combined absolute cover of oakleaf hydrangea (*Hydrangea quercifolia*), eastern redbud (*Cercis canadensis*), and/or dogwoods (*Cornus* spp.) is greater than or equal to 5%
- (4) Jumpseed (*Polygonum virginianum*) and/or common ladyfern (*Athyrium filix-femina*) are both absent.....go to 12

12a. The combined absolute cover of both sweet gum (*Liquidambar styraciflua*) and chinquapin oak (*Quercus muehlenbergii*) is greater than the combined absolute cover of both water oak (*Quercus nigra*) and cherrybark oak (*Quercus pagoda*).....

***Liquidambar styraciflua* - *Carya illinoensis* - *Quercus nigra* Forest**

12b. The combined absolute cover of both sweet gum (*Liquidambar styraciflua*) and chinquapin oak (*Quercus muehlenbergii*) is less than or equal to the combined

absolute cover of both water oak (*Quercus nigra*) and  
cherrybark oak (*Quercus pagoda*).....  
.....***Quercus pagoda* - *Quercus nigra* Forest**

## SHRUBLANDS AND HERBACEOUS VEGETATION KEY (1B)

13a. Vegetation is characterized by shrubs or vines (the absolute cover of all shrub and/or vine species combined is greater than or equal to 35%).....go to 14

14a. The absolute cover of all vine species combined exceeds the absolute cover of all shrub species combined .....*Pueraria montana* var. *lobata* Vine-Shrubland

14b. The absolute cover of all shrub species combined is equal to or exceeds the absolute cover of all vine species combined ..... *Acer negundo* Forest\*

13b. Vegetation is characterized by herbaceous vegetation (the absolute cover of all shrub and/or vine species combined is less than 35%).....go to 15

15a. Either bahiagrass (*Paspalum notatum*) or Johnsongrass (*Sorghum halepense*) has the highest absolute cover among grass species.....go to 16

16a. Bahiagrass (*Paspalum notatum*) has the highest absolute cover among grass species .....***Paspalum notatum* Herbaceous Vegetation**

16b. Johnsongrass (*Sorghum halepense*) has the highest absolute cover among grass species ...***Sorghum halepense* Herbaceous Vegetation**

15b. Neither bahiagrass (*Paspalum notatum*) nor Johnsongrass (*Sorghum halepense*) has the highest absolute cover among grass species.....  
.....***Lolium (arundinaceum, pratense)* Herbaceous Vegetation**

\* - shrubby variant of this forest type