

NATIONAL VEGETATION CLASSIFICATION

VEGETATION OF THE CHESAPEAKE BAY LOWLANDS:

A KEY TO THE TYPES

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July 2003 DRAFT



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KEYS TO THE VEGETATION TYPES

DRAFT KEY TO THE VEGETATION OF THE CHESAPEAKE BAY ECOREGION

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This document was developed to aid land managers in their efforts to identify and map vegetation types using a standard classification system. It was developed for use in the Chesapeake Bay Lowlands ecoregion (figure 1), ranging from southern shore of the Delaware Bay to the coastal plain of Virginia north of the James River. The ecoregion includes the Delmarva peninsula, and the coastal plain of Maryland and northern Virginia.

These are dichotomous keys, with numbered couplets. Each couplet (designated by a boxed number above it) has two statements to choose from. Begin with couplet 1, decide which statement best applies to your setting, and proceed to the couplet indicated after that statement. Continue in this vein and you will eventually arrive at the type that should fit your setting. If there is a couplet where it's unclear which choice is better, make a note and try both directions from that couplet. When you get through the key to a type, refer to the full description to confirm.

It may be possible to reach the same vegetation type at different points in the key. This is by design. Vegetation types are inherently variable, and at their extremes may look quite different. There are two names and a number for each association, all in bold type. The first is the common name, the second is the scientific (association) name, and the third is a database code in the format CEGLO0xxxx. They all refer to the same unit.

What if the key doesn't work? There are several possible reasons:

- You may be using the wrong key. Each key covers a subset of all possible types.
- The type you are looking at may not be typical of the ecoregion, and is not included in the list of types for the Chesapeake Bay Lowlands. There is a list of peripheral types included as an appendix. These associations are best developed and have their major range outside of the Chesapeake Bay Lowlands, but because ecoregion lines are somewhat arbitrary, the types filter into this ecoregion.
- You may be trying to type a transition zone. The classification is designed to impose clear conceptual boundaries on types that grade into each other in reality. Although ecotones are important, they are not classified as separate units. Before using the key, make sure you have done a reconnaissance in the area to be sure you are in a portion of the stand that is truly representative.
- You may be applying the key to vegetation at a scale that is different from that used to develop the classification. For example, a stand of trees must be at least a few acres in extent to be a forest. It is possible to identify a forest type from stands smaller than that, but often there is so much "edge" that its identity is very difficult to discern. Conversely, many herbaceous communities occur naturally in patches less than 0.5 acre in size. Other communities, such as shrub zones along rivers or lakes are linear in form – not very wide, but

quite long. It is important to be cognizant of the average patch size of vegetation when applying the key.

- The current description does not accommodate the variation you are observing.
- There may be no type describing this stand as yet. This is particularly true of vegetation that has been recently altered by human activity.

This classification is estimated to be about 80% complete for the Chesapeake Bay Lowlands. For those stands that do not fit into the classification use the form included in the appendix to describe the stand. Send the description to by email to lesley_sneddon@naturereserve.org or by mail to the NatureServe office in Boston at 11 Avenue de Lafayette, 5th floor, Boston, MA 02111, or contact the heritage program ecologist in your state.

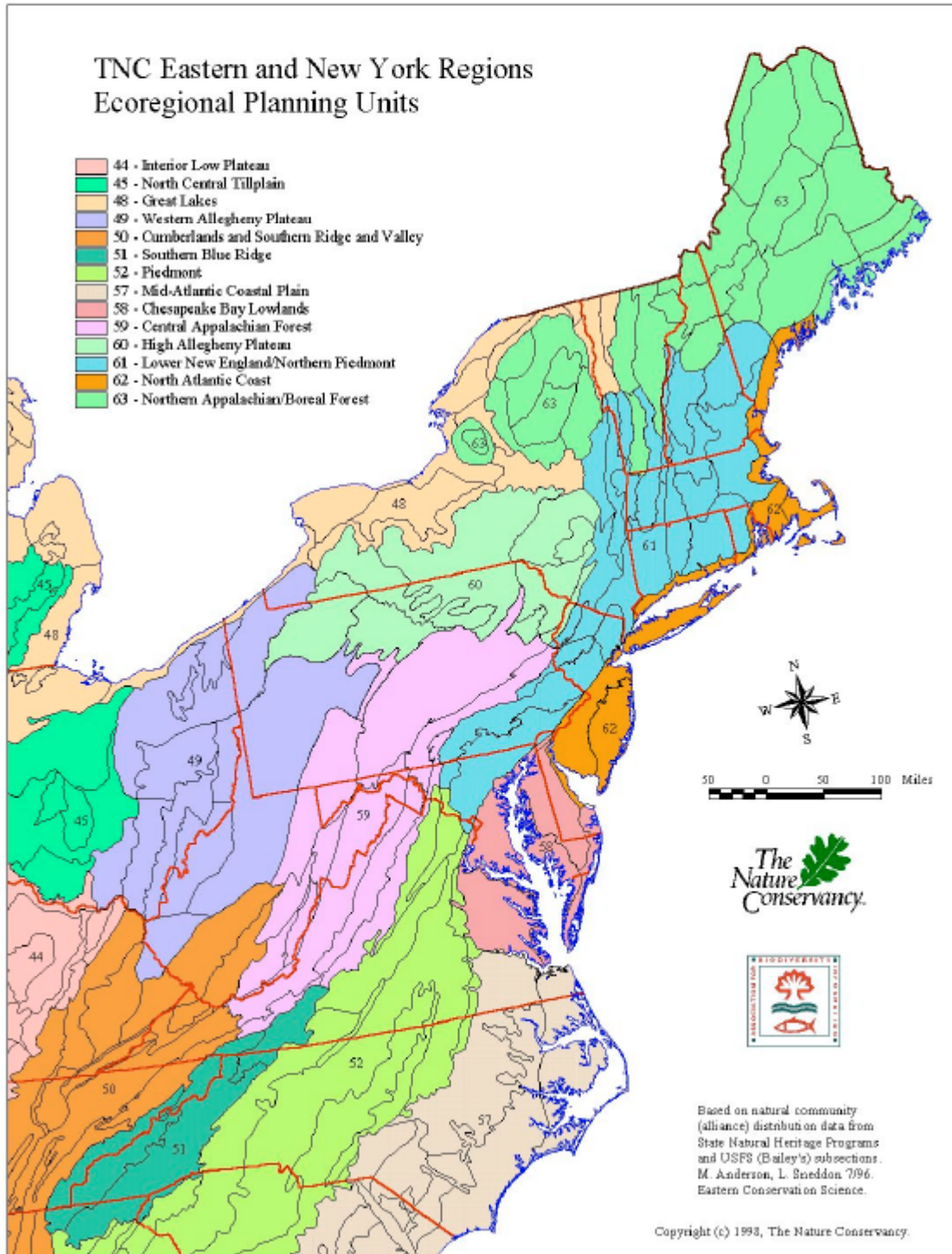


FIGURE 1

A “key to the keys”

The keys have been divided into manageable portions to facilitate their use. It is, however, important that you have the correct key! Please refer to the following to choose the appropriate key.

- 1**
Vegetation primarily in a relatively natural state; no evidence of very recent logging, mowing, etc. (may be early successional pole-sized trees following logging)..... 2
Vegetation shows evidence of recent and heavy human use **Altered Vegetation Key**
- 2**
Vegetation primarily woody (trees or tall shrubs exhibiting tree-like growth dominant; canopy closed to partially open – includes “woodland” class of NVC) 3
Vegetation primarily herbaceous (vegetation may be sparse) 4
- 3**
Forests of uplands (not wetlands) **Coastal Upland Forests Key**
Forests of wetlands **Coastal Wetland Forests Key**
- 4**
Non-forested vegetation of uplands (may include interdunal swales) **Coastal Dune Vegetation Key**
Non-forested vegetation of wetlands 5
- 5**
Vegetation influenced by tidal flow (salt to fresh) **Tidal Marsh Key**
Vegetation of boggy, streamside, or other wetland habitats 6
- 6**
Herbaceous vegetation of sandy or peaty lake or pond shores that are exposed in late summer
..... **Coastal Plain Pondshore Key**
Marshes, shrub swamps and submerged vegetation **Coastal Non-tidal Marshes Key**

Altered Vegetation Key – Chesapeake Bay Lowlands

This group of communities includes altered and generally successional vegetation occurring in coastal regions and the coastal plain from the southern shore of the Delaware Bay to the coastal plain of Virginia north of the James River. It includes uplands and wetlands that have been altered by logging, clearing for agriculture or other activities. Dominants may be monocultures of exotic species, or they may be native species that have established on altered sites and are succeeding to more natural vegetation. This list is far from complete; many patches of altered vegetation are unusual combinations of species that generally do not repeat over the landscape and are therefore not classified in the NVC. Other types simply have not yet been described. When typing altered vegetation, use this key to determine whether the type has been previously described.

1

- Vegetation primarily woody (trees, shrubs, or vines) dominant..... 2
- Vegetation primarily herbaceous, although scattered shrubs and trees are not unusual..... 9

ALTERED FORESTS OF UPLAND SITES

2

- Trees in obvious rows; plantations
 - Red Spruce Plantation (*Picea rubens* Planted Forest: CEGl004758)**
 - OR**
 - Red Pine Plantation (*Pinus resinosa* Planted Forest: CEGl007177)**
 - OR**
 - White Pine Plantation (*Pinus strobus* Planted Forest: CEGl007944)**
 - OR**
 - Loblolly Pine Plantation (*Pinus taeda* Planted Forest: CEGl008462)**
(if others, they are not yet classified)
- Vegetation not obviously planted in rows..... 3

3

- Coniferous trees dominant; may be mixed with deciduous trees..... 4
- Broad-leaved deciduous trees dominant 5
- Shubs or vines dominant..... 8

4

- Pines dominant or mixed with oaks, sweetgum, or red maple on upland previously cleared sites....
 - Japanese Black Pine Forest (*Pinus thunbergiana* Forest: CEGl006012)**
 - OR**
 - Successional Loblolly Pine - Sweetgum Forest (*Pinus taeda* - *Liquidambar styraciflua* Semi-natural Forest: CEGl008462)**
 - OR**

Eastern White Pine Successional Forest (*Pinus strobus* Successional Forest: CEGl007944)

OR

Virginia Pine Successional Forest (*Pinus virginiana* Successional Forest: CEGl002591)

OR

Successional Tuliptree - Loblolly Pine Forest (*Liriodendron tulipifera* - *Pinus taeda* Forest: CEGl007521)

Juniper dominant; may be dense, impenetrable thickets, ranging to scattered trees over a grassy or forb-dominated understory

Old-field Red-cedar Forest

***Juniperus virginiana* Forest (CEGl006024)**

5

Successional deciduous forests of upland sites..... 6

Successional forests of floodplains..... 7

6

Tree-of-heaven, black locust, or sweetgum strongly dominant

Successional Tree-of-Heaven Forest (*Ailanthus altissima* Forest: CEGl007191)

OR

Successional Sweetgum Forest (*Liquidambar styraciflua* Forest: CEGl007216)

OR

Black Locust Successional Forest (*Robinia pseudoacacia* Forest: CEGl007279)

Forest characterized by mixtures of species

Coastal Plain Successional Sweetgum – Oak Forest (*Liquidambar styraciflua* - *Quercus nigra*, *phellos*) - *Pinus taeda* / *Vaccinium elliotii* - *Morella cerifera* Forest: CEGl007726)

OR

Successional Tuliptree - Hardwood Forest (*Liriodendron tulipifera* - *Acer rubrum* - *Quercus* spp. Forest CEGl007221)

ALTERED FORESTS OF FLOODPLAINS

7

Sweetgum prevalent..... **Successional Sweetgum Floodplain Forest**

***Liquidambar styraciflua* Temporarily Flooded Forest (CEGl007330)**

Loblolly pine, or tuliptree, or a mixture.....

..... **Loblolly Pine - Tuliptree Successional Bottomland Forest**

***Pinus taeda* - *Liriodendron tulipifera* / *Lindera benzoin* / *Carex crinita* Forest (CEGl007546)**

SHRUBLANDS

8

Blackberries or catbriers characteristic

..... **Blackberry - Greenbrier Successional Shrubland Thicket**

Rubus (argutus, trivialis) - Smilax (glauca, rotundifolia) Shrubland (CEGL004732)

Wisteria dominant..... **Wisteria Vineland**
Wisteria sinensis Vine-Shrubland (CEGL008568)

HERBACEOUS VEGETATION

UPLANDS

9

Upland fields, meadows, pastures; may have admixtures of shrubs..... 10
Wetland sites..... 12

10

Phragmites australis dominant.....**Phragmites Upland Grassland**
Phragmites australis Temperate Upland Herbaceous Vegetation (CEGL004019)
Other species characteristic; *Phragmites* generally absent 11

11

Dry sites; broomsedge (*Andropogon virginicus*) dominant.....
..... **Successional Broomsedge Vegetation**
Andropogon virginicus var. *virginicus* Herbaceous Vegetation (CEGL004044)
Sites not particularly dry; exotic pasture grasses and forbs characteristic; variable among sites
..... **Orchard Grass Pasture**
Dactylis glomerata - Rumex acetosella Herbaceous Vegetation (CEGL006107)

HERBACEOUS VEGETATION

WETLANDS

12

Phragmites australis – dominated tidal marshes **Reed-grass Marsh**
Phragmites australis Tidal Herbaceous Vegetation (CEGL004187)

Other wetlands
Seedbox Impoundment (*Ludwigia grandiflora* Herbaceous Vegetation: CEGL004288)
OR
Bushy Broomsedge Wetland *Andropogon glomeratus* var. *pumilus* Herbaceous Vegetation (CEGL004099)
OR
Japanese Knotweed Gravelbar (*Polygonum cuspidatum* Temporarily Flooded Herbaceous Vegetation (CEGL008472)
OR
Eastern Reed Marsh (*Phragmites australis* Eastern North America Temperate Semi-natural Herbaceous Vegetation: CEGL004141)

Key to the Coastal Upland Forests of the Chesapeake Bay Region

This group of upland communities includes vegetation generally known as forests that occur in the coastal region from the Delaware Bay south to the Chesapeake Bay region. It includes woody vegetation with closed canopies and those of a more open nature (known as “woodlands” in the National Vegetation Classification). The trees in more sheltered areas of the coast may be tall and straight, while those of the more immediate coast are likely to be stunted and pruned by salt spray and wind. Multi-stemmed tall shrubs forming thickets may have a forest-like appearance, and these are also included here.

1

- Evergreen (dominated by conifers) or mixed forests and woodlands: deciduous trees > 20-25% of the total canopy cover..... 2
- Deciduous forests and woodlands: deciduous trees > 25% of the total canopy cover..... 11

EVERGREEN OR MIXED WOODY VEGETATION

2

- Forest or open woodland dominated by Eastern red-cedar (*Juniperus virginiana*) occurring on sandy soils of coastal beaches. (Must cover at least 2 acres to be this type. Smaller patches of red-cedar may occur in other forest types.) Bayberry (*Morella pensylvanica* = *Myrica pensylvanica*) commonly present. Occurs from Massachusetts south to Maryland.....
-**Maritime Red- cedar Woodland**
***Juniperus virginiana* / *Morella pensylvanica* Woodland (CEGL006212)**
- Pines dominant or mixed with oaks 3

3

- Virginia pine prevalent 4
- Pitch pine or loblolly pine dominant..... 5

4

- Obviously successional forest of dry sandy soil; dense canopy, herbs generally weedy or exotic....
-**Virginia Pine Sucessional Forest**
***Pinus virginiana* Successional Forest (CEGL002591)**
- Natural forest of sandy soils; may be mixed with oaks; shrub layer mostly blueberry or huckleberries; herbs native and include upland sedges, grasses, legumes (lupine or *Tephrosia*); lichens may be abundant. Forest / woodland of ancient dune ridges or old river terraces; variable composition.....
-**Inland Dune Ridge Forest**
***Pinus virginiana* – *Quercus falcata* – *Carya pallida* Forest (CEGL006354)**

5

Pitch pine woodlands of maritime dunes	Pitch Pine Dune Woodland
	<i>Pinus rigida / Hudsonia tomentosa</i> Woodland (CEGL006117)
Loblolly pine prevalent; pure stands or mixed with hardwoods	6
6	
Loblolly forests of dunes, barrier islands, or immediate coast	7
Loblolly forests of the interior	9
7	
Open pine canopy with much exposed sand; lower pine branches often exhibit skirting; beach heather or lichens often present.....	Loblolly Pine Dune Woodland
	<i>Pinus taeda / Hudsonia tomentosa</i> Woodland (CEGL006052)
Closed canopy loblolly pine forest with well-developed shrub and herbaceous layers.....	8
8	
Pure or mixed stands of loblolly pine; water oak present in quantity; best developed from the central Virginia coast and south	Mid-Atlantic Barrier Island Deciduous Forest
	<i>Pinus taeda – Quercus nigra / Gelsemium sempervirens</i> Forest (CEGL006172)
Loblolly pine dominant; coastal forest of southern-most New Jersey (Cape May vicinity), Delaware and south to North Carolina; water oak and jessamine absent.....	
.....	Mid-Atlantic Coastal Loblolly Pine Forest
	<i>Pinus taeda / Morella pensylvanica / Vitis rotundifolia</i> Forest (CEGL006040)
9	
Loblolly pine or pine – oak forest with well-developed heath-shrub layer; ground layer lacking exotics and typified by pink ladies’ slipper, wintergreen, and bracken fern.....	
.....	Coastal Plain Loblolly Pine - Oak Forest
	<i>(Pinus taeda) – Quercus falcata / Gaylussacia frondosa</i> Forest (CEGL006169)
Loblolly pine forest exhibiting disturbances, either on military range or recovering from logging and supporting red maple and sweetgum on upland sites	10
10	
Loblolly pine forest of military ranges, exposed to ordnance-induced frequent fires; little bluestem prevalent	Modified Loblolly Pine / Little Bluestem Woodland
	<i>Pinus taeda / Schizachyrium scoparium</i> Woodland (CEGL003620)
Young loblolly pine forest with red maple and sweetgum on uplands; herbaceous layer poorly developed or characterized by exotic species.....	Successional Loblolly Pine Forest
	<i>Pinus taeda / Liquidambar styraciflua – Acer rubrum var. rubrum / Vaccinium stamineum</i>
	Forest
	(CEGL006011)

DECIDUOUS WOODY VEGETATION

11

Deciduous scrub of barrier islands and coastal dunes; fleshy-fruited tree species prevalent, with wax-myrtle abundant **Chesapeake Bay Deciduous Maritime Scrub Forest**

Prunus serotina / Morella cerifera / Smilax rotundifolia Shrubland (CEGL006319)

Deciduous forests of the interior; well-developed shrub and herbaceous layers 12

12

Oaks and heaths prevalent; pines absent or of variable cover 13

Oaks with mixtures of other hardwoods; heaths may be present but not dominant; higher overall diversity

..... 14

13

Heaths deciduous **Southern Red Oak / Heath Forest**

Quercus (falcata, alba, velutina) / Gaylussacia baccata – Vaccinium pallidum Forest (CEGL006269)

Heaths primarily mountain laurel **Coastal Oak / Laurel Forest**

Quercus velutina – Quercus coccinea – Quercus prinus / Kalmia latifolia Forest (CEGL006374)

14

Hardwood forest abutting wetlands; willow oak and cinnamon fern usually present

..... **Mesic Coastal Plain Oak Forest**

Quercus falcata – Quercus phellos / Ilex opaca Forest (CEGL006390)

Hardwood forests; dry to dry-mesic; not abutting wetlands 15

15

Diverse hardwood forests of ravines; beech, oak, hickories in association with elms, black walnut, or yellow oak 16

Hardwood forests of oaks and hickories of level to gently sloping topography; yellow oak, elms or black walnut absent 17

16

Yellow oak absent or nearly so; bitternut hickory or black walnut present.....

..... **Northern Coastal Plain / Northern Piedmont Basic Mesic Hardwood Forest**

Fagus grandifolia – Liriodendron tulipifera – Carya cordiformis / Lindera benzoin / Podophyllum peltatum Forest (CEGL006055)

Yellow oak present in quantity 17

17

Mesic forest with southern sugar maple; trees straight and tall, herbaceous and shrub layers lush ..

..... **Virginia Basic Mesic Ravine Forest**
***Fagus grandifolia* – *Acer barbatum* – *Quercus muehlenbergii* / *Sanguinaria canadensis* Forest**
(CEGL007181)

Dry forest lacking southern sugar maple; trees stunted; topography very steep; Eastern red-cedar may be present..... **North Atlantic Coastal Plain Calcareous Forest**
***Quercus muehlenbergii* / *Erigeron pulchellus* var. *pulchellus* – *Dichanthelium boscii* –**
(*Verbesina virginica* var. *virginica*) Forest (CEGL007748)

18

Oaks (chestnut oak may be present) and hickories dominant; other hardwoods sparse or absent; dry-mesic forest with abundant heaths mixed with other shrubs such as *Viburnum* spp.
..... **Piedmont Dry-Mesic Oak - Hickory Forest**
Quercus alba* – (*Quercus rubra*, *coccinea*) – *Carya (alba, glabra)* / *Vaccinium pallidum
Piedmont Dry-Mesic Forest (CEGL008475)

Oaks, hickories, beech and tuliptree most frequent tree species; most common forests of the coastal plain; more diverse than oak / heath forests but lacking calciphiles and rich flora of ravines 19

19

Sourwood, hemlock, rhododendrons, Virginia heartleaf common; piedmont forest reaching the inner coastal plain... **Piedmont Acidic Mesic Mixed Hardwood Forest**
***Fagus grandifolia* – *Quercus rubra* / *Cornus florida* / *Polystichum acrostichoides* – *Hexastylis virginica* Forest (CEGL008465)**
Sourwood, hemlock, rhododendrons absent **Coastal Plain Mixed Hardwood Forest**
***Fagus grandifolia* – *Quercus alba* – *Liriodendron tulipifera* – *Carya* spp. Forest**
(CEGL006075)

Coastal Wetland Forests Key – Chesapeake Bay

This group of upland communities includes vegetation generally known as swamp forests that occur on the coastal plain from the south of the Delaware Bay to the Chesapeake Bay drainage. It includes woody vegetation with closed canopies and those of a more open nature. Riverine forests and those of upper river terraces, as well as bog forests, swamps, and other wetland forests are also included here.

- 1**
 Swamp forests needle-leaved or mixed with broad-leaved deciduous trees 2
 Swamp forests broad-leaved deciduous 7
- 2**
 Vegetation of rivers; cypress present in quantity 3
 Cypress absent 4
- 3**
 Loblolly pine and waxmyrtle present in quantity **Wind-tidal Cypress-Gum Swamp**
Pinus taeda – *Nyssa biflora* – *Taxodium distichum* / *Morella cerifera* / *Osmunda regalis* var.
regalis Forest (CEGL004651)
 Loblolly pine and waxmyrtle absent or negligible; lizardtail usually present
 **Chesapeake Bay Cypress – Gum Swamp**
Taxodium distichum – *Nyssa biflora* Chesapeake Bay Forest (CEGL006214)
- 4**
 Loblolly pine dominant. 5
 Atlantic White Cedar dominant 6
- 5**
 Loblolly pine wetland forest of low-lying areas near the coast; soils mucky; not alluvial; tuliptree
 not present..... **Coastal Loblolly Pine Wetland Forest**
Pinus taeda / *Morella cerifera* / *Osmunda regalis* var. *regalis* Forest (CEGL006137)
 Loblolly pine forests of alluvial floodplains; post-agricultural; tuliptree, spicebush present.....
 **Loblolly Pine – Tuliptree Successional Bottomland Forest**
Pinus taeda – *Liriodendron tulipifera* / *Lindera benzoin* / *Carex crinita* Forest (CEGL007546)
- 6**
 Atlantic white cedar swamps of streamsides; herbaceous layer well-developed, with sedges, ferns,
 false-nettle, violets common..... **Delmarva Atlantic White Cedar Swamp**
Chamaecyparis thyoides – *Acer rubrum* / *Magnolia virginiana* Forest (CEGL006078)

Atlantic white cedar swamps of streambanks and millponds; seaside alder a characteristic shrub; coastal plain pond species common associates (yellow-eyed grasses, rushes, beaksedges, fimbry, and others common)..... **Atlantic White Cedar / Seaside Alder Swamp**

Chamaecyparis thyoides / Alnus maritima Woodland (CEGL006307)

7

Wetland forests of alluvial floodplains, stream bottoms, headwaters..... 8

Wetland forests of topographic basins; not associated with river settings..... 14

8

Wetland forests of headwaters and stream drainages influenced by groundwater seepage 9

Wetland forests of bottomlands, alluvial settings; no seepage evident 10

9

Seepage swamp of southern New Jersey and possibly Maryland; pumpkin ash, sweet gum, southern swamp cottonwood characteristic **Cape May Lowland Swamp**

Acer rubrum – Nyssa sylvatica – Liquidambar styraciflua – Populus heterophylla Forest (CEGL006013)

Seepage swamp forest of Virginia coastal plain ravines; green ash and waxmyrtle present
..... **Coastal Plain Calcareous Seepage Swamp**

Acer rubrum – Fraxinus pennsylvanica / Bidens laevis – Pilea fontana Forest (CEGL006413)

10

Wetland forest of tidal rivers; pumpkin ash characteristic.....
..... **Ash – Swamp Black Gum Freshwater Tidal Swamp**

Fraxinus (profunda, pennsylvanica) – (Nyssa biflora) / Polygonum arifolium Woodland (CEGL006287)

Wetland forests of nontidal rivers and streams 11

11

Wetland forest of alluvial backswamps; pin oak prominent.....
..... **Coastal Plain Oak Floodplain Swamp**

Quercus (palustris, phellos) – Acer rubrum / Cinna arundinacea Forest (CEGL006605)

Wetland forests of floodplains and smaller streams 12

12

Wetland forests of broad, flat floodplains; a number of oak species dominant.....
..... **Piedmont Triassic Basin Oak Bottomland Forest**

Quercus pagoda – Quercus phellos – Quercus lyrata – Quercus michauxii / Chasmanthium latifolium Forest (CEGL007356)

Wetland forests of smaller streams 13

13

Wetland forests of braided streams; sweet gum and pin oak dominant; tuliptree and sycamore absent..... **Coastal Plain Floodplain Forest**
Liquidambar styraciflua – Quercus palustris / Carpinus caroliniana / Carex intumescens
Forest (CEGL006602)
Wetland forests of the inner coastal plain; tuliptree present in quantity 14

14

Sycamore absent; vegetation of small streams, low slopes.....
..... **Coastal Plain Bottomland / Tributary Forest**
Liriodendron tulipifera – Acer rubrum – Liquidambar styraciflua / Medeola virginiana **Forest**
(CEGL006601)
Sycamore present; vegetation of braided streams **Coastal Plain Streamside Forest**
Platanus occidentalis – (Liquidambar styraciflua, Liriodendron tulipifera) / Asimina triloba
Forest (CEGL006603)

15

Black willow dominant; interdunal swale of barrier islands.....
..... **Late-Successional Willow Interdunal Swale**
Salix nigra **Woodland (CEGL006348)**
Black willow absent..... 16

16

Saturated forests with pronounced hummock – hollow microtopography with moderately deep peat / muck accumulation..... 17
Seasonally flooded forests that draw down in late summer; shallow organic layer over sand..... 18

17

Green ash prominent; spicebush and lizardtail present, with relatively diverse herbaceous layer evident **Chesapeake Red Maple Swamp**
Acer rubrum – Fraxinus pennsylvanica / Saururus cernuus **Forest (CEGL006606)**
Black gum prevalent with red maple; herbaceous less diverse and less well-developed
..... **Southern Red Maple – Black Gum Swamp Forest**
Acer rubrum - Nyssa sylvatica - Magnolia virginiana **Forest (CEGL006238)**

18

Southern red oak prevalent; forest of wetland borders; pines may be present; wetland plants lacking **Mesic Coastal Plain Oak Forest**
Quercus falcata – Quercus phellos / Ilex opaca **Forest (CEGL006390)**
Wetland plants present, pines lacking or negligible 19

19

Swamp black gum (*Nyssa biflora*) prominent, indicating longer hydroperiod; *Carex jorii* present in abundance..... **Central Coastal Plain Basin Swamp**

***Liquidambar styraciflua* – *Acer rubrum* – *Nyssa biflora* / *Carex jorii* Forest (CEGL006223)**

Basin wetland forest with abundant wetland oaks, e.g. willow oak; may occur on the border of basin or throughout. 20

20

Coastal basin wetland of Delmarva; waxmyrtle present in abundance.....

.....**Delmarva Upland Oak Pool**

***Quercus phellos* / *Carex striata* var. *brevis* Forest (CEGL004644)**

Basin wetland dominated by red maple and sweet gum **Red Maple – Sweetgum Swamp**

***Liquidambar styraciflua* – *Acer rubrum* – *Quercus phellos* / *Leucothoe racemosa* Forest (CEGL006110)**

Key to the Coastal Dunes of the Chesapeake Bay Region

This key includes vegetation of coastal sand dunes from the southern shore of Delaware Bay to the southern coast of Virginia. Vegetation of beaches, foredunes, back dunes, wet dune swales, and maritime forests directly influenced by offshore winds, salt spray, and maritime storms is included here.

1

- Vegetation primarily woody – shrubs or trees dominant (exclusive of dwarf-shrubs such as beach heather)..... 2
- Vegetation primarily herbaceous, or dominated by dwarf-shrubs, or vegetation sparse 10

2

- Open-canopy needle-leaved trees dominant; beach heather and lichens prevalent 3
- Vegetation broad-leaved 4

3

- Pitch pine dominant; restricted to Delaware **Pitch Pine Dune Woodland**
Pinus rigida / Hudsonia tomentosa Woodland (CEGL006117)
- Loblolly pine dominant; Delaware south to Virginia **Loblolly Pine Dune Woodland**
Pinus taeda / Hudsonia tomentosa Woodland (CEGL006052)

4

- Seasonally or permanently wet shrublands characterized by waxmyrtle..... 5
- Shrublands of uplands... 7

5

- Seasonally wet waxmyrtle shrublands with salt hay-dominated herbaceous layer; substrate primarily sandy with thin to absent organic layer **Maritime Wax-myrtle Shrubland**
Morella cerifera – Baccharis halimifolia / Spartina patens Shrubland (CEGL003809)
- Wet waxmyrtle shrublands of backdunes and swales 6

6

- Dense waxmyrtle shrubland characterized by mucky soils and wetland plants
..... **Wax-myrtle Shrub Swamp**
Morella cerifera / Hydrocotyle verticillata Shrubland (CEGL003840)
- Interdunal swale with little organic accumulation, characterized by open canopy of wax-myrtle, highbush blueberry and wetland plants such as rushes, grasses, royal fern, yellow-eyed grass .
..... **Barrier Island Bog**
Morella cerifera – Vaccinium corymbosum Shrubland (CEGL003906)

- 7**
Tall shrublands of backdunes characterized by variable physiognomy; fleshy-fruited species such as black cherry and shadbush prevalent **Chesapeake Bay Deciduous Maritime Shrub Forest**
Prunus serotina / *Morella cerifera* / *Smilax rotundifolia* Forest (CEGL006319)
Shrublands generally knee-high to thigh-high; bayberry prevalent 8
- 8**
Bayberry shrubland of stabilized dunes; herbaceous layer fairly diverse, characterized by grasses (*Panicum virgatum*, little bluestem) and forbs ... **Mid-Atlantic Coastal Backdune Grassland**
Morella (pensylvanica, cerifera) *Schizachyrium littorale* – *Eupatorium hyssopifolium* Shrub Herbaceous Vegetation (CEGL004240)
Shrubland of foredunes; unstable sand exposed in large patches 9
- 9**
Bayberry dominant and thriving, vines unimportant **Maritime Shrubland**
Morella pensylvanica / *Diodia teres* Shrubland (CEGL003881)
Vines dominant (Virginia creeper, poison ivy, cat brier); shrubs, if present, covered by vines and senescing **North Atlantic Coastal Plain Vine Dune**
Smilax glauca – *Toxicodendron radicans* Vine-Shrubland (CEGL003886)
- 10**
Herbaceous vegetation of seasonally or semipermanently flooded swales 11
Herbaceous or dwarf-shrub, or sparse vegetation of uplands or upper beaches 16
- 11**
Semipermanently flooded swale dominated by water hyssop and other aquatic plants; Virginia and south **Water Hyssop – Spikerush Interdunal Swale**
Bacopa monnieri – *Eleocharis albida* Herbaceous Vegetation (CEGL006350)
Seasonally flooded swales dominated by grasses and grasslike plants, or by cranberry 12
- 12**
Swales characterized by bog species such as cranberry, sundews, twigrush, rose pogonia 13
Swales lacking bog species; grasses and grasslike plants dominant 14
- 13**
Cranberry and / or twigrush dominant; relatively low diversity
..... **Northern Interdunal Cranberry Swale**
Vaccinium macrocarpon - *Morella pensylvanica* Dwarf-Shrubland (CEGL006141)
Cranberry lacking, rushes characteristic **Forked Rush Dune Swale**
Juncus (dichotomus, scirpoides) – *Drosera intermedia* Herbaceous Vegetation (CEGL004111)

- 14**
Swales of relatively high diversity; sedges (threesquare, chestnut fimbry) and forbs dominant; halophytic species lacking or negligible..... **Chesapeake Bay Interdunal Swale**
Schoenoplectus pungens – *Fimbristylis (castanea, caroliniana)* **Herbaceous Vegetation**
(CEGL004117)
Halophytes, particularly salt hay, present in quantity 15
- 15**
Switchgrass characteristic or dominant; seaside goldenrod present; shrubs such as waxmyrtle may be present at low cover **Interdune Switchgrass Brackish Depression**
(Morella cerifera) / Panicum virgatum – *Spartina patens* **Herbaceous Vegetation**
(CEGL004129)
Swale of low diversity, generally closer to ocean; salt hay dominant
..... **Northeastern Atlantic Brackish Interdunal Swale**
Spartina patens – *Eleocharis parvula* **Herbaceous Vegetation** (CEGL006342)
- 16**
Sparse vegetation of irregularly flooded upper beaches 17
Vegetation of foredunes or dune slacks 18
- 17**
Sparse vegetation of oceanside upper beach; sea rocket characteristic
..... **North Atlantic Upper Ocean Beach**
Cakile edentula ssp. *edentula* – *Chamaesyce polygonifolia* **Sparse Vegetation** (CEGL004400)
Sparse vegetation of bayside beaches **Coastal Bayshore / Succulent Beach**
Sesuvium portulacastrum – *Atriplex* spp. – *Sueda* spp. **Sparse Vegetation** (CEGL004406)
- 18**
Dwarf-shrub vegetation of dry dune slacks; beach heather dominant.
..... **Central Coast Beach Heather Dune Shrubland**
Hudsonia tomentosa – *Panicum amarum* var. *amarulum* **Dwarf-Shrubland** (CEGL003950)
Grass-dominated vegetation of foredunes..... 19
- 19**
Beachgrass and / or panic grass dominant on foredunes.....
..... **Beachgrass – Panicgrass Dune Grassland**
Ammophila breviligulata – *Panicum amarum* var. *amarum* **Herbaceous Vegetation**
(CEGL004043)
Overwash fans occurring on breached dunes; salt hay (rarely American three-square) characteristic.....
..... **Overwash Dune Grassland**
Spartina patens – *Schoenoplectus pungens* – *Solidago sempervirens* **Herbaceous Vegetation**
(CEGL005097)

Coastal Plain Ponds and Pondshores Key – Chesapeake Bay

This group of wetland communities includes vegetation generally known as coastal plain ponds or Delmarva bays. They generally occur in clearly discernible topographic basins that are groundwater fed, without surface flow. They range on coastal plain from the south of the Delaware Bay to the Chesapeake Bay drainage.

1

Vegetation dominated by shrubs.....**Buttonbush Coastal Plain Pond**
Cephalanthus occidentalis / *Polygonum hydropiperoides* - *Panicum verrucosum* Shrubland
 (CEGL006242)

Vegetation herbaceous 2

2

Vegetation tall (1.5 m), dominated by Virginia chain fern..... **Chainfern Small Depression Pond**
Woodwardia virginica / *Sphagnum cuspidatum* Herbaceous Vegetation (CEGL004475)

Vegetation of lower stature, less than 1m..... 3

3

Vegetation semipermanently flooded; generally in the lowest portion of the wetland; substrate deep muck..... 4

Vegetation seasonally flooded; substrate generally exposed in late summer; well or moderately well consolidated mixture of sand, silt or other mineral soil with variable organic content 6

4

Floating-leaved species, generally water-lilies, present in abundance**Coastal Plain Pond**
Nymphaea odorata - *Eleocharis robbinsii* Herbaceous Vegetation (CEGL006086)

Vegetation comprised of low grasses or grass-like plants, or small-statured forbs without floating leaves..... 5

5

Vegetation of discernible basin wetland, occurring in the central, lowest portion; featherfoil (*Hottonia inflata*) and creeping lovegrass (*Eragrostis hypnoides*) characteristic.....

.....**Creeping Lovegrass Coastal Plain Pond**
Eragrostis hypnoides - *Ludwigia sphaerocarpa* - *Polygonum hydropiperoides* Herbaceous
 Vegetation (CEGL006608)

Vegetation comprised of yellow spikerush (*Eleocharis flavescens*), yellow-eyed grasses (*Xyris* spp.), and other coastal plain pond species; forming poorly consolidated mats in a large wetland complex; known from Prime Hook NWR**Deep Muck Coastal Plain Pond**

Eleocharis flavescens - *Xyris difformis* Herbaceous Vegetation (CEGL006400)

6	Vegetation characterized by rushes, or rushes with sedges	7
	Vegetation characterized by grasses or sedges	8
7	Vegetation characterized by creeping rush (<i>Juncus repens</i>) and white doll's daisy (<i>Boltonia asteroides</i>) and a variety of other herbs; uncommon; known from Assawoman Wildlife Management Area in Delaware	Creeping Rush – Boltonia Coastal Plain Pond
		<i>Juncus repens</i> - <i>Boltonia asteroides</i> Herbaceous Vegetation (CEGL006610)
	Vegetation characterized by Canada rush (<i>Juncus canadensis</i>) and three-way sedge (<i>Dulichium arundinaceum</i>); relatively more common	Three-way Sedge – Canada Rush Coastal Plain Pond
		<i>Dulichium arundinaceum</i> - <i>Juncus canadensis</i> Herbaceous Vegetation (Provisional) (CEGL006415)
8	Twigrush (<i>Cladium mariscoides</i>) and wrinkled jointgrass (<i>Coelorachis rugosa</i>) dominant; uncommon vegetation type currently known only from Assawoman Bay Wildlife Management Area in Delaware	Cape May - Delmarva Depression Meadow
		<i>Cladium mariscoides</i> - <i>Coelorachis rugosa</i> Herbaceous Vegetation (CEGL006332)
	Grasses dominant; vegetation more common	9
9	Panic-grasses (<i>Panicum</i> spp.) dominant, sometimes nearly monotypic stands; giant plumegrass (<i>Saccharum giganteum</i>) absent	Panicgrass Pondshore
		<i>Panicum hemitomon</i> - <i>Panicum verrucosum</i> Herbaceous Vegetation (CEGL006338)
	Other grasses dominant.	10
10	Giant plumegrass (<i>Saccharum giganteum</i>) present in quantity; species diversity higher and includes other coastal plain pond species	Delmarva Bay Tall Grassland
		<i>Saccharum giganteum</i> - (<i>Dichanthelium spretum</i>, <i>Panicum verrucosum</i>) Herbaceous Vegetation (CEGL006609)
	Southern cutgrass (<i>Leersia hexandra</i>) dominant	Small Depression Pond (Cutgrass Prairie Type)
		<i>Leersia hexandra</i> - (<i>Panicum verrucosum</i>, <i>Scleria reticularis</i>) Herbaceous Vegetation [Provisional] (CEGL004047)

Key to the tidal marshes of Chesapeake Bay

This key includes vegetation of tidal marshes and swamps from Delaware Bay to the southern shore of Virginia. Vegetation of salt marshes as well as vegetation of brackish and fresh tidal rivers is included here.

- 1**
 Vegetation dominated by shrubs..... 2
 Vegetation herbaceous 9
- 2**
 Tidal shrublands adjacent to salt marshes or brackish tidal marshes; marsh elder (*Iva frutescens*) present in quantity 3
 Marsh elder and other halophytes absent; shrublands of freshwater tidal portions of rivers..... 4
- 3**
 Shrublands adjacent to salt marshes of barrier islands or proximate to the ocean.....
 **Mid-Atlantic Maritime Salt-shrub**
***Baccharis halimifolia* – *Iva frutescens* / *Spartina patens* Shrubland (CEGL003921)**
 Shrublands of the brackish (mid-tidal) portion of tidal rivers; giant cordgrass (*Spartina cynosuroides*) co-dominant with marsh elder.....**Brackish Shrubland**
***Iva frutescens* / *Spartina cynosuroides* Shrubland (CEGL006847)**
- 4**
 Shrubland deciduous..... 5
 Shrubland a mixture of the evergreen waxmyrtle and deciduous shrubs..... 6
- 5**
 Black willow present in quantity **Black Willow Tidal Shrubland**
***Salix nigra* Shrubland (CEGL006843)**
 Black willow absent; alders or tall indigo bush (*Amorpha fruticosa*) dominant 6
- 6**
 Tall indigo bush dominant **Tall Indigo Bush Tidal Shrubland**
***Amorpha fruticosa* Shrubland (CEGL006844)**
 Alders dominant..... 7
- 7**
 Seaside alder characteristic**Seaside Alder Tidal Shrubland**
***Alnus maritima* / *Acorus calamus* Shrubland (CEGL006841)**
 Smooth alder characteristic..... **North Atlantic Fresh Tidal Shrub Swamp**
***Alnus (incana ssp. rugosa, serrulata)* - *Cornus amomum* Shrubland (CEGL006337)**

8	Substrate deep muck; hummocks and hollows evident	
 Wind-tidal Waxmyrtle – Willow Thicket	
	<i>Morella cerifera – Rosa palustris / Thelypteris palustris var. pubescens</i> Shrubland	
	(CEGL004656)	
	Substrate thin peat over sand; microtopography flat, hummocks and hollows absent	
 Brackish Tidal Creek Shrubland	
	<i>Morella cerifera – Baccharis halimifolia / Eleocharis fallax</i> Shrubland	
	(CEGL006846)	
9	Aquatic vegetation of subtidal waters.....	10
	Vegetation emergent	13
10	Submerged aquatic vegetation at the upper limits of tidal influence where water is predominantly fresh.....	11
	Submerged aquatic vegetation of saline waters (bays, tidal creeks, coastal waters)	12
11	Pondweeds predominant; vegetation regularly flooded by tides	
 Central Atlantic Freshwater Subtidal Bed	
	<i>Stuckenia pectinata – Potamogeton perfoliatus – (Zannichellia palustris)</i> Herbaceous	
	Vegetation (CEGL006027)	
	Vegetation of higher species diversity; irregularly flooded by wind tides; tapegrass characteristic	
 Mixed Freshwater Subtidal Community	
	<i>Ceratophyllum demersum – Vallisneria americana – Najas spp.</i> Tidal Herbaceous Vegetation	
	(CEGL006048)	
12	Submerged aquatic vegetation of bays and creeks; ditch grass dominant	
 North Atlantic Coast Beaked Ditch-grass Bed	
	<i>Ruppia maritima</i> Acadian / Virginian Zone Temperate Herbaceous Vegetation	
	(CEGL006167)	
	Submerged aquatic vegetation of sheltered coastal waters; eelgrass dominant	
 North Atlantic Eelgrass Bed	
	<i>Zostera marina</i> Herbaceous Vegetation (CEGL004336)	
13	Vegetation of salt marshes adjacent to barrier beaches or at the mouth of tidal rivers receiving high salinity	14
	Vegetation of tidal rivers; inland where waters are brackish to fresh.....	23

HERBACEOUS VEGETATION OF SALT MARSHES

14

- Vegetation at the upper edge of salt marsh, receiving freshwater seepage; halophytes absent to negligible; *Eleocharis rostellata* (tall, arching spikerush that roots at the inflorescence) characteristic..... 15
- Vegetation of salt marshes; halophytes abundant 17

15

- Fen-like vegetation of high species diversity; twig rush (*Cladium mariscoides*), sundews, white beakrush (*Rhynchospora alba*) characteristic; shrubs may be present in variable cover
 **Sea Level Fen**
***Cladium mariscoides* – *Drosera intermedia* – *Eleocharis rostellata* Herbaceous Vegetation (CEGL006310)**
- Spikerush marsh of low diversity; fen species absent (although twigrush may be present at low cover)..... 16

16

- Some halophytes such as salt hay (*Spartina patens*) may be present at low cover; range from Virginia north**Spikerush Lawn Tidal Marsh**
***Eleocharis rostellata* - *Spartina patens* Herbaceous Vegetation**
- Halophytes absent; creeping spikerush (*Eleocharis fallax*) characteristic
 **Atlantic Coast Tidal Oligohaline Spikerush Marsh**
***Eleocharis fallax* - *Eleocharis rostellata* - *Schoenoplectus americanus* - *Sagittaria lancifolia* Herbaceous Vegetation (CEGL004628)**

17

- Tall grasses or grass-like plants forming nearly monospecific clonal patches 18
- Vegetation of higher diversity, or if low diversity, forming a meadow rather than discrete patches 19

18

- Black needle-rush dominant **Needlerush High Marsh**
***Juncus roemerianus* Herbaceous Vegetation (CEGL004186)**
- Common reed (*Phragmites australis*) dominant..... **Reed-Grass Marsh**
***Phragmites australis* Herbaceous Vegetation (CEGL004187)**

19

- Vegetation of high salt marsh adjacent to salt shrub or uplands..... 20
- Vegetation of low marsh or between low marsh and high marsh 21

20

- Salt hay or saltgrass (*Distichlis spicata*) dominant; marsh of low diversity
 **Mid-Atlantic High Salt Marsh**

Spartina patens – *Distichlis spicata* – *Juncus roemerianus* **Herbaceous Vegetation**
(CEGL004197)

Switchgrass (*Panicum virgatum*) characteristic; high diversity of forbs **Brackish Meadow**

Panicum virgatum – *Spartina patens* **Herbaceous Vegetation** (CEGL006150)

21

Ponded water remains after tidal flooding recedes; saltworts dominant..... **Salt Panne**

Salicornia (virginica, bigelovii, maritima) - *Spartina alterniflora* **Herbaceous Vegetation**
(CEGL004308)

Substrate well drained after flooding recedes 22

22

Low salt marsh – saltwater cordgrass dominant or monotypic (in one variant, salt hay is co-dominant, with saltworts abundant) **North Atlantic Low Salt Marsh**

Spartina alterniflora / (*Ascophyllum nodosum*) **Acadian/Virginian Zone Herbaceous Vegetation** (CEGL004192)

Vegetation in a band between low and high marsh; lower-lying than high marsh, chairmaker's bulrush (*Schoenoplectus americanus**) present in quantity **Transitional Tidal Marsh**

Schoenoplectus americanus - *Spartina patens* **Herbaceous Vegetation** (CEGL006612)

(**Schoenoplectus americanus* has long been known as *Scirpus olneyi*)

VEGETATION OF TIDAL RIVERS

BRACKISH MARSHES

23

Vegetation of mid-tidal reaches of tidal rivers where saline waters mix with fresh; some halophytes usually present..... 24

Vegetation at the upper limits of tidal influence; water fresh, halophytes absent or negligible 32

24

Vegetation of low rosette-forming species on broad mud or sand flats of tidal rivers; submerged at high tide; may be sparse **North Atlantic Coast Intertidal Mudflat**

Sagittaria subulata - *Limosella australis* **Tidal Herbaceous Vegetation** (CEGL004473)

Vegetation formed by taller grasses or grass-like plants or forbs 25

25

The tall annual water-hemp (*Amaranthus cannabinus*) dominant; occurs on sandy tidal rivershores exposed to ice and wave scour **Water-Hemp Brackish Tidal Marsh**

Amaranthus cannabinus **Herbaceous Vegetation** (CEGL006080)

Tall grasses or grass-like plants dominant; may be mixed with forbs 26

26	Saltwater cordgrass (<i>Spartina alterniflora</i>) a major component.....	27
	Saltwater cordgrass absent or negligible.....	29
27	Vegetation of meanders and adjacent to uplands, exposed to freshwater seepage rather than the freshwater input from the river; diverse mixture of freshwater forbs with freshwater cordgrass	Mesohaline Seepage Marsh <i>Spartina alterniflora</i> - <i>Ptilimnium capillaceum</i> - <i>Polygonum punctatum</i> Herbaceous Vegetation (CEGL006418)
	Vegetation less diverse mixture of saltwater cordgrass with other grasses or grasslike plants	28
28	Saltwater cordgrass and water-hemp (<i>Amaranthus cannabinus</i>) co-dominant; mid-tidal portion of rivers in Delaware and Maryland	Central Atlantic Brackish Marsh <i>Spartina alterniflora</i> – <i>Amaranthus cannabinus</i> Herbaceous Vegetation (CEGL006417)
	Saltwater cordgrass and alkali bulrush (<i>Schoenoplectus robustus</i>) co-dominant	Alkali Bulrush Brackish Marsh <i>Schoenoplectus robustus</i> – <i>Spartina alterniflora</i> Herbaceous Vegetation (CEGL006416)
29	Vegetation of large rivers impacted by ice scour; sandy-gravelly substrate, may be quite sparse and variable; threesquare (<i>Schoenoplectus pungens</i>) characteristic.....	Atlantic Coast Brackish Tidal Marsh <i>Schoenoplectus pungens</i> Herbaceous Vegetation (CEGL004188)
	Vegetation well developed; substrate silty or peaty.....	30
30	Low tidal marshes and flats; green arrow-arum (<i>Peltandra virginica</i>), threesquare, softstem bulrush (<i>Schoenoplectus tabernaemontani</i>), barnyard grass (<i>Echinochloa walteri</i>) characteristic.....	Central Atlantic Coast Low Brackish Marsh <i>Peltandra virginica</i> – <i>Echinochloa walteri</i> – (<i>Schoenoplectus pungens, tabernaemontani</i>) Herbaceous Vegetation (CEGL00****)
31	Giant cordgrass (<i>Spartina cynosuroides</i>) dominant; vegetation of tidal creeks, levees, sloughs	Atlantic Giant Cordgrass Marsh <i>Spartina cynosuroides</i> Herbaceous Vegetation (CEGL004195)
	Narrow-leaf cattail (<i>Typha angustifolia</i>) dominant	Cattail Brackish Tidal Marsh <i>Typha angustifolia</i> – <i>Hibiscus moscheutos</i> Herbaceous Vegetation (CEGL004201)

FRESHWATER TIDAL MARSHES

32

- Low rosette-forming species dominant..... 33
- Tall grasses or grass-like plants, or leafy forbs dominant..... 34

33

- Vegetation of sandy or gravelly substrates of large rivers; negligible organic deposits; pipewort characteristic..... **Estuary Pipewort Freshwater Intertidal Flat**
Eriocaulon parkeri – *Polygonum punctatum* **Herbaceous Vegetation (CEGL006352)**
- Vegetation of mud or sand substrates; may be sparse; on tidal streams, in small patches; quillworts characteristic**Estuary Quillwort Intertidal Flat**
Isoetes riparia **Herbaceous Vegetation (CEGL006058)**

34

- Grasses or grasslike plants dominant, or mixed with forbs 35
- Leafy forbs dominant.... 39

35

- Southern wild rice (*Zizaniopsis miliacea*) dominant; marshes from Virginia and south.....
 **Southern Wild Rice Tidal Marsh**
Zizaniopsis miliacea **Herbaceous Vegetation (CEGL004705)**
- Southern wild rice absent or negligible..... 36

36

- Vegetation lower-lying than adjacent marsh; ponded water typical; sweet flag (*Acorus calamus*) characteristic and dominant in spring, although may be overtopped by other species later in the growing season **Sweet Flag Tidal Marsh**
Acorus calamus **Herbaceous Vegetation (CEGL006833)**
- Sweet flag absent or negligible 37

37

- Diverse marsh with cattails, many species of sedges, and other forbs
 **Cattail – Sedge Tidal Marsh**
Typha latifolia – *Schoenoplectus fluviatilis* – *Carex comosa* **Herbaceous Vegetation (CEGL006096)**
- Marsh adjacent to river; wild rice or shoreline sedge (*Carex hyalinolepis*) dominant 40

38

- Wild rice dominant; widespread freshwater tidal marsh... **Atlantic Coast Wild Rice Tidal Marsh**
 *Zizania aquatica* **Herbaceous Vegetation (CEGL004202)**

Shoreline sedge (<i>Carex hyalinolepis</i>) dominant; uncommon tidal marsh of Virginia and Maryland	Shoreline Sedge Tidal Marsh <i>Carex hyalinolepis</i> Herbaceous Vegetation (CEGL006177)
39 High marsh of high diversity; no one species dominant except in small patches.....	Oligohaline Mixed Forbs Marsh <i>Hibiscus moscheutos</i> - <i>Polygonum arifolium</i> - <i>Leersia oryzoides</i> - (<i>Carex stricta</i>) Herbaceous Vegetation (CEGL006181)
Vegetation of lower diversity.....	40
40 Vegetation of swales and backmarshes of rivers, ponded water evident; jewelweed (<i>Impatiens capensis</i>), green arrow-arum (<i>Peltandra virginica</i>), arrowhead (<i>Sagittaria latifolia</i>), cattails characteristic.....	Freshwater Tidal Mixed Forbs High Marsh <i>Impatiens capensis</i> - <i>Peltandra virginica</i> - <i>Sagittaria latifolia</i> - (<i>Typha angustifolia</i>) Herbaceous Vegetation (CEGL006325)
Vegetation adjacent to river and freely drained.....	41
41 Green arrow-arum (<i>Peltandra virginica</i>) and pickerelweed (<i>Pontederia cordata</i>) co-dominant.....	Pickerelweed Tidal Marsh <i>Peltandra virginica</i> – <i>Pontederia cordata</i> Tidal Herbaceous Vegetation (CEGL004706)
Lotus or pond-lilies dominant.....	42
42 Lotus dominant.....	American Lotus Tidal Marsh <i>Nelumbo lutea</i> Tidal Herbaceous Vegetation (CEGL006913)
Yellow pond-lilies (<i>Nuphar lutea</i>) dominant.....	43
43 Broad-leaf pondlily, a pond-lily with entire non-wavy margins (<i>Nuphar lutea</i> ssp. <i>advena</i>) dominant.....	Yellow Pond-lily Tidal Marsh <i>Nuphar lutea</i> ssp. <i>advena</i> Tidal Herbaceous Vegetation (CEGL004472)
Narrow-leaf pondlily, a pond-lily with narrow wavy-margined leaves, dominant; upper reaches of tidal influence in blackwater rivers.....	Chesapeake Bay Yellow Pond-lily Tidal Marsh <i>Nuphar lutea</i> ssp. <i>sagittifolia</i> Tidal Herbaceous Vegetation (CEGL006094)

Nontidal Marshes Key – Chesapeake Bay

This group of wetland communities includes vegetation generally known as marshes and shrub swamps that occur on the coastal plain from the south of the Delaware Bay to the Chesapeake Bay drainage.

1

Vegetation dominated by shrubs.....	2
Vegetation herbaceous; shrubs largely absent	8

SHRUB SWAMPS

2

Shrub swamps of barrier islands	3
Shrub swamps of other settings	4

3

Wax-myrtle (<i>Myrica cerifera</i>) dominant; tall shrubland of mucky soils.....	
.....	Waxmyrtle Shrub Swamp
	<i>Morella cerifera</i> / <i>Hydrocotyle verticillata</i> Shrubland (CEGL003840)
Wax-myrtle mixed with other shrubs such as high-bush blueberry (<i>Vaccinium corymbosum</i>); soils thin organic accumulation over sand; bog species such as sundews (<i>Drosera intermedia</i>) present	Barrier Island Bog
	<i>Morella cerifera</i> - <i>Vaccinium corymbosum</i> Shrubland (CEGL003906)

4

Buttonbush dominant in clearly discernible topographic basin that is groundwater fed; water level in pond center draws down in late summer, exposing substrate supporting a variety of coastal plain species, e.g. meadowbeauty (<i>Rhexia virginica</i>), fimbry (<i>Fimbristylis autumnalis</i>), warty panic-grass (<i>Panicum verrucosum</i>)*	
.....	North Atlantic Coastal Plain Buttonbush / Warty Panicgrass Pond
	<i>Cephalanthus occidentalis</i> / <i>Polygonum hydropiperoides</i> - <i>Panicum verrucosum</i> Shrubland (CEGL006242)

Shrub swamps of marshes, pond and lakeshores, and river shores.....	5
---	---

*(this type may be identified definitively during low water)

5

Alders and silky dogwood (<i>Cornus amomum</i>) dominant; vegetation of river shores.....	6
Buttonbush or water willow (<i>Decodon verticillatus</i>) dominant.....	7

6	Alder shrubland of non-tidal portion of rivers.....	Alluvial Alder Swamp <i>Cornus amomum</i> - <i>Alnus serrulata</i> Shrubland (CEGL006414)
	Alder shrubland of freshwater tidal portion of rivers .	North Atlantic Fresh Tidal Shrub Swamp <i>Alnus (incana ssp. rugosa, serrulata)</i> - <i>Cornus amomum</i> Shrubland (CEGL006337)

7	Water willow (<i>Decodon verticillatus</i>) dominant, in a variety of settings	Water-willow Shrub Swamp <i>Decodon verticillatus</i> Semipermanently Flooded Shrubland (CEGL005089)
	Buttonbush (<i>Cephalanthus occidentalis</i>) dominant in a variety of settings.....	Buttonbush Shrub Swamp <i>Cephalanthus occidentalis</i> / <i>Glyceria canadensis</i> Shrubland (CEGL006069)

HERBACEOUS VEGETATION
FLOATING-LEAVED OR SUBMERGENT

8	Vegetation floating-leaved or submergent.....	9
	Vegetation emergent	15

9	Vegetation submergent	10
	Floating-leaved vegetation.....	11

10	Pondweeds dominant; vegetation of tidal rivers	Central Atlantic Freshwater Subtidal Bed <i>Stuckenia pectinata</i> - <i>Potamogeton perfoliatus</i> - (<i>Zannichellia palustris</i>) Tidal Herbaceous Vegetation (CEGL006027)
	Featherfoil (<i>Hottonia inflata</i>) and water-purslane (<i>Ludwigia palustris</i>) characteristic; floodplain pools or impoundments	Coastal Plain Water-purslane Marsh <i>Hottonia inflata</i> – <i>Ludwigia palustris</i> - <i>Callitriche heterophylla</i> Herbaceous Vegetation (CEGL00)

11	Water shallow, may draw down in late season; emergent species also abundant.....	12
	Water deeper and semipermanent or permanent.....	13

12	Water lily dominant; vegetation of shallow seasonal pond	Coastal Plain Pond <i>Nymphaea odorata</i> - <i>Eleocharis robbinsii</i> Herbaceous Vegetation (CEGL006086)
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Water-hyssop (*Bacopa monnieri*) dominant; interdunal swale of barrier island
 **Water-hyssop - Spikerush Interdunal Swale**
Bacopa monnieri - *Eleocharis albida* **Herbaceous Vegetation (CEGL006350)**

13
 Golden club (*Orontium aquaticum*) present in quantity **Golden Club Pond**
Orontium aquaticum - *Schoenoplectus subterminalis* - *Eriocaulon aquaticum* **Herbaceous**
Vegetation (CEGL007859)

Water lilies or lotus dominant..... 14

14
 Water lilies dominant.... **Water-lily Aquatic Wetland**
Nuphar lutea ssp. *advena* - *Nymphaea odorata* **Herbaceous Vegetation (CEGL002386)**
 American lotus (*Nelumbo lutea*) dominant..... **American Lotus Aquatic Wetland**
Nelumbo lutea **Herbaceous Vegetation (CEGL004323)**

EMERGENT VEGETATION

15
 Vegetation of rivershores..... 16
 Vegetation of other settings 19

16
 Arrow-arum (*Peltandra virginica*) and pickerelweed (*Pontederia cordata*) characteristic.....
 **Pickerelweed Marsh**
Pontederia cordata - *Peltandra virginica* **Semipermanently Flooded Herbaceous Vegetation**
(CEGL004291)
 Vegetation dominated by grasses or grass-like plants 17

17
 Vegetation of sandy, gravelly shorelines subjected to scouring; tall sedge (*Carex torta* – twisted
 sedge) characteristic **Herbaceous Cobble Bar and Shore**
Carex torta - *Calamagrostis canadensis* **Herbaceous Vegetation (CEGL006070)**
 Vegetation of mucky or peaty substrates 18

18
 Cattails and tall sedges present in quantity **Eastern Cattail Marsh**
Typha (angustifolia, latifolia) - (*Schoenoplectus* spp.) **Eastern Herbaceous Vegetation**
(CEGL006153)
 Saltwater cordgrass (*Spartina alterniflora*) present with freshwater species
 **Mesohaline Seepage Marsh**

***Spartina alterniflora* - *Ptilimnium capillaceum* - *Polygonum punctatum* Herbaceous
Vegetation (CEGL006418)**

19

Arrow-arum (*Peltandra virginica*) and pickerelweed (*Pontederia cordata*) characteristic.....
 **Pickerelweed Marsh**
***Pontederia cordata* - *Peltandra virginica* Semipermanently Flooded Herbaceous Vegetation
 (CEGL004291)**
 Vegetation dominated by grasses or grass-like plants 20

20

Vegetation low, spikerushes and yellow-eyed grasses (*Xyris* spp.) dominant; very deep muck,
 poorly consolidated **Yellow Spikerush – Yellow-eyed Grass Mat**
***Eleocharis flavescens* - *Xyris difformis* Herbaceous Vegetation (CEGL006400)**
 Vegetation taller..... 21

21

Cattails dominant or mixed with tall bulrushes **Eastern Cattail Marsh**
***Typha (angustifolia, latifolia)* - (*Schoenoplectus* spp.) Eastern Herbaceous Vegetation
 (CEGL006153)**
 Sedges or rushes dominant..... 22

22

Soft rush (*Juncus effusus*) present in quantity **Rush Marsh**
***Juncus effusus* Seasonally Flooded Herbaceous Vegetation (CEGL004112)**
 Woolrush (*Scirpus cyperinus*) present in quantity **Woolgrass Marsh**
***Scirpus cyperinus* Seasonally Flooded Herbaceous Vegetation (CEGL006349)**

APPENDIX – FIELD FORM

NVC Code / Name _____

Site name: (refuge and local names used to refer to areas within refuge if applicable) _____

Quad name _____

County name: _____ Town _____

Directions to site: _____

Survey date: _____ State: _____ Surveyors: _____

Elevation: _____ ft. (from topo or GPS)

Environmental setting: (prevalent soil type e.g. sandy loam, sand, etc.; bedrock type if known or relevant; topographic position, e.g. upper slope, basin wetland, etc.)

Vegetation structure (closed tree canopy; herbaceous with scattered shrubs, etc.): _____

Layer	height	% cover	Most abundant/characteristic species
Tree layer			
Shrub layer			
Herb layer			
Moss \ lichen layer			
Vines*			

* place vines in herb or shrub layers if prevalent there; if significant in tree canopy, note as separate layer

Other comments (known or inferred land use history, other human or unnatural disturbances, presence of invasive species, evidence of fire or flooding; animal use etc.)