

NATIONAL VEGETATION CLASSIFICATION

VEGETATION OF THE NORTH ATLANTIC COAST:

A KEY TO THE TYPES

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NatureServe

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KEYS TO THE VEGETATION TYPES

DRAFT KEY TO THE VEGETATION OF THE NORTH ATLANTIC COAST 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 North Atlantic Coast ecoregion (figure 1), ranging from just north of Portland, Maine to the southern shore of the Delaware Bay. The ecoregion extends inland for 10-20 miles south to New York, where it encompasses all of Long Island, the coastal plain of New Jersey, and the Delaware Bay shore of Delaware.

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:

- There may be no type describing this stand as yet, or the current description does not accommodate the variation you are observing.. 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 North Atlantic Coast. 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@natureserve.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.
- 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 North Atlantic Coast. There is a list of peripheral types included

as an appendix to the classification. These associations are best developed and have their major range outside of the North Atlantic Coast, 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 usually 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.

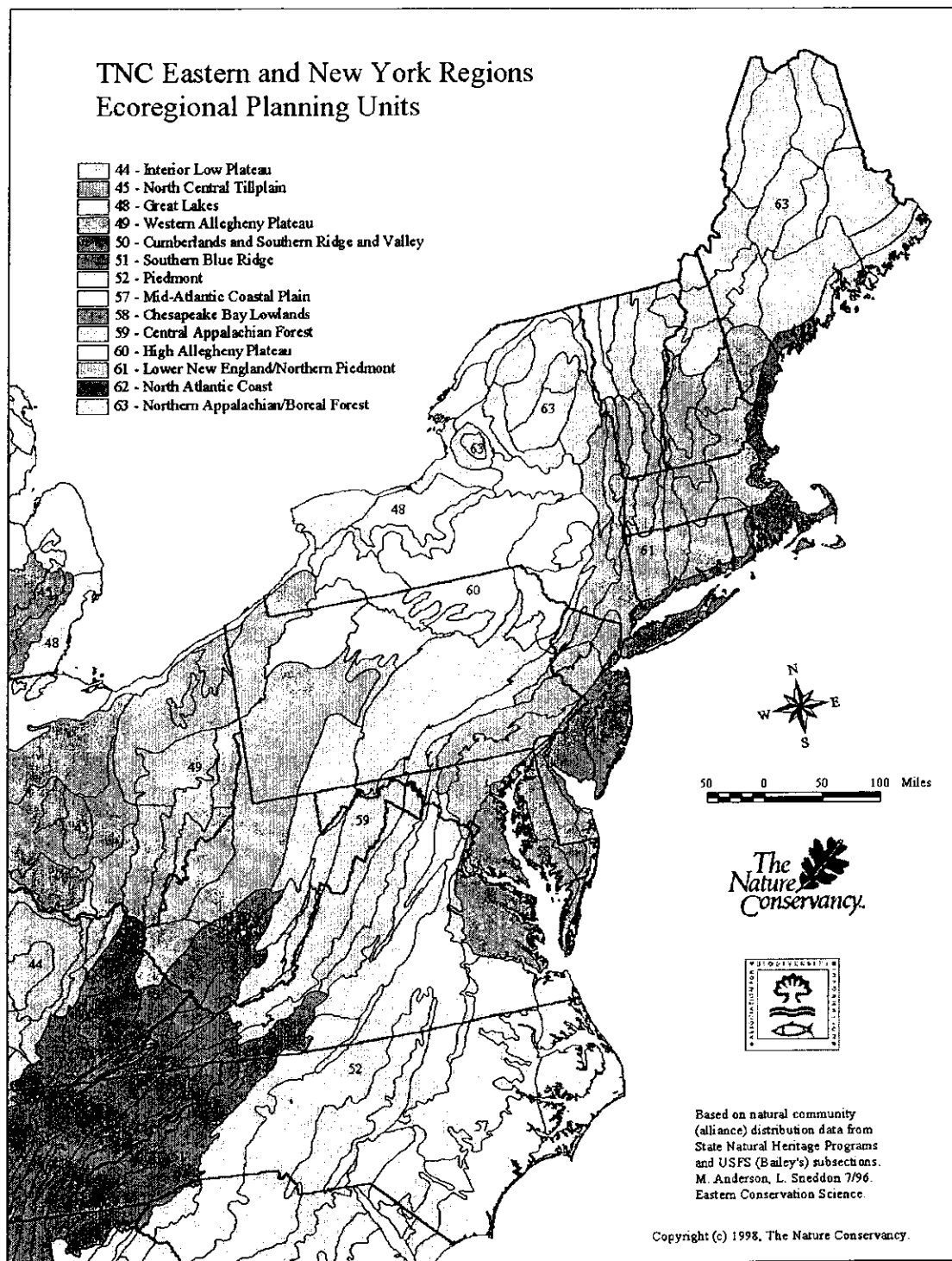


FIGURE 1 ECOREGION MAP

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 forested (trees or tall shrubs exhibiting tree-like growth dominant; canopy closed to partially open – includes “woodland” class of NVC; also includes very short pitch pine vegetation known as pine plains)..... 3
Vegetation primarily non-forested (shrubs, herbaceous vegetation dominant or vegetation 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) 5
Non-forested vegetation of wetlands 6
- 5**
Non-forested vegetation of coastal sand dunes..... **Coastal Dune Vegetation Key**
Other non-forested upland vegetation..... **Coastal Shrubland and Natural Grassland Key**
- 6**
Vegetation influenced by tidal flow (salt to fresh) **Tidal Marsh Key***
Vegetation of boggy, streamside, or other wetland habitats 7
- 7**
Vegetation primarily wetland shrubs **Coastal Shrub Swamps and Bogs Key**
Vegetation primarily wetland, non-shrubby..... 8
- 8**
Herbaceous vegetation of sandy or peaty lake or pond shores that are exposed in late summer.....
..... **Coastal Plain Pondshore Key***
Marshes, fens and submerged vegetation..... **Coastal Non-tidal Marshes Key***

***Keys still in development as of September 2002**

Coastal Upland Forests Key

This group of upland communities includes vegetation generally known as forests that occur in the coastal region from the Delaware Bay north to central Maine. 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 American holly) forests and woodlands: deciduous trees < 20-25% of the total canopy cover..... 2
- Deciduous or mixed forests and woodlands: deciduous trees > 25% of the total canopy cover.... 28

EVERGREEN OR MIXED WOODY VEGETATION

2

- Forest dominated by American holly (*Ilex opaca*) occurring on sandy soils of coastal beaches. (Must cover at least 5 acres to be this type. Smaller patches of holly may occur in other forest types.) Bayberry (*Morella pensylvanica* = *Myrica pensylvanica*) commonly present. Known from Long Island and New Jersey coast..... **Maritime Holly Forest**
Ilex opaca / *Morella pensylvanica* Forest (CEGL006376)

Needle-leaved forests or woodlands 3

3

- Hemlock and/or pines dominant 4
- Spruce or Eastern red-cedar dominant 26

4

- White pine or white pine and hemlock present in quantity 5
- Pines other than white pine dominant, hemlock absent 8

5

- Forests of loamy sands and sandy loams of the more northerly and interior portions of the ecoregion; hemlock present in quantity 6
- Hemlock absent or rare; oaks and white pine present in quantity 7

6

- Dry forest of mid-slope or level areas, soils dry, no mesic indicators such as cinnamon fern (*Osmunda cinnamomea*) or jack-in-the-pulpit (*Arisaema triphyllum*) present.....
 **White Pine – Hemlock Dry-Mesic Forest**
Pinus strobus – *Tsuga canadensis* Lower New England / Northern Piedmont Forest
 (CEGL006328)

Forest of low areas and valley bottoms, transitional to wetlands; soils exhibit mottling; cinnamon fern or jack-in-the-pulpit usually present **Low Hemlock-Hardwood Forest**
Tsuga canadensis – *Acer rubrum* – *Betula alleghaniensis* / *Osmunda cinnamomea* Forest
 (CEGL006380)

7

White pine and oaks codominant; forests generally away from the coast; mesic indicators such as inkberry (*Ilex glabra*) or highbush blueberry (*Vaccinium corymbosum*) lacking
 **White Pine – Oak Forest**

Pinus strobus – *Quercus (rubra, velutina)* – *Fagus grandifolia* Forest (CEGL006293)

White pine and white oak characteristic; inkberry (*Ilex glabra*), highbush blueberry (*Vaccinium corymbosum*) and other mesic indicators present; forest near coast but sheltered from direct maritime influences **Coastal White pine – Oak Forest**

Pinus strobus – *Quercus alba* / *Ilex glabra* Forest (CEGL006382)

8

Loblolly pine dominant; coastal forest of southern-most New Jersey (Cape May vicinity), Delaware and south to North Carolina **Mid-Atlantic Coastal Loblolly Pine Forest**

Pinus taeda / *Morella pensylvanica* / *Vitis rotundifolia* Forest (CEGL006040)

Pitch Pine or Black pine dominant, or mixture of pine species 9

9

Black pine dominant; understory usually dominated by non-native grasses and forbs
 **Black Pine Forest**

Pinus thunbergiana Forest (CEGL006012)

Dry pine forests; pitch pine (*Pinus rigida*) dominant or at least present in quantity 10

10

Pitch pine forests / woodlands of rocky substrates 11

Dry pine forests / woodlands of sandy soils..... 12

11

Pitch pine dominated rock outcrops of coastal Maine (occasionally jack pine (*Pinus banksiana*), red spruce (*Picea rubens*) or northern white cedar (*Thuja occidentalis*) are dominant or co-dominant); habitat not directly influenced by salt spray and coastal storms but characteristic of southern and central coastal Maine peninsulas; scrub oak (*Quercus ilicifolia*) lacking. Broom crowberry (*Corema conradii*) characteristic

..... **Coastal Pitch Pine Outcrop Woodland**

Pinus rigida / *Corema conradii* Woodland (CEGL006154)

Pitch pine dominated rock outcrops where broom-crowberry is largely absent; scrub oak (*Quercus ilicifolia*) occasionally present; dry pitch pine woodlands with ericaceous shrubs most common in the dwarf-shrub layer **Pitch Pine Rocky Summit**
Pinus rigida / *Photinia melanocarpa* / *Deschampsia flexuosa* – *Schizachyrium scoparium*
 Woodland (CEGL006116)

12

Dry pine forest of dry sandy or gravelly soils; pitch pine, red pine (*Pinus resinosa*) and white pine (*Pinus strobus*) typically present; known from New Hampshire and Maine
 ***Pinus strobus* – *Pinus resinosa* – *Pinus rigida* Forest (CEGL006259)**

Dry pitch pine forests or woodlands of sandy soils; red pine absent, white pine minor or absent; found in the ecoregion from southern New England to Delaware 13

13

Pitch pine forest / woodland of coastal sand dunes; species such as beach heather (*Hudsonia tomentosa*), bearberry (*Arctostaphylos uva-ursi*), pinweed (*Lechea*) spp. or others typical of sand dunes also present..... **Pitch Pine Dune Woodland**

***Pinus rigida* / *Hudsonia tomentosa* Woodland (CEGL006117)**

Pitch pine forests and woodlands of more interior areas of the ecoregion; not occurring on coastal sand dunes 14

14

Scrub oak minor or lacking; grasses and / or tree oaks may or may not be present in quantity; canopy closed to partially open; sedges, grasses or blueberries and huckleberries prominent in the ground layer 15

Pitch pine and scrub oak (*Quercus ilicifolia*) both present in quantity; canopy more open; vegetation known as "pitch pine – scrub oak barrens" 19

15

Pitch pines and tree oaks prevalent 16

Tree oaks absent or nearly so 17

16

Bayberry usually present; large-patch to matrix forest type pine barrens of Long Island, NY; also common in southern Massachusetts, including Cape Cod

..... **Pitch Pine – Oak Coastal Forest**

***Pinus rigida* – *Quercus coccinea* / *Vaccinium pallidum* – (*Morella pensylvanica*) Forest (CEGL006381)**

Bayberry absent; species not typical of coastal pine barrens often present at low cover, such as chestnut oak, red oak, or white pine. Pitch pine – oak forests occurring in the more interior portions of the ecoregion or in more sheltered areas near the coast north of Plymouth County, Massachusetts **Dry Pine – Oak Forest**

***Pinus rigida* – *Quercus (velutina, coccinea, prinus)* Forest (CEGL006290)**

17

Pitch pine woodland lacking scrub oak in ecoregion outside of the New Jersey Pine Barrens
 **Pitch Pine / Heath Woodland**
Pinus rigida / *Vaccinium* spp. – *Gaylussacia baccata* Woodland (CEGL005046)
 Pitch pine woodland lacking scrub oak; restricted to the New Jersey pine barrens..... 18

18

Xeric pitch pine woodland, shrub layer poorly developed and lacking scrub oak.....
 **Pitch Pine / Pennsylvania Sedge Woodland**
Pinus rigida / *Carex pensylvanica* Woodland (CEGL006385)
 Pitch pine woodland with mesic indicators such as sheep laurel (*Kalmia angustifolia*), inkberry
 (*Ilex glabra*), highbush blueberry (*Vaccinium corymbosum*) and others present.....
 **Pitch Pine Subhydric Lowland**
Pinus rigida / *Gaylussacia baccata* – *Kalmia angustifolia* Woodland (CEGL006387)

19

Pitch pine / scrub oak woodlands found immediately adjacent to wetlands or in low areas; species
 of slightly higher soil moisture such as inkberry (*Ilex glabra*), sweet pepper bush (*Clethra*
alnifolia), highbush blueberry (*Vaccinium corymbosum*) present; soil mottles usually present 20
 Dry pitch pine / scrub oak barrens lacking mesic species, generally not found immediately
 adjacent to wetlands or in low areas; soil mottles absent 21

20

Mesic woodlands of the New Jersey Pine Barrens or Long Island, NY (less frequently
 northward)¹ **New Jersey (Coastal Plain) Mesic Pine Barrens**
Pinus rigida / *Quercus ilcifolia* - *Kalmia angustifolia* / *Pyxidantha barbulata* Woodland
 (CEGL006384)
 Mesic pine barrens of generally south of the Mullica River in New Jersey; holly (*Ilex opaca*),
 dogwood (*Cornus florida*) characteristic **Southern New Jersey mesic pine barrens**
Pinus (rigida, echinata) - *Quercus coccinea* / *Ilex opaca* Forest (CEGL006115)

21

Pitch pine / scrub oak barrens of the coastal region north of New Jersey..... 22
 Pitch pine / scrub oak barrens of New Jersey..... 24

¹ This vegetation may occur as small patches or in transition zones between uplands and wetlands north of Long Island, where it lacks pyxie moss (*Pyxidantha barbulata*) and other species typical of the NJ pine barrens. On the Atlantic / Coastal plain (NJ and NY), this type is of large enough patches to be regarded as a separate type. To the north, patches are small enough that they are generally regarded to be simple transition zones and not recognized as distinct units.

22

Pitch pines extremely stunted, less than 2m tall and often only knee-high.....
..... **Northern Dwarf Pine Plains**
***Pinus rigida* – *Quercus ilicifolia* / *Arctostaphylos uva-ursi* Shrubland (CEGL006097)**
Trees taller than head-high..... 23

23

Bayberry (*Morella pensylvanica*) usually present at least in the vicinity (may not be dominant);
dwarf shrubs such as golden heather (*Hudsonia ericoides*), bearberry (*Arctostaphylos uva-ursi*)
and pinweed (*Lechea villosa*) typical; scattered tree oaks may be present; pine barrens of the
coast; typical widespread pine vegetation of Cape Cod, MA and eastern Long Island, NY
..... **Coastal Pine Barrens**
***Pinus rigida* / *Quercus ilicifolia* / *Morella pensylvanica* Woodland (CEGL006315)**
Bayberry absent; grassy openings dominated by tall grasses such as big bluestem (*Andropogon*
gerardii) and rich in forbs such as bush clovers (*Lespedeza* spp), lupine (*Lupinus perennis*)
prevalent
..... **Inland Pitch Pine / Scrub Oak Barrens**
***Pinus rigida* / *Quercus ilicifolia* / *Lespedeza capitata* Woodland (CEGL006025)**

24

Pitch pines extremely stunted, less than 2m tall and often only knee-high.....
..... **New Jersey Dwarf Pine Plains**
***Pinus rigida* – *Quercus marilandica* / *Corema conradii* Shrubland (CEGL006148)**
Trees taller than head-high..... 25

25

Open pine barrens of NJ; tree oaks absent or nearly so; scrub oak and / blackjack oak dominant in
the shrub layer; pyxie moss often dominates the field (lowest vascular) layer
..... **New Jersey Pitch Pine / Scrub Oak Barren**
***Pinus rigida* / *Quercus* (*marilandica*, *ilicifolia*) / *Pyxidanthera barbulata* Woodland**
(CEGL006051)
Open pine barrens of NJ with tree oaks common in the canopy
..... **Mid-successional New Jersey Pine-Oak Woodland**
Pinus rigida* – (*Pinus echinata*) / *Quercus* (*marilandica*, *ilicifolia*) / *Vaccinium pallidum
Woodland
(CEGL006383)

26

Spruce dominant; restricted to extreme northern portion of the ecoregion (southern and central Maine coast) **Maritime Spruce Forest**

Picea rubens – *Picea glauca* Forest (CEGL006151)

Woody vegetation dominated by eastern red-cedar; structure variable from dense to closed, 2m to 10m in height..... 27

27

Eastern red-cedar vegetation of sand dunes, influenced by salt spray and wind; post oak (*Quercus stellata*) often present; understory characterized by dune species including seaside goldenrod (*Solidago sempervirens*), pinweed (*Lechea intermedia*), salt hay (*Spartina patens*), and vines

..... **Maritime Red-cedar Woodland**

Juniperus virginiana / *Morella* (= *Myrica*) *pensylvanica* Woodland (CEGL006212)

Eastern red-cedar vegetation of old fields, usually away from the coast or near the coast but sheltered; structure highly variable but canopy often quite dense; understory alien grasses and forbs, although little bluestem (*Schizachyrium scoparium*) may be present in quantity as well

..... **Old-field Red-cedar Forest**

Juniperus virginiana Forest (CEGL006024)

DECIDUOUS WOODY VEGETATION

28

Setting is sand, loam, till, or other unconsolidated material 29

Setting is one of exposed rock – talus, rocky cliff or outcrop..... 45

29

Forest of floodplain terraces, characterized by high diversity of tree species, including sugar maple (*Acer saccharum*), white ash (*Fraxinus americana*), basswood (*Tilia americana*) and rich herb layer, occurs from Connecticut northward **High Terrace Floodplain Forest**

Acer saccharum – *Fraxinus* spp. – *Tilia americana* / *Matteuccia struthiopteris* – *Ageratina altissima* Forest (CEGL006114)

Sugar maple and basswood absent or nearly so 30

30

Oaks are minor or absent (considerably less than 50% cover) 31

Oaks are prevalent in the canopy; canopy may be stunted or tall 34

31

Beech is strongly dominant; forest of coastal sand dunes; canopy may be short and stunted where exposed to wind and salt spray, with trees taller in protected backdunes; limited to Long Island, NY **Maritime Beech Forest**

Fagus grandifolia / *Smilax rotundifolia* Forest (CEGL006043)

Tall shrubland, woodland or forest (canopy height very variable in height and closure) of fleshy-fruited species such as black cherry (*Prunus serotina*), shadbush (*Amelanchier* spp.), chokeberry (*Aronia melanocarpa*), sassafras (*Sassafras albidum*), black gum (*Nyssa sylvatica*), arrowwood (*Viburnum dentatum*), beach plum (*Prunus maritima*)..... 32

32

Vegetation sheltered from direct maritime influences; oaks make up a portion of the canopy (although substantially less than 50% cover); coastal forests that have been cleared generally transition to this type **Successional Maritime Forest**

Prunus serotina – *Sassafras albidum* – *Amelanchier canadensis* / *Smilax rotundifolia*
Shrubland (CEGL006145)

Vegetation of bluffs and secondary dunes; vegetation head-high, dense to open, multi-stemmed with a level wind-sheared canopy 33

33

Waxmyrtle (*Myrica* = *Morella cerifera*) absent; tall maritime shrubland of New Jersey and north.

..... **Northern Tall Maritime Shrubland**

Amelanchier canadensis – *Viburnum* spp. – *Morella pensylvanica* Shrubland (CEGL006379)

Waxmyrtle (*Myrica* = *Morella cerifera*) present; tall maritime of Cape May, New Jersey and the Delmarva peninsula **Chesapeake Bay Tall Maritime Shrubland**

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

34

Oaks dominant; few other hardwood genera present in the canopy; scattered pines sometimes present..... 35

Oaks combined with other nut-bearing hardwood species such as beech (*Fagus grandifolia*) and hickories (*Carya* spp.) form the canopy 42

35

Scrub oaks dominant; tree oaks absent; occurs in association with pine barrens

..... **Outwash Scrub Oak Barrens**

Quercus ilicifolia – *Quercus prinoides* Shrubland (CEGL006111)

Tree oaks dominant 36

36

Post oak (*Quercus stellata*) usually present in the canopy with other oaks 37

Post oak absent 38

37

Maritime forest characterized by post oak (*Quercus stellata*) of maritime bluffs, sand spits and salt marsh borders, known from Long Island, NY and Connecticut coast

Maritime Post Oak Forest

Quercus stellata – *Quercus velutina* / *Morella pensylvanica* / *Deschampsia flexuosa* Forest
(CEGL006373)

Inland sandy woodland characterized by open canopy of post oak, with black oak, blackjack oak (*Quercus marilandica*) and sassafras (*Sassafras albidum*); known from southeastern NY and southwestern NJ

Post Oak – Sassafras Barrens

Quercus stellata – *Sassafras albidum* / *Smilax glauca* Woodland (CEGL006372)

38

Oak forests with heaths such as blueberries and huckleberries prominent in the shrub layer; southern red oak (*Quercus falcata*) a characteristic oak; forests of southern New Jersey and south

39

Oak forests with heaths in the understory; southern red oak absent; forests ranging from Cape May, New Jersey and northwards.....

40

39

Dry oak forests of the coastal plain; southern red oak (*Quercus falcata*); usually characteristic; mesic indicators such as willow oak (*Quercus phellos*), highbush blueberry (*Vaccinium corymbosum*), or swamp doghobble (*Leucothoe racemosa*) lacking; not generally located adjacent to wetlands or low areas

Southern Red Oak / Heath Forest

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

Southern red oak forests; mesic indicators such as willow oak (*Quercus phellos*), highbush blueberry (*Vaccinium corymbosum*), or swamp doghobble (*Leucothoe racemosa*) present in quantity; generally located adjacent to wetlands or low areas.....

Mesic Coastal Plain Oak Forest

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

40

Heath understory dominated by mountain laurel (*Kalmia latifolia*)..

Coastal Oak / Laurel Forest

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

Heath understory deciduous (blueberries, huckleberries).....

41

41

Chestnut oak prominent; deciduous forest of small hill tops within pine barrens in New York and New Jersey.....

Pine Barrens Hilltop Forest

Quercus prinus – *Quercus velutina* / *Gaylussacia frondosa* Forest (CEGL006334)

Chestnut oak absent or of low cover; common oak forest type of the northeast, occurring in coastal areas and in dry soils inland **Coastal Oak / Heath Forest**
Quercus coccinea – *Quercus velutina* / *Sassafras albidum* / *Vaccinium pallidum* Forest
 (CEGL006375)

42

Beech and other hardwoods contribute substantial cover with oaks.....43
 Beech minor to absent... 44

43

Diverse forest of oaks, hickories, beech, tuliptree (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*); holly (*Ilex opaca*) often present and usually abundant; herbaceous layer usually rich and may include may apple (*Podophyllum peltatum*), Solomon's seal (*Polygonatum biflorum*), Christmas fern (*Polystichum acrostichoides*); forest of the coastal plain from Cape May, New Jersey and south.....
 **Northern Coastal Plain Mixed Hardwood Forest**
Fagus grandifolia – *Quercus alba* – *Liriodendron tulipifera* – *Carya* spp. Forest
 (CEGL006075)

Forest dominated by oaks and beech; tuliptree and sweet gum lacking; herbaceous layer usually less rich than previous type, as indicated by lack of may apple; oak – beech forest of NJ coastal plain north of Cape May, ranging to Massachusetts..... **Coastal Oak – Beech Forest**
Fagus grandifolia – *Quercus alba* – *Quercus rubra* Forest (CEGL006377)

44

Hickories an important component of the canopy; dogwood (*Cornus florida*) prominent in the understory; forest of Long Island, New York and Massachusetts.....
 **Northeastern Dry Oak – Hickory Forest**
Quercus (alba, rubra, velutina) / *Cornus florida* / *Viburnum acerifolium* Forest
 (CEGL006336)

Holly abundant in the understory; dogwood absent..... **Coastal Oak / Holly Forest**
Quercus velutina / *Ilex opaca* Forest (CEGL006378)

DECIDUOUS WOODY VEGETATION OF ROCKY HABITATS

45

Red oak (or less often, chestnut oak) woodland of rocky summits and outcrops; occurs away from the coast and is not directly influenced by maritime wind and salt spray
 **Red Oak Rocky Summit**
Quercus rubra – (*Quercus prinus*) / *Vaccinium* spp. / *Deschampsia flexuosa* Woodland
 (CEGL006134)

Rocky headland of variable composition; black cherry (*Prunus serotina*) and staghorn sumac (*Rhus typhina*) often present; vegetation influenced by wind and salt spray
 **Maritime Rocky Shrubland**
Prunus serotina – *Rhus typhina* Shrubland (CEGL006399)

Coastal Wetland Forests Key

This group of upland communities includes vegetation generally known as swamp forests that occur in the coastal region from the Delaware Bay north to central Maine. 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 wetland forests of pine barrens are also included here.

1

- Swamp forests needle-leaved or mixed with deciduous trees..... 2
- Swamp forests deciduous..... 15

CONIFEROUS OR MIXED SWAMP FORESTS

2

- Hemlock (*Tsuga canadensis*) present in quantity; yellow birch (*Betula alleghaniensis*) or white pine (*Pinus strobus*) often present; pitch pine (*Pinus rigida*), Atlantic white cedar (*Chamaecyparis thyoides*) absent (or if Atlantic white cedar present with hemlock see couplet 7)..... 3
- Atlantic white cedar (*Chamaecyparis thyoides*) or pines present in quantity..... 4

3

- Swamp of saturated basis; hemlock and hardwoods of variable cover; hummocks and pools prevalent; characterized by peat formation..... **Hemlock – Hardwood Peat Swamp**
Tsuga canadensis – *Betula alleghaniensis* / *Ilex verticillata* / *Sphagnum* spp. Forest
(CEGL006226)
- Mesic to seasonally saturated wetland of hemlock and hardwoods; standing water not usually present, soils usually mineral rather than peat; vegetation occupies valley bottoms and other areas transitional to wetlands..... **Low Hemlock – Hardwood Forest**
Tsuga canadensis – *Acer rubrum* – *Betula alleghaniensis* / *Osmunda cinnamomea* Forest
(CEGL006380)

4

- Atlantic white cedar present in quantity; pitch pine minor or absent..... 5
- Pitch pine or loblolly pine present in quantity 11

CEDAR SWAMPS

5

- Leatherleaf (*Chamaedaphne calyculata*) bog mat with interrupted Atlantic white cedar canopy
.....**Atlantic White Cedar Bog**
Chamaecyparis thyoides / *Chamaedaphne calyculata* Woodland (CEGL006321)

More or less closed forest of Atlantic white cedar with variable cover of hardwoods; leatherleaf minor, and if present, mixed with other dwarf shrubs 6

6

Atlantic white cedar swamp of northern New England states, typified by presence of spruce (*Picea rubens*), bunchberry (*Cornus canadensis*), creeping snowberry (*Gaultheria hispidula*), and other species of northern climates..... **Boreal Atlantic White Cedar Swamp**

***Chamaecyparis thyoides* – *Picea rubens* / *Gaylussacia baccata* / *Gaultheria hispidula* Forest (CEGL006363)**

Spruce and other northern species absent 7

7

Atlantic white cedar swamps of more inland portions of the ecoregion; hemlock (*Tsuga canadensis*) or yellow birch (*Betula alleghaniensis*) often present at low cover; coastal indicators bayberry (*Myrica pensylvanica*) or inkberry (*Ilex glabra*) absent 8

Atlantic white cedar swamps of the glaciated coastal region or Atlantic coastal plain; coastal or coastal plain indicators bayberry, inkberry, and others present at least in low cover..... 10

8

Great rhododendron (*Rhododendron maximum*) present

.....**Southern Inland Atlantic White Cedar Swamp**

***Chamaecyparis thyoides* / *Rhododendron maximum* Forest (CEGL006355)**

Great rhododendron absent 9

9

Atlantic white cedar swamp of poorly drained basins with peat development, pools and hummocks with deep peat; not generally influenced by overland flow and characterized by absence of marshy species..... **Northern Inland Atlantic White Cedar Swamp**

***Chamaecyparis thyoides* / *Ilex verticillata* Forest (CEGL006189)**

Atlantic white cedar swamp of water courses and other areas receiving overland flow or other nutrient input; characterized by diverse herbaceous layer of species often associated with marshes or groundwater seepage, such as irises (*Iris versicolor*), skunk cabbage (*Symplocarpus foetidus*), steeplebush (*Spiraea latifolia*), bur-reeds (*Sagittaria*) spp. and others; red maple often makes up a substantial part of the canopy

.....**Seasonally Flooded Atlantic White Cedar Swamp**

***Chamaecyparis thyoides* – *Acer rubrum* / *Vaccinium corymbosum* / *Triadenum virginicum* Forest (CEGL006364)**

10

Atlantic white cedar swamp of the northern Atlantic coast north of the range of red bay (*Magnolia virginiana*) from northern New Jersey coastal plain to Massachusetts; coastal indicators bayberry (*Morella pensylvanica*), inkberry (*Ilex glabra*) present at least at the wetland edge; wetland tending to be acidic and nutrient-poor.....

.....**Northern Coastal Atlantic White Cedar Swamp**

***Chamaecyparis thyoides* / *Ilex glabra* Forest (CEGL006188)**

Atlantic white cedar swamp of the Atlantic coastal plain (southern New Jersey to Delaware); occurs most frequently along water courses and thus receives some seasonal flooding.....

..... **Coastal Plain Atlantic White Cedar Swamp**

***Chamaecyparis thyoides* – *Acer rubrum* / *Magnolia virginiana* Forest (CEGL006090)**

WETLAND PINE FORESTS

11

Loblolly pine present in quantity (Cape May and northern Delaware only)

..... **Coastal Loblolly Pine Wetland Forest**

***Pinus taeda* / *Morella cerifera* / *Osmunda regalis* Forest (CEGL006137)**

Pitch pine (*Pinus rigida*) present in quantity 12

12

Bog wetland with deep peat accumulation, pronounced floating mat and scattered pitch pine canopy; shrub layer heavily dominated by leatherleaf (*Chamaedaphne calyculata*)

..... **Pitch Pine Bog**

***Pinus rigida* / *Chamaedaphne calyculata* / *Sphagnum* spp. Woodland (CEGL006194)**

Pitch pine-dominated wetlands of NJ pine barrens; shallow peat accumulation or overlying saturated sands; or if deep organic layer is present, grasses rather than dwarf shrubs dominate ground layer 13

13

Pineland reedgrass dominates the ground layer..... **Pitch Pine – Pine Reedgrass Savanna**

***Pinus rigida* / *Gaylussacia dumosa* / *Calamovilfa brevipilis* Woodland (CEGL006388)**

Dwarf shrubs dominate the ground layer..... 14

14

Water present at surface or just below; red maple (*Acer rubrum*) and black gum (*Nyssa sylvatica*) often present with pitch pine canopy. Shrub layer is relatively diverse, with highbush blueberry (*Vaccinium corymbosum*), sheep laurel (*Kalmia angustifolia*) and others; sphagnum mosses are common

Pitch Pine Lowland

***Pinus rigida* / *Vaccinium corymbosum* – *Leucothoe racemosa* / *Shagnum* spp. Woodland (CEGL006195)**

Surface water not present, but soils mottled and mesic species (highbush blueberry, inkberry) present

Pitch Pine Subhydric Lowland

***Pinus rigida* / *Gaylussacia baccata* / *Kalmia angustifolia* Woodland (CEGL006387)**

DECIDUOUS WETLAND FORESTS

15

- Forests with closed or open canopies along river floodplains 16
 Wetland forests of headwater streams, poorly drained basins, and other low areas..... 20

16

- Swamps of rivers influenced by tides; exhibiting bare substrate diurnally; red maple (*Acer rubrum*) and green ash (*Fraxinus pennsylvanica*) usually present..... **Tidal Swamp**
Acer rubrum – *Fraxinus pennsylvanica* / *Polygonum* spp. Woodland (CEGL006165)
 Swamps of non-tidal river floodplains 17

17

- Diverse canopy of basswood (*Tilia americana*), white ash (*Fraxinus americana*) sugar maple (*Acer saccharum*), and others 18
 Sugar maple and basswood absent 19

18

- Rich forests of high floodplain terraces; infrequently flooded
 **High Terrace Floodplain Forest**
Acer saccharum – *Fraxinus* spp. – *Tilia americana* / *Matteuccia struthiopteris* – *Ageratina altissima* Forest (CEGL006114)
 Rich floodplain forests of coastal streams; wetland indicators such as jewelweed (*Impatiens capensis*), water purslane (*Ludwigia palustris*) and others present; currently known only from the Great Bay watershed **Rich Floodplain Forest**
Tilia americana – *Acer saccharum* – *Acer nigrum* / *Laportea canadensis* Forest (CEGL006405)

19

- Forests of large rivers; silver maple (*Acer saccharinum*) dominant
 **Silver Maple Floodplain Forest**
Acer saccharinum / *Onoclea sensibilis* – *Boehmeria cylindrica* Forest (CEGL006176)
 Swamp white oak present in quantity; silver maple absent or nearly so
 **Swamp White Oak Floodplain Forest**
Quercus bicolor – *Acer rubrum* / *Carpinus caroliniana* Forest (CEGL006386)

RED MAPLE SWAMPS

20

Swamp forests of constantly saturated, poorly drained basins with hummocks and pools containing tannic water; generally acidic and nutrient-poor; red maple (*Acer rubrum*) and black gum (*Nyssa sylvatica*) common..... 21

Swamp forests of headwater streams, river backswamps, bottomlands receiving nutrients from overland flow; water levels change; may be dry at end of growing season 24

21

Northern species yellow birch (*Betula alleghaniensis*), goldthread (*Coptis trifolia*), bunchberry (*Cornus canadensis*), creeping snowberry (*Gaultheria hispidula*) or other boreal species present..... 22

Northern species absent; more temperate species such as swamp azalea (*Rhododendron viscosum*), sweet pepperbush (*Clethra alnifolia*) present in abundance 23

22

Red spruce (*Picea rubens*) often present at low cover; great rhododendron (*Rhododendron maximum*) absent; swamp of northern New England.....

..... **Northern Basin Swamp**

Acer rubrum – *Nyssa sylvatica* – *Betula alleghaniensis* / *Sphagnum* spp. Forest
(CEGL006014)

Red spruce absent; great rhododendron forms a pronounced understory.....

..... **Red Maple / Rhododendron Swamp**

Acer rubrum / *Rhododendron maximum* Forest (CEGL006396)

23

Common basin swamp of the coastal plain of New Jersey and south; southern species red bay Swamps (*Magnolia virginiana*), sweet gum (*Liquidambar styraciflua*), swamp bay (*Persea palustris*) and others present in quantity..... **Southern Basin Swamp**

Acer rubrum – *Nyssa sylvatica* – *Magnolia virginiana* Forest (CEGL006238)

Southern species mentioned above absent; common swamp of the northeast.....

..... **Lower New England Basin Swamp**

Acer rubrum – *Nyssa sylvatica* / *Rhododendron viscosum* – *Clethra alnifolia* Forest
(CEGL006156)

24

Open canopy of red maples over tussock sedges

..... **Red Maple / Tussock Sedge Wooded Marsh**

Acer rubrum / *Carex stricta* – *Onoclea sensibilis* Woodland (CEGL006119)

Essentially closed canopy; tussock sedges of relatively low cover 25

25

Swamp of the coastal plain from New Jersey south; vegetation occurring in seasonally flooded basins experiencing late-season draw-down; organic layer shallow to absent; sweetgum common **Red Maple – Sweetgum Swamp**

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

Swamps of headwaters, sloping hillsides and other low areas receiving overland flow as well as groundwater influence; substrate muck rather than sphagnum peat; red maple and green ash (*Fraxinus pennsylvanica*) characteristic 26

26

Species of cooler climates such as red spruce (*Picea rubens*), mountain holly (*Nemopanthus mucronatus*), balsam fir (*Abies balsamea*) present; swamps of northern New England

..... **Northern Hardwood Seepage Swamp**

Acer rubrum – *Fraxinus* spp. / *Nemopanthus mucronatus* – *Vaccinium corymbosum* Forest (CEGL006220)

Northern species absent 27

26

Southern species lizard-tail (*Saururus cernuus*) or willow oak (*Quercus phellos*) absent; swamp of New England **Lower New England Red Maple Swamp**

Acer rubrum – *Fraxinus* (*pennsylvanica*, *americana*) / *Lindera benzoin* / *Symplocarpus foetidus* Forest (CEGL006406)

Swamps of the coastal plain from New Jersey south characterized by swamp cottonwood (*Populus heterophylla*) or willow oak 28

27

Swamp of the mid-Atlantic coastal plain (NJ, DE, MD, VA) characterized by lizard-tail and other forbs; diversity relatively low **Chesapeake Red Maple Swamp**

Acer rubrum – *Fraxinus pennsylvanica* / *Saururus cernuus* Forest (CEGL006606)

Swamp of the Cape May peninsula characterized by high diversity and calcium-requiring plants such as *Cirsium muticum* and *Euphorbia purpurea* **Cape May Lowland Swamp**

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

Coastal Shrub Swamps and Bogs Key

This key encompasses vegetation commonly known as shrub swamps and bogs. It also includes wet shrub savannas of the pine barrens where the water table is at or below the sand surface, as well as wet shrublands that fringe pond or lake shores.

1

- Wetland shrub savannas with shrubs interspersed with large expanses of abundant sedges or grasses..... 2
- Shrub swamps or bogs with high density of shrubs..... 3

2

- Wet shrub savanna of the New Jersey pine barrens; widely spaced dwarf huckleberry (*Gaylussacia dumosa*) and pine barren sand-reed (*Calamovilfa brevipilis*) characteristic **Pine Barrens Sand Reed Savanna**
Gaylussacia dumosa / *Calamovilfa brevipilis* Shrub Herbaceous Vegetation (CEGL006397)
- Wet shrub savanna of Rhode Island; leatherleaf (*Chamaedaphne calyculata*) and sweet gale (*Myrica gale*) interspersed with sedges (*Carex exilis*) **Coastal Plain Sedge Fen**
Myrica gale – *Chamaedaphne calyculata* / *Carex exilis* – *Rhynchospora alba* / *Vaccinium macrocarpon* Shrub Herbaceous Vegetation (CEGL006392)

3

- Shrub swamps of river borders 4
- Shrub wetlands of bogs, pond borders, or interdunal swales 6

4

- Water willow dominant. **Water Willow Shrub Swamp**
Decodon verticillatus Semipermanently Flooded Shrubland (CEGL005089)
- Alders (*Alnus* spp.) prevalent..... 5

5

- Shrub swamps of rivers unaffected by tidal flow; herbaceous diversity relatively low..... **Alluvial Shrub Swamp**
Cornus amomum – *Alnus serrulata* Shrubland (CEGL006414)
- Shrub swamp of tidal rivers; herbaceous diversity high due to diurnal exposure of sediments **Tidal Shrub Swamp**
Alnus (incana ssp. rugosa, serrulata) – *Cornus amomum* Shrubland (CEGL006337)

6

- Shrub swamps of deep muck; sphagnum of minor importance or absent..... 7
- Shrub bogs with sphagnum (peat development may range from shallow to deep) or occurring on the borders of ponds or in interdunal swales 9

7

Water willow dominant. Water Willow Shrub Swamp2

***Decodon verticillatus* Semipermanently Flooded Shrubland (CEGL005089)**

Buttonbush dominant 8

8

Buttonbush wetland of deep muck and nearly constant standing water; herbs sparse to absent.....

..Buttonbush Shrub Swamp

***Cephalanthus occidentalis* Shrubland (CEGL003908)**

Buttonbush wetland of drawdown basins supporting relatively diverse herbaceous flora later in the growing season, including grasses, sedges, rushes, beggars-ticks (*Bidens* spp.) and smartweeds (*Polygonum* spp.)..... **Buttonbush Coastal Plain Pond**

***Cephalanthus occidentalis* / *Polygonum hydropiperoides* – *Panicum verrucosum* Shrubland**
(CEGL006242)

9

Shrub bogs with sphagnum either forming a floating mat or deep peat..... 10

Shrub wetlands of pond borders or in interdunal swales; sphagnum, if present, forms a thin layer over saturated sands 13

10

Shrub bogs dominated by highbush blueberry (*Vaccinium corymbosum*).....

. Highbush Blueberry Bog Thicket

***Vaccinium corymbosum* / *Sphagnum* spp. Shrubland (CEGL006190)**

Bogs of deep basins with floating sphagnum mat; leatherleaf (*Chamaedaphne calyculata*) strongly dominant 11

11

Well-developed hollows in bogs where mosses and the dark liverwort *Cladopodiella fluitans* are abundant and not much overtopped by shrubs; small vascular plants such as cranberry (*Vaccinium macrocarpon*), sundews (*Drosera* spp.) and northern white beaksedge (*Rhynchospora alba*) are characteristic **Peatland Moss Lawn / Mud Bottom**

***Sphagnum cuspidatum* – *Cladopodiella fluitans* Nonvascular Vegetation (CEGL006394)**

Bog shrubs dense, forming hummocks 12

2 Water willow often forms a distinct zone at the edge of the water in leatherleaf bogs in this ecoregion. It is regarded to be a part of the Southern New England Bog community. See CEG006008 of couplet 12.

12

Leatherleaf bogs of the New Jersey pine barrens; peatland sedge (*Carex striata*) usually present ...

..... **Pine Barrens Bog**

Chamaedaphne calyculata / *Carex striata* Dwarf-shrubland (CEGL006208)

Leatherleaf bogs of the northeastern coastal region (north of the NJ pine barrens).....

..... **Southern New England Bog**

Chamaedaphne calyculata – (*Gaylussacia dumosa*) – *Decodon verticillatus* / *Woodwardia virginica* Dwarf-Shrubland (CEGL006008)

13

Wet shrub thickets of pondshore and lakeshore margins..... 14

Wet shrub thickets of interdunal swales..... 15

14

Highbush blueberry shrub wetland with thin layer of peat overlying sand; often occurs on the margins of ponds that draw down in late summer

Blueberry Wetland Thicket

Vaccinium corymbosum – *Rhododendron viscosum* – *Clethra alnifolia* Shrubland
(CEGL006371)

Wet shrub thicket characterized by sweet gale (*Myrica gale*) and steeplebush (*Spiraea latifolia*) occurring on the borders of drawdown ponds (those that have exposed shorelines in late summer) in the northern portion of the ecoregion

..... **Northern Pondshore Shrub Thicket**

Myrica gale – *Spiraea tomentosa* / *Panicum virgatum* Shrubland (CEGL006064)

14

Interdunal swale dominated by sweet gale (*Myrica gale*) and bayberry (*Morella pensylvanica*); swale of New York north to NH.....

Northern Interdunal Shrub Swale

Myrica gale – *Morella pensylvanica* Shrubland (CEGL006339)

Interdunal swale or basin wetland of the mid-Atlantic states (NJ south to northern VA)

characterized by wax-myrtle (*Morella cerifera*) and highbush blueberry (*Vaccinium corymbosum*)

Barrier Island Bog

Morella cerifera – *Vaccinium corymbosum* Shrubland (CEGL003906)

Coastal Shrubland and Natural Grassland Communities Key

This key includes non-forested, non-wetland vegetation of the coast from southern Maine to the southern shore of Delaware Bay. Some dune shrublands are included here, as the transition point to a setting not directly influenced by maritime processes is not always evident. See the coastal dune communities key for more information on dune shrublands.

1

Pitch pine or pitch pine and scrub oaks dominant, may be very sparse 2
Vegetation deciduous or herbaceous 4

2

Very open canopy of pitch pine trees with large expanses of unvegetated sand with some beach heather (*Hudsonia tomentosa*); adjacent to riverside; **Inland Dune**
***Pinus rigida* / *Hudsonia tomentosa* / *Pityopsis falcata* Sparse Vegetation (CEGL006391)**
Naturally low pitch pines and scrub oaks, knee high to head high; dwarf-shrubs bearberry (*Arctostaphylos uva-ursi*) or golden heather (*Hudsonia ericoides*) in sandy openings 3

3

Dwarf pine vegetation of Long Island, NY and scattered locations north; pyxie moss (*Pyxidanthra barbulata*), *Leiophyllum buxifolium* absent **Northern Dwarf Pine Plains**
***Pinus rigida* – *Quercus ilicifolia* / *Arctostaphylos uva-ursi* Shrubland (CEGL006097)**
Dwarf pine vegetation of the New Jersey pine barrens **New Jersey Pine Plains**
***Pinus rigida* – *Quercus marilandica* / *Corema conradii* Shrubland (CEGL006148)**

4

Setting is a rocky headland **Coastal Rocky Headland**
***Prunus serotina* – *Rhus typhina* Shrubland (CEGL006399)**
Setting is sand, loam, or other unconsolidated material 5

5

Tall deciduous shrublands (2-5 meters) near the coast; scrub oaks (*Quercus ilicifolia*, *Quercus prinoides*) or fleshy-fruited tree species such as black cherry (*Prunus serotina*), shadbush (*Amelanchier* spp.), or sassafras (*Sassafras albidum*) prevalent 6
Shrubs shorter than 2 meters; tree species absent, or vegetation herbaceous; vegetation of sandplains 9

- 6
Scrub oaks dominant; vegetation in association with pine barrens.....
..... **Outwash Scrub Oak Barrens**
***Quercus ilicifolia* – *Quercus prinoides* Shrubland (CEGL006111)**
Tall shrublands; fleshy-fruited tree species prevalent..... 7
- 7
Tall shrubland to forest; canopy height and closure variable; tree oaks and fleshy-fruited tree
species intermixed; generally replaced virgin maritime forest.....
.....**Successional Maritime Forest**
***Prunus serotina* – *Sassafras albidum* - *Amelanchier canadensis* / *Smilax rotundifolia* Forest**
(CEGL006145)
Dense tall shrubland; tree oaks absent or of minor cover; fleshy-fruited tree and shrub species
having a wind-sheared flat-topped canopy 8
- 8
Bayberry (*Myrica* = *Morella pensylvanica*) and beach plum (*Prunus maritima*) also present
.....**Northern Tall Maritime Shrubland**
***Amelanchier canadensis* – *Viburnum* spp. – *Morella pensylvanica* Shrubland (CEGL006379)**
Beach plum absent; wax-myrtle (*Myrica* = *Morella cerifera*) common.....
.....**Chesapeake Bay Deciduous Maritime Forest**
***Prunus serotina* / *Myrica* = *Morella cerifera* / *Smilax rotundifolia* Shrubland (CEGL006319)**
- 9
Low heath shrubs dominant (more than 75% cover)**Sandplain Heathland**
***Gaylussacia baccata* – *Vaccinium angustifolium* – *Arctostaphylos uva-ursi* / *Schizachyrium*
littorale (= *Schizachyrium scoparium* var. *littorale*) Herbaceous Vegetation (CEGL006066)**
Vegetation herbaceous; native grasses and forbs prevalent; shrubs may be present but at less than
25% cover 10
- 10
Tall native grasses big bluestem (*Andropogon gerardii*) and Indian grass (*Sorghastrum nutans*)
occurring in a small remnant grassland on Long Island, NY**Hempstead Plains Grassland**
Schizachyrium scoparium* – *Sorghastrum nutans* – *Hypoxis hirsuta* – *Baptisia tinctoria
Herbaceous Vegetation (CEGL006187)
Tall grasses absent; little bluestem and native forbs occurring on level sandplains 11

11

Sandplain grassland of southern Maine; lowbush blueberry common at low cover; sharp-pointed ricegrass (*Oryzopsis pungens*) characteristic **Northern Sandplain Grassland**

Vaccinium angustifolium / *Schizachyrium littorale* – *Carex lucorum* Shrub Herbaceous
Vegetation (CEGL006393)

Sandplain grassland of Cape Cod south; bayberry (*Myrica* = *Morella pensylvanica*) present with lowbush blueberry; more diverse than Northern Sandplain Grassland in that it supports goldenasters (*Chrysopsis falcata*, *Chrysopsis mariana*), birdsfoot violet (*Viola pedata*), frostweed (*Helianthemum dumosum*) and other species of more southern distribution. **Sandplain Grassland**

Morella pensylvanica / *Schizachyrium littorale* – *Danthonia spicata* Shrub Herbaceous
Vegetation (CEGL006067)

Coastal Dune Communities Key

This key includes vegetation of coastal sand dunes from southern Maine to the southern shore of Delaware Bay. 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 of beaches and foredunes, fully exposed to oceanic influences; dominated by annuals, perennial grasses and forbs, or sparsely vegetated 2

Vegetation on the lee side of dunes and inland; marginally protected from oceanic influences (low areas of dunes and backdunes); vegetation primarily low or tall shrubs or shrubs mixed with forbs 5

2

Beach community occurring at the wrack line on well-drained sands but flooded irregularly by storm tides, dominated by annuals such as sea rocket (*Cakile edentula*)
.....

North Atlantic Upper Ocean Beach

Cakile edentula ssp. *edentula* – *Chamaesyce polygonifolia* Sparse Vegetation (CEGL004400)

Vegetation of foredunes or breached dunes, perennial grasses and forbs predominant; may be very sparse 3

3

Vegetation (often sparse) of breached dunes, characterized by overwash; upland form of salt hay (*Spartina patens* var. *monogyna*) usually present, with or without beachgrass (*Ammophila breviligulata*) **Overwash Dune Grassland**

Spartina patens – *Schoenoplectus pungens* – *Solidago sempervirens* Herbaceous Vegetation (CEGL004097)

Vegetation of foredunes, beachgrass (*Ammophila breviligulata*) commonly present 4

4

Foredune vegetation of the northern portion of the ecoregion (central NJ and north to central ME); beach pea (*Lathyrus japonicus*) usually present and bitter panic-grass (*Panicum amarum*) usually absent..... **Northern Beachgrass Dune**

Ammophila breviligulata – *Lathyrus japonicus* Herbaceous Vegetation (CEGL006274)

Foredune vegetation of southern NJ and south; bitter panic-grass (*Panicum amarum*) usually co-dominant; beach pea absent or nearly so **Beachgrass - Panic-grass Dune Grassland**

Ammophila breviligulata – *Panicum amarum* var. *amarum* Herbaceous Vegetation (CEGL004043)

5

Vegetation of backdunes, not influenced by the water table..... 6

Vegetation of interdunal swales, wetland plants present (but substrate may be dry, particularly in late season)..... 20

6	Backdune vegetation of variable structure – grasses, dwarf-shrubs, low shrubs and vines growing as patches or often intermixed	7
	Tall shrubland or forest of backdunes	14
7	Interdunal areas dominated by the dwarf-shrub beach heather (<i>Hudsonia tomentosa</i>)	8
	Dwarf-shrubs absent or nearly so.....	9
8	Beach heather and / or bearberry (<i>Arctostaphylos uva-ursi</i>) dominant, with associates such as beach pea (<i>Lathyrus japonicus</i>), beach sedge (<i>Carex silicea</i>), and scattered beach plum (<i>Prunus maritima</i>) typical of northern dunes Northern Beach Heather Dune Shrubland <i>Hudsonia tomentosa</i> – <i>Arctostaphylos uva-ursi</i> Dwarf-shrubland (6143)	
	Beach heather dominant; northern associates absent; bitter panic-grass (<i>Panicum amarum</i>) a common associate; occurring on mid-Atlantic coastal dunes from southern NJ to NC	
	 Central Coast Beach Heather Dune Shrubland <i>Hudsonia tomentosa</i> / <i>Panicum amarum</i> var. <i>amarulum</i> Dwarf-shrubland (CEGL003950)	
9	Essentially level or low (but dry) sandy areas with mixture of forbs, grasses and low shrubs; little bluestem (<i>Schizachyrium littorale</i> = <i>Schizachyrium scoparium</i> var. <i>littorale</i>) characteristic	10
	Topography less level, dune “hillocks” with low shrubs primarily, low forb diversity and cover	12
10	Level areas of sandplains, usually near the coast but may be separated from a maritime dune complex; characterized by high diversity of forbs including members of the pea family such as goat’s rue (<i>Tephrosia virginiana</i>) and honesty-weed (<i>Baptisia tinctoria</i>), and butterfly weed (<i>Asclepias tuberosa</i>); coastal dune species such as seaside goldenrod (<i>Solidago sempervirens</i>), salt hay (<i>Spartina patens</i>), beach pea (<i>Lathyrus japonicus</i>) absent	
	 Northern Sandplain Grassland <i>Morella pensylvanica</i> / <i>Schizachyrium littorale</i> – <i>Danthonia spicata</i> Shrub Herbaceous Vegetation (CEGL006067)	
	Level stabilized areas of interdunes; dune species seaside goldenrod, salt hay and seabeach three-awn (<i>Aristida tuberculosa</i>) generally present with little bluestem.....	11

11

Stabilized interdune north of Delaware Bay shore; waxmyrtle (*Morella* = *Myrica cerifera*) absent, and species of northern distribution more characteristic: scattered beach plum (*Prunus maritima*), beach sedge (*Carex silicea*), beach pea (*Lathyrus japonicus*).....

.....**North Atlantic Coast Backdune Grassland**
(Morella pensylvanica) – Schizachyrium littorale – Aristida tuberculosa Shrub Herbaceous
 Vegetation (CEGL006161)

Stabilized interdune of the outer Delaware Bay shore and south; scattered waxmyrtle (*Morella* = *Myrica cerifera*) and bitter panicgrass (*Panicum amarum*) present with little bluestem

Mid-Atlantic Coast Backdune Grassland
Morella (pensylvanica, cerifera) / Schizachyrium littorale – Eupatorium hyssopifolium
 Shrub Herbaceous Vegetation (CEGL004240)

12

Dune community dominated by vines, often growing over low dead shrubs **Vine Dune**

Smilax glauca – Toxicodendron radicans Vine-Shrubland (CEGL003886)

Dune community dominated by low (but not dwarf-shrubs beach heather or bearberry), typically bayberry (*Myrica pensylvanica*) 13

13

Dune shrubland north of the Delaware Bay shore; beach plum (*Prunus maritima*) a common associate; waxmyrtle (*Morella cerifera*) absent **Northern Bayberry Dune Shrubland**

Morella pensylvanica – Prunus maritima Shrubland (CEGL006295)

Dune shrubland south of Cape Henlopen, DE; beach plum generally absent; waxmyrtle and bitter panicgrass usually present with bayberry **Chesapeake Bay Maritime Shrubland**

Morella pensylvanica / Diodea teres Shrubland (CEGL003881)

14

Pines dominant 15

Deciduous trees or tall shrubs dominant 16

15

Open pitch pine canopy on dune; range to Cape Henlopen, DE..... **Pitch Pine Dune Woodland**

Pinus rigida / Hudsonia tomentosa Woodland (CEGL006117)

Open loblolly pine canopy on dune; range from Cape Henlopen, DE and south

.....**Loblolly Pine Dune Woodland**

Pinus taeda / Hudsonia tomentosa Woodland (CEGL006052)

16

Beech is strongly dominant; forest of coastal sand dunes; canopy may be short and stunted where exposed to wind and salt spray, with trees taller in protected backdunes; limited to Long Island, NY and Nantucket, MA **Maritime Beech Forest**

***Fagus grandifolia* / *Smilax rotundifolia* Forest (CEGL006043)**

Tall shrubland, woodland or forest (canopy height very variable in height and closure) of fleshy-fruited or tall shrub species such as black cherry (*Prunus serotina*), shadbush (*Amelanchier* spp.), chokeberry (*Aronia melanocarpa*), sassafras (*Sassafras albidum*), black gum (*Nyssa sylvatica*), arrowwood (*Viburnum dentatum*), waxmyrtle (*Morella cerifera*), or groundsel-tree (*Baccharis halimifolia*)..... 17

17

Vegetation sheltered from direct maritime influences; oaks make up a portion of the canopy (although substantially less than 50% cover); coastal forests that have been cleared generally transition to this type **Successional Maritime Forest**

***Prunus serotina* – *Sassafras albidum* – *Amelanchier canadensis* / *Smilax rotundifolia* Shrubland (CEGL006145)**

Vegetation of bluffs and secondary dunes; vegetation head-high, dense to open, multi-stemmed with a level wind-sheared canopy..... 18

18

Waxmyrtle (*Myrica* = *Morella cerifera*) absent; tall maritime shrubland of New Jersey and north.

..... **Northern Tall Maritime Shrubland**

***Amelanchier canadensis* – *Viburnum* spp. – *Morella pensylvanica* Shrubland (CEGL006379)**

Waxmyrtle (*Myrica* = *Morella cerifera*) present; tall maritime shrubland of Cape May, New Jersey and the Delmarva peninsula and south 19

19

Vegetation of unstable sand dunes; substrate dry; herbaceous layer poorly developed to absent

..... **Chesapeake Bay Tall Maritime Shrubland**

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

Vegetation of more stable sand dunes; waxmyrtle and groundsel-tree (*Baccharis halimifolia*) typically co-dominant; herbaceous layer well-developed and usually characterized by salt hay (*Spartina patens*) **Maritime Wax-myrtle Shrubland**

***Morella cerifera* – *Baccharis halimifolia* / *Spartina patens* Shrubland (CEGL003809)**

20

21

***Morella cerifera* – *Vaccinium corymbosum* Shrubland (CEGL003906)**

***Myrica gale* -- *Morella pensylvanica* Shrubland (CEGL006339)**

22

***Vaccinium macrocarpon* – *Morella pensylvanica* Dwarf-shrubland (CEGL006141)**

23

***Juncus (dichotomus, scirpoides) – Drosera intermedia* Herbaceous Vegetation (CEGL004111)**

24

(*Morella cerifera*) / *Panicum virgatum* – *Spartina patens* Herbaceous Vegetation (CEGL004129)

Vegetation more diverse; salt hay (*Spartina patens*) particularly characteristic.....
..... **Brackish Interdunal Swale**
Spartina patens – *Eleocharis parvula* Herbaceous Vegetation (CEGL006342)

APPENDIX - ELD FORM

Form 2: Qualitative Description

NVC Code / Name _____

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

Quad name (s): _____

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 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.)