

# Maryland Community Classification

## Introduction

This document presents a comprehensive list of plant communities for the terrestrial vegetation occurring within Maryland. The classification unit of this document, the Community Alliance, is based on floristic composition and is roughly equivalent in magnitude to the "cover type" of the Society of American Foresters (Eyre, 1980). In addition to forested communities, this classification includes woodlands, shrublands and herbaceous vegetation.

This first approximation of Maryland plant communities illustrates the preliminary stages of the classification development and provides a framework to continue work. The hierarchy of the classification follows The Nature Conservancy's (TNC) National Classification.

The objective of the National Classification is to partition the biophysical landscape into reasonable units for conservation. The basic unit of the classification is the "community element", a vegetation unit of uniform floristic composition, habitat and physiognomy. The alliance level presented here is broader in scale. Developed in part for the National Gap Analysis Program, the community alliances are groups of community elements which share one or more diagnostic species and occur in broadly similar habitat. Whereas the community element is homogenous in composition, the community alliance is typically more variable across its range.

## Classification of Community Elements and Community Alliances

This classification includes upland and palustrine communities as well as the vegetated portions of Cowardin et al. (1979) lacustrine, riverine, estuarine, and marine systems. Excluded are the portions of Cowardin et al. (1979) marine, estuarine, and lacustrine systems beyond the limits of rooted vegetation, as well as other non-vegetated habitats.

This is a classification of existing vegetation rather than physical habitats. The underlying assumption was that the vegetation is the best, and most easily measured, assessor of complex environmental and historical site conditions. Conceptually then, both the community element and community alliance include all of the biological and physical diversity associated with that vegetation.

## **Structure of the Hierarchy**

In this classification the floristically defined groups (elements and alliances) are arranged into an increasingly broader physiognomic framework (The Nature Conservancy, 1994). The framework is based on easily observable characteristics of the vegetation such as the physical form (class), the leaf phenology (subclass) and leaf morphology (group). At these upper levels of the hierarchy, the classification is primarily organizational. This is desirable, since in most cases the variables involved in defining these groups are too complex and correlated for simple dichotomous arrangement.

The terrestrial hierarchy is a modification of UNESCO (1973) and Driscoll, et al. (1984). The levels are as follows:

I. Class: based on the structure of the vegetation as determined by the relative cover of the dominant canopy stratum in tree, shrub, dwarf shrub, herbaceous, and non-vascular vegetation. Examples: forest, woodland, shrubland.

A. Subclass: determined by the predominant leaf phenology for woody types, and the average vegetation height for herbaceous types.

1. Group: divisions are based largely on leaf morphological characteristics (e.g. broad-leaved or needle-leaved)

a. Formation: based on a number of major environmental and ecological variables such as climate, hydrologic regime.

i. Community Alliance: a physiognomically uniform group of community elements sharing one or more diagnostic species. This level of the classification hierarchy has been adopted by the National Gap Analysis Program as a means to organize and standardize data collected in the ground-truthing portion of the project. The "group" of Sneddon and Metzler (1992) is closely related to the community alliance.

\*\* Community element: plant association of definite floristic composition, having uniform physiognomy and of uniform habitat (not included in this document).

## **Methods**

The data used to generate this classification were from a wide variety of sources, however, much of the work is based on community types described and tracked by individual state Heritage Programs in The Nature Conservancy's Eastern Region: Connecticut, Delaware, Maine, Maryland,

Massachusetts, New Hampshire, New York, New Jersey, Pennsylvania, Rhode Island, Vermont, Virginia and West Virginia.

Alliances were derived through the analysis of existing data from published and unpublished sources, and from primary data collected by heritage and TNC ecologists (see Sneddon, 1993 for methodology). Data types were placed within the following categories: 1) quantitative (generally plot-based); 2) species lists from individual stands; and 3) composite community descriptions. When possible, quantitative samples of a broad (formation, subclass, or class level) vegetation type was analyzed using standard multivariate methodology. In particular, TWINSpan (Hill, 1979) was used to produce species by site tables which were circulated among the state Heritage Program ecologists and manually rearranged until a consensus on the appropriate divisions was reached. Environmental data were used as both a check and a refinement to the floristic patterns revealed during analysis, as were species lists and composite community descriptions from the literature. Alliances were derived by successively grouping stands into larger groups based on their physiognomy and floristic composition. However, data collected in a standardized fashion over a broad geographic range was the exception rather than the rule. Many of the alliances identified in this study were classified with some, but not comprehensive, coverage by quantitative data. Others were classified using only composite community descriptions. In all cases, further research and refinement is ongoing.

### **Current Community Inventory/Research Projects in Maryland**

Recent community emphasis has been focused on the inventory and research of Maryland's barrier island communities, shale barren habitats, Potomac drainage floodplain forests, limestone glades and woodlands, river scour communities, Appalachian Plateau wetlands, circumneutral seepage wetlands, northern Piedmont bogs, Nanticoke River watershed communities, ancient xeric sand dunes, sandstone glades, Delmarva Bays, oldgrowth forests, and mixed-mesophytic forests. Maryland is still in the early stages of describing the component communities and developing ranking criteria for individual community types. Development of a community component to the Biological Conservation Database is a high priority for Maryland to aid in the tracking of rare, threatened, and endangered communities across the state.

## References

- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service. Washington, D.C. 131p.
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- Eyre, F.H. 1980. Forest Cover Types of the United States and Canada. Society of American Foresters. Washington, D.C. 148p.
- Grossman, D.H., Goodin, K.L. and Reuss, C.L. (eds). 1994. Rare plant communities of the conterminous United States: An initial survey. Report Prepared for the U.S. Fish and Wildlife service. The Nature Conservancy, Arlington, VA. 620 p.
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- Sneddon, L. (ed). 1993. Field form instructions for the description of sites and terrestrial, palustrine, and vegetated estuarine communities. Version 2. The Nature Conservancy, Eastern Heritage Task Force, Boston, MA.
- United Nations Educational, Scientific and Cultural Organization (UNESCO). 1973. International classification and mapping of vegetation. Series 6, Ecology and Conservation. Paris. 93 p.

## Community Alliances of Maryland as of 8 April 1996

Hemlock - White Pine Forest  
*Tsuga canadensis* - *Pinus strobus* Forest  
Red Cedar Forest  
*Juniperus virginiana* Forest  
Red Spruce - Balsam Fir Forest  
*Picea rubens* - *Abies (balsamea, fraseri)* Forest  
Hemlock Wetland Forest  
*Tsuga canadensis* Wetland Forest  
Red Spruce - Balsam Fir Wetland Forest  
*Picea rubens* - *Abies balsamea* Wetland Forest  
Loblolly Pine Forest  
*Pinus taeda* (wetland) Forest  
Sugar Maple - Yellow Birch - Beech Forest

*Acer saccharum* - *Betula allegheniensis* - *Fagus grandifolia* Forest  
Sugar Maple - White Ash - American Basswood Forest  
*Acer saccharum* - *Fraxinus americana* - *Tilia americana* Forest  
White Baswood - Yellow Buckeye Forest  
*Tilia heterophylla* - *Aesculus octandra* Forest  
Sugar Maple - Yellow Oak Forest  
*Acer saccharum* - *Quercus muehlenbergii* Forest  
Red Oak - Sugar Maple Forest  
*Quercus rubra* - *Acer saccharum* Forest  
Hickory - White Ash - Oak Forest  
*Carya* - *Fraxinus americana* - *Quercus* Forest  
Oak / Heath Forest (Northeastern Upland)  
(Northeastern Upland) *Quercus* / *Ericaceae* Forest  
Oak - Beech / American Holly Forest  
*Quercus* - *Fagus grandifolia* / *Ilex opaca* Forest  
Black Cherry - Common Serviceberry - Oak Forest  
*Prunus serotina* - *Amelanchier canadensis* - *Quercus* spp. Forest  
Pin Cherry Forest  
*Prunus pensylvanica* Forest  
Pin Oak, Swamp White Oak Wetland Forest  
*Quercus* (*palustris*, *bicolor*) Wetland Forest  
Silver Maple - (Cottonwood) Wetland Forest  
*Acer saccharinum* - (*Populus deltoides*) Wetland Forest  
Sycamore - River Birch - Boxelder Wetland Forest  
*Platanus occidentalis* - *Betula nigra* - *Acer negundo* Wetland Forest  
Red Maple - Red Ash Wetland Forest  
*Acer rubrum* - *Fraxinus pennsylvanica* Wetland Forest  
Red Maple - Black Ash Wetland Forest  
*Acer rubrum* - *Fraxinus nigra* Wetland Forest  
Red Maple - Black Gum Wetland Forest  
*Acer rubrum* - *Nyssa sylvatica* Wetland Forest  
Red Maple - Sweet Gum Wetland Forest  
*Acer rubrum* - *Liquidambar styraciflua* Wetland Forest  
Bald Cypress - Black Gum Forest  
*Taxodium distichum* - *Nyssa biflora* Forest  
Oak - Shortleaf Pine Forest  
*Quercus* - *Pinus* (*rigida*, *echinata*) Forest  
Virginia Pine - Loblolly Pine - Southern Red Oak Forest  
*Pinus virginiana* - *Pinus taeda* - *Quercus falcata* Forest  
Virginia Pine / Black Jack Oak Forest  
*Pinus virginiana* / *Quercus marilandica* Forest  
Loblolly Pine - Water Oak, Southern Red Oak Forest  
*Pinus taeda* - *Quercus* (*nigra*, *falcata*) Forest  
White Pine - Red Oak, Black Oak Forest  
*Pinus strobus* - *Quercus* (*rubra*, *velutina*) Forest  
Hemlock - Sugar Maple - Yellow Birch Forest

*Tsuga canadensis* - *Acer saccharum* - *Betula allegheniensis* Forest  
Yellow Birch - Red Spruce Forest  
*Betula allegheniensis* - *Picea rubens* Forest  
Atlantic White Cedar - Red Maple Forest  
*Chamaecyparis thyoides* - *Acer rubrum* Forest  
Red Maple - Red Spruce Wetland Forest  
*Acer rubrum* - *Picea rubens* Wetland Forest  
Willow Oak - Loblolly Pine Wetland Forest  
*Quercus phellos* - *Pinus taeda* Wetland Forest  
Pitch Pine / Scrub Oak Woodland  
*Pinus rigida* / *Quercus ilicifolia* Woodland  
Loblolly Pine Woodland  
*Pinus taeda* Woodland  
Northern White Cedar Woodland  
*Thuja occidentalis* Woodland  
Atlantic White Cedar Wetland Woodland  
*Chamaecyparis thyoides* Wetland Woodland  
Red Spruce Wetland Woodland  
*Picea rubens* Wetland Woodland  
Yellow Oak Woodland  
*Quercus muehlenbergii* Woodland  
American Basswood - White Ash Woodland  
*Tilia americana* - *Fraxinus americana* Woodland  
Red Maple - Red Ash Wetland Woodland  
*Acer rubrum* - *Fraxinus pennsylvanica* Wetland Woodland  
Red Cedar - White Ash Woodland  
*Juniperus virginiana* - *Fraxinus americana* Woodland  
Virginia Pine / Little Bluestem Sparse Woodland  
*Pinus (virginiana, rigida)* / *Schizachyrium scoparium* Sparse Woodland  
Bayberry - (Beach Plum) Shrubland  
*Myrica pensylvanica* - (*Prunus maritima*) Shrubland  
Wax-myrtle (Wet) Shrubland  
*Myrica cerifera* (Wet) Shrubland  
Wax-myrtle - Highbush Blueberry (wet) Shrubland  
*Myrica cerifera* - *Vaccinium corymbosum* (wet) Shrubland  
Wax-myrtle - Sea-myrtle Shrubland  
*Myrica cerifera* - *Baccharis halimifolia* Shrubland  
Sea-myrtle - Maritime Marsh-elder  
*Baccharis halimifolia* - *Iva frutescens* Shrubland  
Smooth Alder Shrubland  
*Alnus (incana, serrulata)* Shrubland  
River Birch Shrubland  
*Betula nigra* Shrubland  
Black Willow Shrubland  
*Salix nigra* Shrubland  
Button Bush Shrubland

*Cephalanthus occidentalis* Shrubland  
Water-willow Shrubland  
*Decodon verticillatus* Shrubland  
Highbush Blueberry  
*Vaccinium corymbosum* Shrubland  
Speckled Alder, Smooth Alder - Kinnikinnik Shrubland  
*Alnus (incana, serrulata)* - *Cornus amomum* Shrubland  
Bayberry - Little Bluestem Sparse Shrubland  
*Myrica pensylvanica* - *Schizachyrium scoparium* Sparse Shrubland  
Beach Heather Dwarf Shrubland  
*Hudsonia tomentosa* Dwarf Shrubland  
Blueberry Dwarf Shrubland  
*Vaccinium (myrtilloides, vacillans, angustifolium)* Dwarf Shrubland  
Large Cranberry Dwarf Shrubland  
*Vaccinium macrocarpon* Dwarf Shrubland  
Big Bluestem - Indian Grass Herbaceous  
*Andropogon gerardii* - *Sorghastrum nutans* Herbaceous  
Bluejoint Reed-grass - Reed Canary Grass Herbaceous  
*Calamagrostis canadensis* - *Phalaris arundinacea* Herbaceous  
Broad-leaved Cattail Herbaceous  
*Typha latifolia* Herbaceous  
Bulrush spp. Herbaceous  
*Scirpus* Spp. Herbaceous  
Narrow-leaved Cattail Herbaceous  
*Typha angustifolia* - *Hibiscus* spp. Herbaceous  
Big Cord-grass Herbaceous  
*Spartina cynosuroides* Herbaceous  
Common Reed Herbaceous  
*Phragmites australis* Herbaceous  
Smooth Cord-grass - *Lilaeopsis* Herbaceous  
*Spartina alterniflora* - *Lilaeopsis chinensis* Herbaceous  
Saltmarsh Bulrush Herbaceous  
*Scirpus robustus* Herbaceous  
Wild Rice Herbaceous  
*Zizania aquatica* Herbaceous  
Smooth Cord-grass Herbaceous  
*Spartina alterniflora* Herbaceous  
Needlerush Herbaceous  
*Juncus roemerianus* Herbaceous  
Orchard Grass - Sheep Sorrel Herbaceous  
*Dactylis glomerata* - *Rumex acetosella* Herbaceous  
Allegheny Flyback Herbaceous  
*Danthonia compressa* Herbaceous  
American Beachgrass Herbaceous  
*Ammophila breviligulata* Herbaceous  
Forked Rush Herbaceous

*Juncus dichotomous* Herbaceous  
Switchgrass (seasonally flooded) Herbaceous  
*Panicum virgatum* (seasonally flooded) Herbaceous  
Common Threesquare Herbaceous  
*Scirpus pungens* (seasonally flooded) Herbaceous  
Walter's Sedge Herbaceous  
*Carex striata* Herbaceous  
Tussock Sedge Herbaceous  
*Carex stricta* Herbaceous  
Twig Rush Herbaceous  
*Cladium mariscoides* Herbaceous  
Three-square Sedge Herbaceous  
*Dulichium arundinaceum* Herbaceous  
Horned-rush Herbaceous  
*Rhynchospora macrostachya* Herbaceous  
Switchgrass Herbaceous  
*Panicum virgatum* Herbaceous  
Salt-meadow Cordgrass - Common Threesquare Herbaceous  
*Spartina patens* - *Scirpus pungens* Herbaceous  
Salt-meadow Cordgrass Herbaceous (Estuarine)  
*Spartina patens* Herbaceous (Estuarine)  
Moss-phlox - River-bank Goldenrod Herbaceous  
*Phlox subulata* - *Solidago simplex* Herbaceous  
Glaucous Greenbrier - Poison Ivy Herbaceous  
*Smilax glauca* - *Toxicodendron radicans* Herbaceous  
Pickerelweed - Arrow-arum Herbaceous  
*Pontederia cordata* - *Peltandra virginica* Herbaceous  
Parker's Pipewort Herbaceous  
*Eriocaulon parkeri* Herbaceous  
Glasswort - Smooth Cordgrass (short form) Herbaceous  
*Salicornia* - *Spartina alterniflora* (short form) Herbaceous  
Yellow Hedge-hyssop - Meadow Beauty Herbaceous  
*Gratiola aurea* - *Rhexia virginica* Herbaceous  
Golden Saxifrage - True Watercress Herbaceous  
*Chysosplenium americanum* - *Nasturtium officinale* Herbaceous  
Yellow Water-lily Herbaceous  
*Nuphar lutea* Herbaceous  
Clasping Leaved Pondweed - Tapegrass Herbaceous  
*Potamogeton perfoliatus* - *Vallisneria americana* Herbaceous  
Eelgrass Herbaceous  
*Zostera marina* Herbaceous  
Ditch-grass Herbaceous  
*Ruppia maritima* Herbaceous  
Sago Pondweed - Horned Pondweed Herbaceous  
*Potamogeton pectinatus* - *Zannichellia palustris* Herbaceous  
Sea Rocket Herbaceous

*Cakile edentula* Herbaceous  
Quillwort Sparsely Vegetated  
*Isoetes riparia* Sparsely Vegetated

**8 April 1996**