



The National Vegetation Classification Standard

The National Vegetation Classification Standard establishes a consistent national approach to the classification of existing vegetation. It is intended to facilitate collaboration between state and federal agencies engaged in the collection of vegetation data, and to support vegetation map consistency (although it is not a map standard). It will foster accuracy, consistency, and clarity in the structure, labeling, definition and application of vegetation for the U.S and its Trust Territories. The National Vegetation Classification Standard (NVC) also defines and adopts standards for vegetation data collection and analysis. These minimum metadata requirements ensure consistent reporting on the nation’s vegetation resources..

The NVC is being implemented by federal, state, tribal, and non-profit agencies as well as academic researchers and private environmental consulting firms who see the value in sharing their vegetation data with other agencies and groups. The Montana Natural Heritage Program uses the NVC as the standard for classifying intensive plot data. This allows us to share data through the National Park Service’s [PLOTS Database](#), and allows us to share site information with other collaborating agencies and Heritage Programs.

The Classification

The National Vegetation Classification is a hierarchical system designed to classify existing vegetation (i.e. plant cover, floristic composition, and vegetation structure occurring in a specific place at a specific time) on the basis of both physiognomic and floristic criteria. The upper levels of the classification are physiognomic, defined primarily on the basis of growth form, structure, and cover, while the lower levels are floristic, based primarily on species composition and abundance. The middle-tiered levels are based on a combination of physiognomic and floristic characteristics.

The NVC also differentiates between natural and cultural vegetation, with separate classification hierarchies for each. Natural (and semi-natural) vegetation is vegetation in which species and site characteristics are determined primarily by ecological processes. By contrast, when the structure, composition, and development of vegetation are determined by regular human activity, such as land clearance, grazing, and/or fire regime management/fuels treatments, the vegetation is defined as cultural vegetation. Natural vegetation may be influenced to varying degrees by human activity. Vegetation that has been shaped by both anthropogenic disturbances and ecological processes (e.g. reclaimed cropland or rangeland) is defined as semi-natural vegetation. The NVC encompasses all areas having one percent or more of their surface area covered with live vegetation. Non-vegetated lands and open water are excluded from classification.

NVC Hierarchy	Natural Vegetation	Cultural Vegetation
Upper Level		
	Level 1-Formation Class	Level 1- Cultural Class
	Level 2- Formation Subclass	Level 2- Cultural Subclass
	Level 3- Formation	Level 3- Cultural Formation
		Level 4- Cultural Subformation Row Crop
Mid Level		
	Level 4-Division	Level 5-Cultural Group
	Level 5-Macrogroup	Level 6-Cultural Subgroup
	Level 6-Group	
Lower Level		
	Level 7-Alliance	Level 7- Cultural Type
	Level 8-Association	Level 8- Cultural Subtype (optional)

Upper Level Units: With Natural Vegetation, the upper-level units consist of three classes defined on the basis of physiognomic and ecological factors.

1. **Formation Class:** A broad combination of dominant general growth forms that correspond to global moisture and temperature regimes and/or substrate or aquatic conditions.

2. **Formation Subclass:** A combination of general dominant and diagnostic growth forms reflecting global macroclimatic factors driven primarily by latitude and continental position or reflecting the overriding substrate or aquatic conditions.
3. **Formation:** A combination of general dominant and diagnostic growth forms reflecting global macroclimatic factors including by elevation, seasonality of precipitation, and soil moisture conditions.

Mid-Level units: The mid-level units consist of three classes defined on the basis of both physiognomic and floristic units.

4. **Division:** A combination of dominant and diagnostic growth forms and a broad set of diagnostic plant taxa reflecting biogeographic differences in composition, and continental differences in mesoclimate, geology, substrates, hydrology, and disturbance regimes.
5. **Macrogroup:** A combination of moderate sets of diagnostic plant species and diagnostic growth forms reflecting biogeographic differences in composition and sub-continental to regional differences in mesoclimate, geology, substrates, hydrology, and disturbance regimes.
6. **Group:** A combination of relatively narrow sets of diagnostic plant species (including dominants and co-dominants), with broadly similar composition, and diagnostic growth forms reflecting biogeographic differences in mesoclimate, geology, substrates, hydrology, and disturbance regimes.

Lower Level units: The lower-level units consist of two classes defined on the basis of floristic units.

7. **Alliance:** A characteristic range of species composition, habitat conditions, physiognomy, and diagnostic species, typically at least one of which is found in the uppermost or dominant stratum of the vegetation layer, and reflecting regional to subregional climate, substrates, hydrology, moisture/nutrient factors and disturbance regimes. An alliance consists of one or more associations.
8. **Association:** A characteristic range of species composition, with diagnostic species occurrence, habitat conditions, and physiognomy reflecting topo-edaphic conditions, climate, substrates, hydrology, and disturbance regimes.

A sample classification is shown below.

Examples of the NVC Natural Vegetation hierarchy with an upland and wetland community.

Natural Vegetation Hierarchy	Example: Upland	Example: Wetland
Upper Level		
Level 1-Formation Class	Forest and Woodland	Mesomorphic Shrub and Herb Vegetation (Shrubland and Grassland)
Level 2- Formation Subclass	Temperate Forest	Temperate and Boreal Grassland and Shrubland
Level 3- Formation	Cool Temperate Forest	Temperate and Boreal Bog and Fen
Mid Level		
Level 4-Division	Western North America Cool Temperate Forest	North American Bog and Fen
Level 5-Macrogroup	Northern Rocky Mountain Lower Montane Forest	Western North America Bog and Fen
Level 6-Group	Northern Rocky Mountain Ponderosa Pine Woodland and Savanna	Rocky Mountain Subalpine-Montane Fen
Lower Level		
Level 7-Alliance	Ponderosa Pine-Douglas-fir Woodland Alliance (<i>Pinus ponderosa</i> - <i>Pseudotsuga menziesii</i> Woodland Alliance)	Inflated Sedge Seasonally Flooded Herbaceous Alliance Inflated Sedge Herbaceous Alliance (<i>Carex utriculata</i> / <i>Carex rostrata</i> Herbaceous Alliance)
Level 8-Association	Ponderosa Pine-Common Snowberry Forest (<i>Pinus ponderosa</i> - <i>Symphoricarpos albus</i> Forest)	Northwest Territory Inflated Sedge Herbaceous Vegetation (<i>Carex utriculata</i> Herbaceous Vegetation)