

**Field Key to Ecological Systems and Target Alliances
of the Map Zones 31, 39, 40 (Northern Great Plains), United States**

**NatureServe
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Northern Tallgrass Prairie. Goose Lake, Minnesota. Photo by *D. Faber-Langendoen*

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Introduction

The following keys to NatureServe ecological systems cover the areas found in NLCD map zones 31, 39, and 40 (Northern Great Plains). The systems included in these keys are intended to represent the legend that LANDFIRE will be striving to map for existing vegetation (Figure 1). Some types are in the keys that characteristically occur at small spatial scales (generally <2 ha in size) and hence may not be mappable by the LANDFIRE project. However, we have chosen to be inclusive in the keys, so that the user will have information on these system types for comparison purposes. In some cases they may be important for modeling fire condition class and, given their relative distinctiveness on the landscape, they may indeed be mappable.

Plant names are almost always in Latin and follow the nomenclature of Kartesz (1999). In limited cases, we have included synonyms and/or common names for some taxa.

The keys are dichotomous, which means the user follows the order of the ‘couplets’ and makes a choice between the two options represented in the couplet. The ordering of the couplets in each key does matter, and the user should choose the option in each couplet that best fits the data or field situation. The users should carefully read both couplets before making the best choice of the two available leads. A choice leads the user to the next couplet to be utilized in the keying process, via a number at the far right, or else leads to a final result (an ecological system or an alliance).

If the choice the user makes leads to a “result”, then either an Ecological System or a Vegetation Alliance is named. Alliances are recognizable because “alliance” is in the name, and they all start with one or more Latin names (e.g. *Pinus strobus* Forest Alliance).

Systems do not include Latin species names in them, and always start with a Biogeographic region (e.g. North-Central Interior or Laurentian-Acadian), and may include plant species or genus common names (e.g. Pine, Oak). Numbers in parentheses placed after the System Name are the EVT (Existing Vegetation Type) codes assigned by Landfire to the Systems.

Some keys or portions of keys may follow a different logic from one another, depending on what ecological or biogeographic variable is best suited to the types included in the key. A group of higher-order couplets or choices guides the user to one of several individual keys for a more specific group of systems. Some systems include a variety of manifestations on the landscape, and these may appear more than once in the key or keys. These examples will be noted by reference to the other examples.

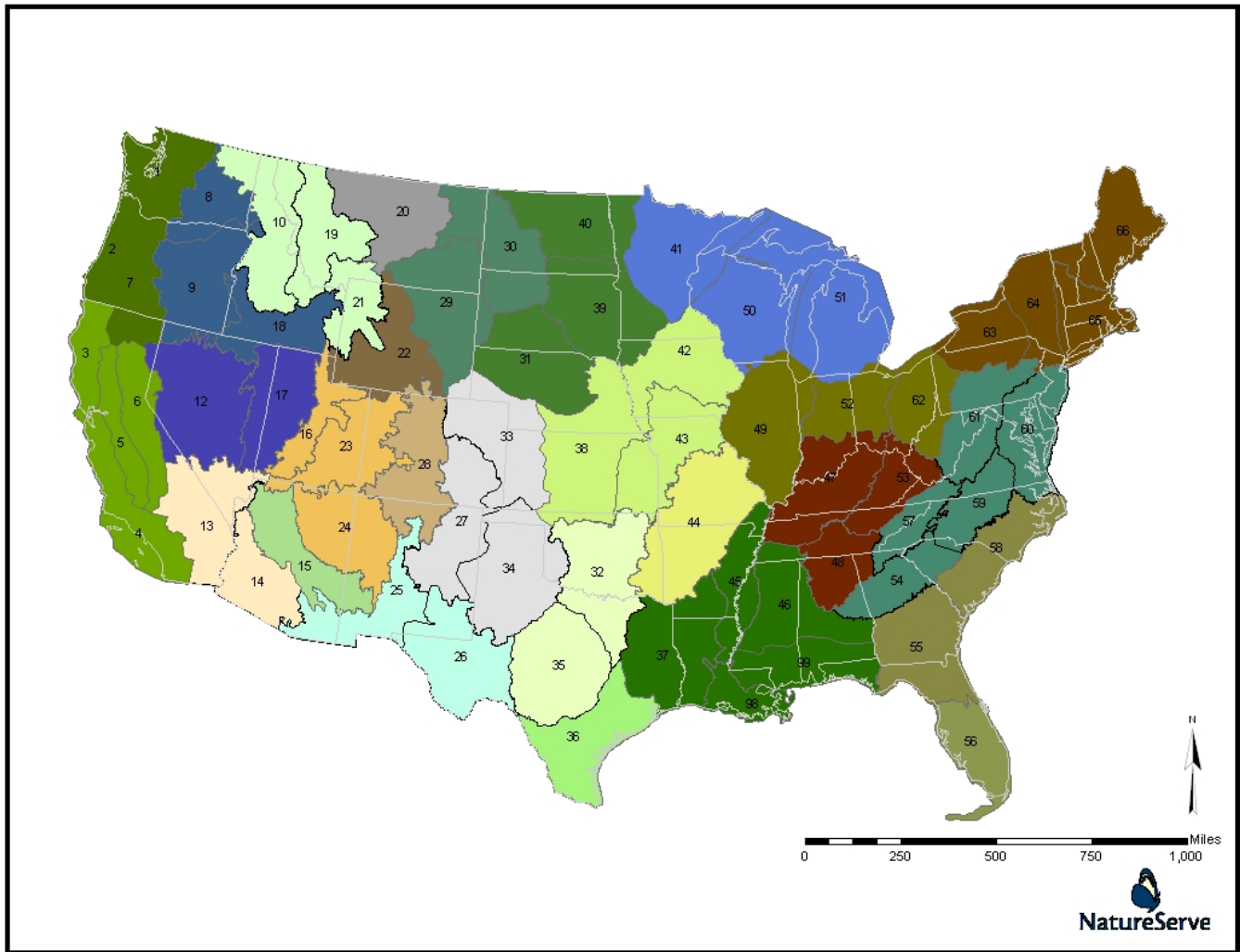


Figure 1. LANDFIRE map zone clusters with keys to ecological systems and selected alliances.

The keys to ecological systems use a variety of different variables, which are applied in various sequences, depending on the relative significance of the variable. Variables that are less ambiguous in their application will ideally be used earlier or “higher” in the key. The principal (and more-or-less universal) variables that help provide the upper structure for the key include broad physiognomy (e.g. forested vs. non-forested), broad biogeography (where a map zone is heterogeneous in this respect), and general hydrology (e.g. upland and wetland). Common terms instead of overly jargonistic or technical language is preferred in the key where possible, but some terms may require definition. In our sense of meaning, “wetland” vegetation is that “whose composition is affected by flooding or saturated soil conditions.” The term is not used in the sense of a “jurisdictional wetland” which is a more limited as well as a legal meaning of this term.

Systems may occur in the key in several places, if their range of variability would require this. In more detailed (or “lower”) places in the key, dominance within vegetation strata may play a role. Tree cover is generally considered first, then that of shrubs, then the herbaceous component. Codominant species within a given strata are important as well, in some cases a System or alliance will have two or more codominant species, which may or may not be present in all stands.

Some terminology is commonly employed throughout the keys that distinguish general spatial characteristics of the vegetation or environmental setting. For example ‘matrix’ types of vegetation

are dominant across the majority of a given landscape, while 'large patch' types tend to occur as distinctive patches, which represent specific environments within the larger 'matrix.' In the western Great Lakes area, elevation is not of much use in distinguishing systems, but soil composition or latitude may be of some importance. These variables and others are used to provide the framework for the key.

Ideally, the user of the key will be able to locate themselves in relation to the USFS Section and Subsection boundaries, as in some cases this may be the determining factor between two otherwise similar systems. These ecoregional limits are in a sense a general guide, and different systems of classifying ecoregions vary in terms of precisely where these boundaries occur. In many cases, the ecoregional line correlates well with an observable variable in vegetation, topography, soil type, etc., but this may not always be the case and ecotonal areas may occur in some cases near a boundary.

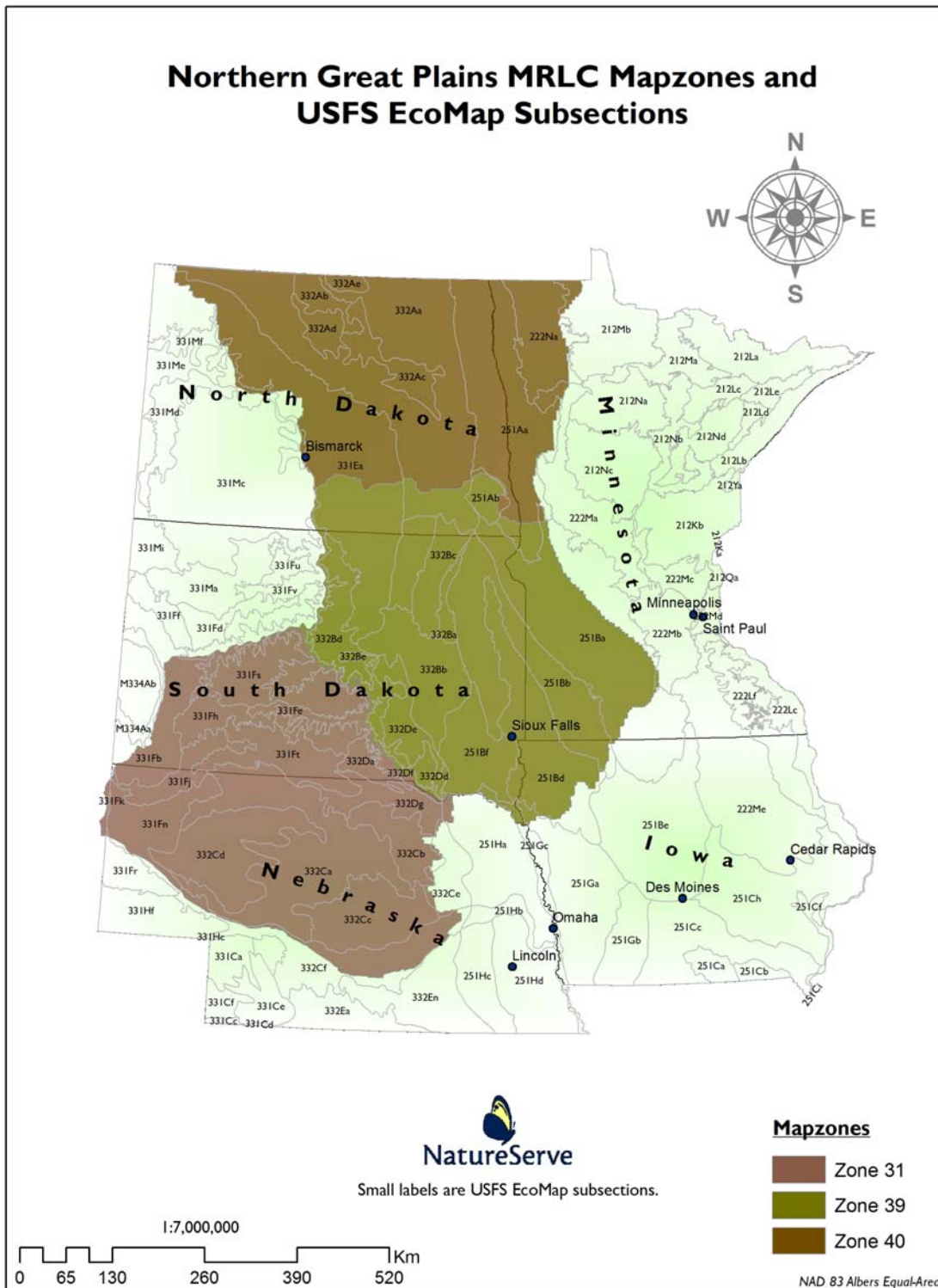


Figure 2 – USFS Subsections for Map Zones 31, 39, and 40.

In the section of the document immediately following, we have provided a table showing the LANDFIRE legend units that represent non-natural vegetation and a short description for each of them. They are not formally incorporated into the keys, since they are typically recognizable without the use of a key, or else their floristic composition is so variable as to be not useful in a field key. Our primary purpose was to provide keys for the natural and near-natural vegetation of these zones.

Land Use, Unvegetated, Semi-natural and Altered Vegetation

LAND USE OR UNVEGETATED SURFACES	
Open Water	Open water
Developed	Generally developed lands.
Developed, Open Space	Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Impervious surfaces account for less than 20% of total cover. Examples include parks, lawns, golf courses, airport grasses, and industrial site grasses.
Developed, Low Intensity	Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-50% of total cover. These areas most commonly include single-family housing units.
Developed, Medium Intensity	Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-80% of the total cover. These areas most commonly include single-family housing units.
Developed, High Intensity	Includes highly developed areas where people reside in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to 100% of the total cover.
Agriculture	Generally developed for agricultural uses.
Pasture/Hay	These agriculture lands typically have perennial herbaceous cover (e.g. regularly-shaped plantings) used for livestock grazing or the production of hay. There are obvious signs of management such as irrigation and haying that distinguish it from natural grasslands. Identified CRP lands are included in this land cover type.
Cultivated Crops and Irrigated Agriculture	These areas used for the production of crops, such as corn, soybeans, small grains, sunflowers, vegetables, and cotton, typically on an annual cycle. Agricultural plant cover is variable depending on season and type of farming. Other areas include more stable land cover of orchards and vineyards.
SEMI-NATURAL / ALTERED VEGETATION	
Ruderal Vegetation	Vegetation resulting from succession following significant anthropogenic disturbance of an area. It is generally characterized by unnatural combinations of species (primarily native species, though they often contain slight or substantial numbers and amounts of species alien to the region as well).
Ruderal Upland - Old Field	
Ruderal Upland – Abandoned Tree Plantation	
Ruderal Wetland	
Introduced Vegetation	Vegetation dominated by introduced species. These are spontaneous, self-perpetuating, and not (immediately) the result of planting, cultivation, or human maintenance. Land occupied by introduced vegetation is generally permanently altered (converted) unless restoration efforts are undertaken.
Introduced Upland Vegetation – Treed	Land cover is significantly altered/disturbed by introduced tree species.
Introduced Upland Vegetation - Shrub	Land cover is significantly altered/disturbed by introduced woody and/or herbaceous vegetation.
Introduced Upland Vegetation – Annual and Biennial Forbland	Land cover is significantly altered/disturbed by introduced annual and biennial forbs. Natural vegetation types are no longer recognizable.
Introduced Upland Vegetation - Perennial Grassland and Forbland	Land cover is significantly altered/disturbed by introduced, non-native perennial grasses and forbs. Natural vegetation types are no longer recognizable.

Introduced Riparian Vegetation	Land cover is altered/disturbed and dominated by introduced woody vegetation (woodlands and shrublands). Typical riparian trees and shrubs include <i>Elaeagnus angustifolia</i> , <i>Triadica sebifera</i> , etc.
Introduced Wetland Vegetation	Land cover is altered/disturbed and dominated by introduced wetland vegetation. Species may include <i>Lythrum salicaria</i> , <i>Phalaris arundinacea</i> , <i>Phragmites australis</i> , etc.
Modified/Managed Vegetation	Vegetation resulting from management or modification of natural/near natural; vegetation, but producing a structural and floristic combination not clearly known to have a natural analogue. Modified vegetation may be easily restorable by either management, restoration of ecological processes, and/or succession.
Modified/Managed Upland Vegetation	Land cover is apparently managed/modified and dominated by trees and/or shrubs. Vegetation is a mixture of herbaceous, shrub, and tree species.
Recently Burned Forest and Woodland	Land cover is apparently modified by recent fires which have burned forest and woodland vegetation. Vegetation is a mixture of herbaceous, shrub, and tree species.
Recently Burned Shrubland	Land cover is apparently modified by recent fires which have shrubland vegetation. Vegetation is a mixture of herbaceous and shrub species.
Recently Burned Grassland	Land cover is apparently modified by recent fires which have burned grassland vegetation. Vegetation is a mixture of herbaceous and shrub species.
Managed Tree Plantation	Land cover is apparently modified and appears as a managed tree plantation.
Recently Logged Timberland	Land cover is apparently modified and appears as logged timberland.
Modified/Managed Wetland Vegetation	These areas include created and obviously managed wetlands of varying size resulting from water diversion. Artificial Wetlands will be mapped where obvious built structures may be distinguished from imagery.

Key to Map Zones 31, 39, 40 Ecological Systems

This key is intended for identifying Ecological Systems and selected alliances that are found in the Northern Great Plains (NLCD Map Zone 31, 39, 40), which covers western Minnesota, eastern and central North Dakota, South Dakota except for the northwestern corner, most of western and central Nebraska, and a small portion of northwestern Iowa.

Please note the following symbols:

* indicates NS ecological system that has been grouped into broader LANDFIRE Map Unit. Included to help clarify key, but crews need to record broader LANDFIRE Map Unit(**)

** indicates broader LANDFIRE Map Unit.

*** small patch ecological system, NOT being mapped by LANDFIRE and included for completeness of the key.

KEY TO GROUPS

- 1a. Total woody canopy cover generally less than 10%..... 2
- 1b. Total woody canopy cover generally 10% or more 3

- 2a. Total canopy cover (woody and herbaceous vascular plants) generally less than 10%.....**Key A**
- 2b. Total canopy cover (herbaceous) >10%, some woody species may be present 5

- 3a. Wetland forests, woodlands, and shrublands (stands whose composition is affected by flooding or saturated soil conditions; including floodplains and bottomlands as well as seepage forests) **Key B**
- 3b. Upland forests, woodlands, and shrublands (stands whose composition is not affected by flooding or saturated soil conditions) 4

- 4a. Land covered in trees, from savannas (10-25% cover of trees, generally >3 m tall with a single main stem and >25% cover graminoids), to woodlands (25-60%) or forests (60-100%) **Key C**
- 4b. Land covered in shrubs, tall or dwarf, at least 10% cover woody vegetation, scattered trees may be present, these less than 10%, and clearly not a savanna..... **Key D**

- 5a. Wetlands (including pond margins, marshes, sloughs, and wet depressions) **Key E**
- 5b. Uplands (e.g. dune grasslands and shrublands, dry prairies, some examples of scrub) **Key F**

KEY A – SPARSELY VEGETATED SYSTEMS (<10% vascular cover)

- 1a. System characterized by a mosaic of quartzite outcrops; restricted to Subsection 251Ba; System may have denser vegetation between outcrops.....**Eastern Great Plains Quartzite Rocky Outcrop*****
- 1b. Systems not in Section 251 2

- 2a. System is a canyon, either dry or with a perennial stream; vegetation typically patchy with riparian woodlands and forests on the wetter canyon bottoms through mesic to xeric forests and woodlands the closer to the canyon rims one gets; dominant species vary with landscape position but typically include *Populus deltoides*, *P. tremuloides*, *Quercus macrocarpa* and shrubs such as *Cercocarpus montanus* and *Salix exigua* **Northwestern Great Plains Canyon (2341)**
- 2b. System is a cliff or badland..... 3

- 3a. Badlands sites; substrate is predominantly easily eroded and poorly consolidated or unconsolidated clays with small outcrops of sandstone or shale; xeric sites; dominant vegetation is xerophytic shrubs and grasses such as *Grindelia squarrosa*, *Gutierrezia sarothrae* (especially with overuse and grazing), *Sarcobatus vermiculatus*, *Atriplex gardneri*, *Artemisia pedatifida*, *Eriogonum* spp., *Muhlenbergia cuspidata*, *Pseudoroegneria spicata*, and *Arenaria hookeri* possibly with patches of *Artemisia* spp..... **Western Great Plains Badlands***
..... **Western Great Plains Sparsely Vegetated Systems (2007)****
- 3b. Cliff or outcrop sites; substrate is predominantly consolidated rock, usually limestone or sandstone; vegetation confined to cracks or ledges where soil accumulates **Western Great Plains Cliff and Outcrop***
..... **Western Great Plains Sparsely Vegetated Systems(2007)****

KEY B – WOODY WETLAND SYSTEMS

- 1a. Systems on floodplains of small, medium, or large rivers 2
- 1b. Systems in depressions, along lakeshores, or in areas with seasonally or permanently high water tables 5
- 2a. System on small rivers, streams, or ephemeral streams 3
- 2b. System on medium to larger rivers 4
- 3a. System in Province 331 on riparian areas of small rivers and streams; dominated by *Populus deltoides* sometimes with *Fraxinus pennsylvanica*, typically with an understory of shrubs such as *Artemisa cana*, *Cornus sericea*, and *Symphoricarpos occidentalis*.....**Northwestern Great Plains Riparian***
..... **Western Great Plains Floodplain Systems (2162)****
- 3b. System in draws or ravines with permanent or ephemeral streams present; dominant trees are *Fraxinus pennsylvanica*, *Juniperus scopulorum*, *Populus deltoides* and shrubs including *Cornus* spp., *Crataegus* spp., *Eleagnus commutata*, and *Prunus virginiana*..... **Western Great Plains Wooded Draw and Ravine (2385)**
- 4a. System found on floodplains of medium to large rivers in Province 212 or 222
..... **North-Central Interior Floodplain***
..... **Central Interior and Appalachian Floodplain Systems (2471)****
- 4b. System found on floodplains of medium to large rivers in Provinces 251 or 332
..... **North-Central Interior Floodplain***
..... **Eastern Great Plains Floodplain Systems (2469)****
- 4c. System found on floodplains of medium to large rivers in Province 331
..... **Northwestern Great Plains Floodplain***
..... **Western Great Plains Floodplain Systems (2162)****
- 5a. Fen System with groundwater flowing through peat and/or marl substrate; System in Section 222 and 251B; Sphagnum and *Dasiphora fruticosa* ssp. *floribunda* are characteristic species**North-Central Interior Shrub-Graminoid Alkaline Fen****
- 5b. Wetland System dominated by graminoids such as *Calamagrostis canadensis*, wetland *Carex* spp., *Schoenoplectus* spp., *Spartina pectinata*, *Typha* spp. and shrubs such as *Cornus* spp. and *Salix* spp.....
..... **North-Central Interior Wet Meadow-Shrub Swamp***
..... **Central Interior and Appalachian Herbaceous Wetland Systems** (2493)**

KEY C – FOREST AND WOODLAND SYSTEMS (>10% tree cover)

1a. Systems with >25% tree cover.....	2
1b. Systems with <25% tree cover.....	11
2a. Systems dominated by <i>Quercus</i> spp.	3
2b. Systems not dominated by <i>Quercus</i> spp.	5
3a. Systems in Sections 222 or 251	4
3b. Systems in Sections 331, 332A, 332B, or 332D; dominated by <i>Quercus macrocarpa</i>	7
Western Great Plains Dry Oak Forest and Woodland (2013)	
4a. System dominated by <i>Quercus alba</i> , <i>Q. rubra</i> , and <i>Q. macrocarpa</i> ; if dominated by <i>Q. macrocarpa</i> then <i>Q. alba</i> and <i>Q. rubra</i> more abundant than <i>Q. ellipsoidalis</i> and <i>Q. velutina</i> ; sites in ravines in Section 251B may be dominated by <i>Tilia americana</i> with or without <i>Q. macrocarpa</i>	4
North-Central Interior Dry-Mesic Oak Forest and Woodland (2310)	
4b. System dominated by <i>Quercus ellipsoidalis</i> , <i>Q. velutina</i> , and <i>Q. macrocarpa</i> ; if dominated by <i>Q. macrocarpa</i> , then <i>Quercus ellipsoidalis</i> and <i>Q. velutina</i> more abundant than <i>Q. alba</i> and <i>Q. rubra</i>	7
North-Central Interior Dry Oak Forest and Woodland (2311)	
5a. System dominated by <i>Acer saccharum</i> , <i>Quercus rubra</i> , <i>Tilia americana</i> , <i>Ostrya virginiana</i> ; <i>Acer saccharum</i> >20% cover	6
North-Central Interior Maple-Basswood Forest (2314)	
5b. System not as above.....	6
6a. System in draws, ravines, or north-facing slopes, possibly with ephemeral streams present; dominant trees are <i>Fraxinus pennsylvanica</i> , <i>Juniperus scopulorum</i> , <i>Populus deltoides</i> and shrubs including <i>Cornus</i> spp., <i>Crataegus</i> spp., <i>Eleagnus commutata</i> , and <i>Prunus virginiana</i>	7
Western Great Plains Wooded Draw and Ravine (2385)	
6b. System not as above.....	7
7a. System in Province 212, 222, or 251; woodlands and forests dominated by <i>Populus tremuloides</i> , sometimes with <i>Betula papyrifera</i> , <i>Populus balsamifera</i> , or <i>Quercus macrocarpa</i> co-dominant; understory a mix of shrubs (typically <i>Corylus</i> spp. and <i>Salix</i> spp.) and prairie graminoids (i.e. <i>Andropogon gerardii</i> , <i>Calamagrostis canadensis</i> , <i>Sorghastrum nutans</i> , <i>Sporobolus heterolepis</i>).....	8
Eastern Great Plains Tallgrass Aspen Parklands (2331)	
7b. Systems in Provinces 331 or 332.....	8
8a. Systems in Provinces 331 and 332; forests and woodlands dominated by <i>Pinus ponderosa</i> ; understory dominated by a variety of shrubs (typically <i>Cercocarpus montanus</i> , <i>Juniperus</i> spp., <i>Prunus virginiana</i> , <i>Quercus macrocarpa</i> , and <i>Symphoricarpos occidentalis</i>) and graminoids (typically <i>Carex inops</i> ssp. <i>heliophila</i> , <i>Oryzopsis asperifolia</i> , <i>Pascopyrum smithii</i> , <i>Schizachyrium scoparium</i>).....	9
Northwestern Great Plains – Black Hills Ponderosa Pine Woodland and Savanna (2179)	
8b. Systems not dominated by <i>Pinus ponderosa</i>	9
9a. System in northwestern ND; vegetation a mix of forests and woodlands interspersed with openings dominated by mixedgrasses; <i>Populus tremuloides</i> is the most abundant tree species though <i>Betula papyrifera</i> can be common; <i>Bouteloua curtipendula</i> , <i>Carex filifolia</i> , <i>Hesperostipa comata</i> , and <i>Pseudoroegneria spicata</i> are common graminoids.....	10
Northwestern Great Plains Aspen Forest and Parkland (2009)	
9b. Systems not as above.....	10
10a. System in Province M334 and 331; rare, high-elevation sites with <i>Picea glauca</i> abundant (>30%); other common trees include <i>Betula papyrifera</i> , <i>Pinus ponderosa</i> , and <i>Populus tremuloides</i>	10
Northwestern Great Plains Highland White Spruce Woodland (2048)	
10b. System in Province 331 and Section 332C; forests and woodlands dominated by <i>Pinus flexilis</i> , <i>Juniperus osteosperma</i> , and <i>Juniperus scopulorum</i> ; soils are shallow and usually have a high rock content	10
Rocky Mountain Foothill Limber Pine – Juniper Woodland (2049)	

- 11a. Savanna System with the tree layer dominated by *Quercus macrocarpa*, possibly with *Quercus alba* and *Quercus ellipsoidalis*; understory dominated by tallgrass prairie species, particularly *Andropogon gerardii*, *Calamagrostis canadensis*, *Schizachyrium scoparium*, and *Sorghastrum nutans*; soils are rich, deep, and fine-grained **North-Central Interior Oak Savanna (2394)**
- 11b. Savanna/barrens System dominated by *Quercus velutina* or *Quercus macrocarpa*; understory dominated by mid-grass species, particularly *Calamovilfa longifolia*, *Hesperostipa spartea*, *Koeleria macrantha*, *Schizachyrium scoparium*; soils are sandy..... **North-Central Interior Oak Barrens (2394)**

KEY D – UPLAND SHRUBLAND SYSTEMS (>10% shrub cover)

- 1a. System in Provinces 212, 222, or 251; dominated by *Corylus* spp., *Salix petiolaria*, or shrubby *Populus tremuloides* or *Quercus macrocarpa*..... **Eastern Great Plains Tallgrass Aspen Parkland (2331)**
- 1a. System in Provinces 331 or 332..... 2
- 2a. System in Province 331; dominated by *Artemisia tridentata* with a variety of associated or co-dominant shrubs including *Chrysothamnus viscidiflorus*, *Ericameria nauseosus*, *Ephedra* spp., *Sarcobatus vermiculatus*; the herbaceous component is typically less than 25% and dominated by *Achnatherum hymenoides*, *Bouteloua gracilis*, *Bromus* spp., *Elymus lanceolatus*, *Pascopyrum smithii*..... **Inter-Mountain Basins Big Sagebrush Shrubland (2080)**
- 2b. Systems not as above 3
- 3a. System in Sections 332C and Subsections 331Fn and 331Fr; soils are somewhat excessively to excessively well-drained sands; *Aretmisia filifolia* is the characteristic dominant shrub, other common shrubs are *Amorpha canescens*, *Prunus pumila* var. *besseyi*, *Rhus trilobata*, and *Yucca glauca*; typical dominant graminoids are *Andropogon hallii*, *Calamovilfa longifolia*, *Schizachyrium scoparium*, *Sporobolus cryptandrus* and, *Sporobolus giganteus* **Western Great Plains Sandhill Steppe (2094)**
- 3b. Systems not as above 4
- 4a. System in Sections 331E, 332A, 332B, 332D or Subsections 331Fb, 331Fe, 331Fh, 331Fs, 331Ft, 331Fv; a variety of shrubs can be abundant including *Amelanchier alnifolia*, *Dasiphora fruticosa* ssp. *floribunda*, *Eleagnus commutata*, *Juniperus horizontalis*, *Rhus trilobata*, *Shepherdia argentea*, and *Symphoricarpos* spp.; midgrasses dominate the herbaceous layer **Northwestern Great Plains Shrubland (2085)**
- 4b. System in Subsection 331Fj, 331Fn, 331Fr; *Cercocarpus montanus* is usually the dominant shrub though *Rhus trilobata* and *Yucca glauca* can be co-dominant.... **Rocky Mountain Lower Montane-Foothill Shrubland (2086)**

KEY E – UPLAND HERBACEOUS SYSTEMS (<10% woody cover)

- 1a. System dominated by tallgrass species such as *Andropogon gerardii*, *Andropogon hallii*, *Sorghastrum nutans*, *Panicum virgatum*..... 2
- 1b. Site dominated by a mixture of mid- and shortgrass species such as 6
- 2a. Soils deep, rich..... 3
- 2b. Soils sandy, rocky, or gravelly..... 5
- 3a. System in Province 331; sites more mesic than surrounding landscape **Western Great Plains Tallgrass Prairie (2150)**
- 3b. System not in Province 331 4

- 4a. System NOT in Sections 251A, 222N, and 222M and IN subsections 251Bf and 251Bb in Iowa and Nebraska; System dominated by tallgrass species such as *Andropogon gerardii*, *Sorghastrum nutans*, *Panicum virgatum*, often with midgrasses such as *Schizachyrium scoparium* and forbs such as *Liatris* spp., *Ratibida* spp., *Echinacea* spp., and *Solidago* spp. **Central Tallgrass Prairie (2421)**
- 4b. System in Sections 251A, 222N, and 222M and subsections 251Ba and 251Bb in Minnesota and South Dakota; System dominated by tallgrass species such as *Andropogon gerardii*, *Sorghastrum nutans*, and *Panicum virgatum*, often with midgrasses such as *Hesperostipa spartea*, *Muhlenbergia richardsonis*, and *Schizachyrium scoparium* **Northern Tallgrass Prairie (2420)**
- 5a. System dominated by tall and mid-grasses, especially *Andropogon gerardii*, *Bouteloua curtipendula*, *Bouteloua gracilis*, *Schizachyrium scoparium*, and *Sorghastrum nutans* **North-Central Interior Sand and Gravel Tallgrass Prairie (2412)**
- 5b. System dominated by tall and mid-grasses, especially *Andropogon hallii* and *Calamovilfa longifolia* with some mid-grasses such as *Hesperostipa comata*, *Carex inops* ssp. *heliophila*, and *Panicum virgatum*..... **Western Great Plains Sand Prairie (2148)**
- 6a. System dominated by shortgrasses, especially *Bouteloua gracilis*, *Aristida purpurea*, *Bouteloua curtipendula*, *Bouteloua hirsuta*, *Buchloe dactyloides* **Western Great Plains Shortgrass Prairie (2149)**
- 6b. Site dominated by mid-grasses such as *Schizachyrium scoparium*, *Pascopyrum smithii*, *Nassella viridula*, and *Festuca* spp. with a mix of tall and short-grasses 6
- 7a. System in Sections 332A, 332B, 332D and dominated by a mixture of midgrasses, especially *Pascopyrum smithii*, *Nassella viridula*, and *Festuca* spp. but may also contain tall and short-grass species **Northwestern Great Plains Mixedgrass Prairie (2141)**
- 7b. System in Sections 332A, 332B, 332D. Site dominated by midgrasses, especially *Pascopyrum smithii*, *Schizachyrium scoparium* but may also contain tall and short-grass species such as *Bouteloua curtipendula*, *Andropogon gerardii*, *Hesperostipa comata*, *Sporobolus heterolepis*, and *Bouteloua gracilis* **Central Mixedgrass Prairie (2132)**

KEY F – HERBACEOUS WETLAND SYSTEMS

- 1a. Systems on floodplains of medium to large rivers 2
- 1b. Systems in depressions, along lakeshores, or in areas with seasonally or permanently high water tables 3
- 2a. Systems found on floodplains of medium to large rivers in Province 212 or 222 **North-Central Interior Floodplain***
..... **Central Interior and Appalachian Floodplain Systems (2471)****
- 2b. Systems found on floodplains of medium to large rivers in Provinces 251 or 332..... **North-Central Interior Floodplain***
..... **Eastern Great Plains Floodplain Systems (2469)****
- 2c. Systems found on floodplains of medium to large rivers in Province 331..... **Northwestern Great Plains Floodplain***
..... **Western Great Plains Floodplain Systems (2162)****
- 3a. Marsh Systems in Sections 212 and 222; hydrophytes such as *Ceratophyllum* spp., *Nelumbo lutea*, *Nuphar lutea*, *Potamogeton* spp., *Schoenoplectus* spp., *Typha* spp. dominate **North-Central Interior Freshwater Marsh***
..... **Central Interior and Appalachian Herbaceous Wetland Systems (2493)**
- 3b. Wetland Systems not in Sections 212 and 222 4
- 4a. System in Sections 251 or 332; composed of a series of wet depressions separated by upland grasslands; hydrology may be variable but water is present at the surface for much of the growing season in at least part of the wetland; dominated by *Carex lasiocarpa*, *Carex oligosperma*, *Schoenoplectus* spp. **Great Plains Prairie Pothole (2482)**

4b. Systems single wetlands	5
5a. System in Province 251; shallow marshes and wet meadows which can be dominated by a variety of species including <i>Carex aquatilis</i> , <i>Carex atherodes</i> , <i>Carex lacustris</i> , <i>Carex pellita</i> , <i>Carex stricta</i> , <i>Calamagrostis canadensis</i> , <i>Phalaris arundinacea</i> , <i>Schoenoplectus</i> spp., <i>Spartina pectinata</i> , <i>Typha</i> spp.....	
..... Eastern Great Plains Wet Meadow, Prairie, and Marsh (2488)	
5b. Systems in Provinces 331 or 332	6
6a. Saline wetlands in Provinces 331 or 332, often with salt encrustations on the edges; halophytes or species able to tolerate saline conditions dominate including <i>Distichlis spicata</i> , <i>Hordeum jubatum</i> , <i>Poa arida</i> , <i>Puccinellia nuttaliana</i> , <i>Salicornia rubra</i> , <i>Schoenoplectus maritimus</i> , <i>S. pungens</i> , <i>Sporobolus airoides</i> ... Western Great Plains Saline Depression Wetland*	
..... Western Great Plains Depressional Wetland Systems (2495)**	
6b. Non-saline wetlands.....	7
7a. Marsh System in Sections 331M; inundated most or all of the growing season; potentially dominated by <i>Calamagrostis canadensis</i> , <i>Phalaris arundinacea</i> , <i>Potamogeton</i> spp., <i>Schoenoplectus</i> spp., <i>Typha</i> spp.	
..... North American Arid West Emergent Marsh*	
..... Western Great Plains Depressional Wetland Systems (2495)**	
7b. Systems not in Section 331M	8
8a. System in Province 332 or 331 (except 331M); potentially dominated by a variety of species including <i>Carex atherodes</i> , <i>Carex aquatilis</i> , <i>Carex lacustris</i> , <i>Carex rostrata</i> , <i>Carex nebrascensis</i> , <i>Carex stricta</i> , <i>Ceratophyllum</i> spp., <i>Nelumbo lutea</i> , <i>Nuphar lutea</i> , <i>Potamogeton</i> spp., <i>Schoenoplectus</i> spp., <i>Typha</i> spp.	
..... Western Great Plains Open Freshwater Depression Wetland*	
..... Western Great Plains Depressional Wetland Systems (2495)**	
8b. Playas with an impermeable subsurface layer which results in extreme variation in hydrologic conditions (flooding and drought); surface water typically dries out.....	
..... Western Great Plains Closed Depression Wetland*	
..... Western Great Plains Depressional Wetland Systems (2495)**	