

Frequently Asked Questions Using the National Vegetation Classification

1. Who developed the United States National Vegetation Classification (NVC)?

***Response:** The Federal Geographic Data Committee (FGDC) is an interagency committee that promotes the coordinated development, use, sharing, and dissemination of geospatial data on a national basis. The Office of Management and Budget established the FGDC in 1990 and rechartered the committee in its August 2002 revision of Circular A-16, "Coordination of Geographic Information and Related Spatial Data Activities." The Circular provides direction for Federal agencies that produce, maintain, or use spatial data either directly or indirectly in the fulfillment of their mission and provides for improvements in the coordination and use of spatial data. The Circular also describes effective and economical use and management of spatial data assets in the digital environment for the benefit of the Federal Government and the Nation, and establishes a coordinated approach to electronically develop the National Spatial Data Infrastructure. The FGDC established a Vegetation Subcommittee in 1992 and the Ecological Society of America established a Vegetation Panel in 1994 to facilitate creating a standardized, credible vegetation classification for North America. The BLM has been represented nationally on the Vegetation Subcommittee since 2001 by rangeland ecologists in the Washington Office. The Vegetation Subcommittee of the FGDC established the first NVC standard in 1997 with peer review through the Ecological Society of America (ESA) Vegetation Panel. In 2008, the FGDC formally adopted the Vegetation Subcommittee's updated dynamic standard, allowing for an evolution of the content as the scientific body of knowledge grows on new units. The ESA Vegetation Panel continues to provide peer review.*

2. Why is the BLM implementing use of the NVC now?

***Response:** Through the rapid ecoregional assessment process, the BLM found a need for better and more consistent vegetation data to be able to implement the landscape approach and make sustainable decisions about vegetation. The landscape approach consists of a suite of components that, taken together, will provide a consistent, science-based, adaptive management framework for integrating broad-scale and local-scale resource management information. The ability to work across landscapes requires adoption of standards within and between agencies. Numerous issues in the BLM today extend beyond field office boundaries and require a landscape management approach including wide ranging special status species like the Greater Sage-Grouse or the white bark pine. Issues like invasive species, fire and climate change all affect vegetation and what happens outside a field office's boundaries may be as or more important to management decisions than what happens inside those boundaries.*

The purpose of the NVC Standard is to support the development and use of a consistent national vegetation classification system for the United States and its Trust Territories. The United States NVC allows uniform statistics to be generated about vegetation resources in the United States, based on vegetation data gathered at local, regional, or national levels. The Standard requires that agencies be able to crosswalk other vegetation classifications to the NVC to facilitate the compilation of regional and national summaries. As Federal agencies work together through Landscape Conservation Cooperatives and other regional groups, the need to report across

agencies or across the Department on landscape conditions will increase, and use of the national standard will help us meet those requirements.

In implementing the landscape approach, we need to speak the same language concerning vegetation so that our neighbors and partners can understand us and we can understand them. That common language for vegetation is the NVC. Completing the 2008 NVC Standard and an associated crosswalk to the Ecological Systems used in LANDFIRE coincides with the BLM implementation of the landscape approach.

3. How is the NVC organized?

Response: *The NVC standard 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 NVC is a hierarchical system that classifies vegetation using physiognomic (structural) features at the highest levels of the hierarchy and floristic features at the lower levels. The upper levels of the classification are 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 Macrogroup level is appropriate for sub-regional, state, district or field office mapping. The lower levels such as Alliance or Association may be more appropriate for project level plans. The hierarchical organization of the classification and number of units in each level is as follows:*

Class (8)
Subclass (18)
Formation (38)
Division (77)
Macrogroup (214)
Group (430)
Alliance (in review)
Association (6,105)

4. Who is required to use the NVC?

Response: *All Federal agencies engaged in the classification of vegetation are required to use or crosswalk to the NVC. All institutions, non-profit organizations or individuals receiving Federal funds are expected to use the NVC so that all federally-funded projects collecting vegetation data can share their data and mapping products to facilitate better resource management and conservation efforts. Because of regional and national needs to combine efforts and share data, individuals and non-federally funded agencies and groups are encouraged to use the NVC also.*

The NVC (version 2) was revised in February 2008 and is being implemented by various Federal, state, tribal, and non-profit agencies, as well as academic researchers and private

environmental consulting firms who see the value in sharing vegetation data among agencies and groups. Currently, the United States Geological Survey and the National Park Service Inventory and Monitoring Program use the NVC to guide vegetation mapping in National Park units. The US Forest Service “Existing Vegetation Classification and Mapping Technical Guide (Version 1)” was developed in tandem with the NVC and their existing vegetation classification protocol in the technical guide is compatible with the 2008 FGDC standard. In 1997, the US Fish and Wildlife Service (USFWS) formally adopted the use of the NVC. Their National Conservation Training Center in Sheperdstown, West Virginia developed a five-day course examining vegetation mapping options for anyone responsible for developing a vegetation cover map. Course topics include project planning, the NVC, mapping land cover using ArcGIS software and GPS techniques, accuracy assessment, sampling strategies, managing data and deliverables, and writing contracts. Department of Defense agencies and the NASA have used the NVC.

In the BLM, there are different levels of use of the NVC by states and field offices. California has been working in partnership with California Game and Fish to map BLM lands at lower levels of the classification for projects including solar developments. In 2009, Idaho adopted a policy requiring use at the division-level for all of its offices in planning efforts. As the BLM implements the landscape approach to management, the need for consistency and use of standards like the NVC become more important. This IM serves to remind all offices of the need to use required data standards including the standardized plant names that are provided from the International Taxonomic Information System to the Natural Resources Conservation Service (NRCS) PLANTS database.

5. Are Ecological Systems a part of the NVC?

Response: *In 2003, in response to issues related to mapping the 1997 hierarchy, Pat Comer led a group of ecologists from NatureServe who published “Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems.” Referred to as “Ecological Systems,” these are not part of the NVC hierarchy, but are vegetation-based, and can be linked to the NVC at the middle levels of the hierarchy (Groups and Macrogroups). Ecological Systems have been used as the basis for several national- and regional-scale classification and mapping efforts including wildlife habitat classifications, several regional GAP analysis projects and LANDFIRE. Ecological Systems are recurring groups of biological communities (i.e., associations) that are found in similar physical environments and are influenced by similar dynamic ecological processes. Ecological Systems are defined based on biogeographic region, landscape-scale, dominant cover type, and disturbance regime and, as such, are coarser in scale than the Association or Community Type. LANDFIRE has been working to complete a crosswalk from Ecological Systems to the NVC Macrogroups. It is included as Attachment 4 of this IM.*

6. Why is the macrogroup level the one to use for current vegetation maps in resource management plans?

Response: *The macrogroup is one of the mid-levels of the NVC hierarchy. It shows differences in vegetation types regionally and it provides a compromise in delivering detailed information*

on vegetation that is most appropriate from regional to district levels. At the broadest scale (Class), there are only eight categories to cover all vegetation in the United States which do not adequately cover vegetative types for planning purposes; and the lowest level (Association) where there are currently over 6,100 units. There are 214 Macrogroups with about 75 of them found in the West. We estimate that most planning areas would have about 15-20 macrogroups to map and describe the natural and semi natural forest, rangeland and riparian vegetation existing in a field office or district. Having a direct crosswalk from the most used vegetation classification in the BLM (Ecological Systems in LANDFIRE) to the macrogroups already available is another reason to use the macrogroup level.

7. What is in the planning handbook now and how does current guidance relate to the NVC?

Response: *The current BLM Planning Handbook (H-1601-1) requires that the BLM “identify desired outcomes for vegetative resources, including the desired **mix of vegetative types**, structural stages, and landscape and riparian functions; and provide for native plant, fish, and wildlife habitats and livestock forage”. It does not define what it means by vegetative type and plans have not consistently described or mapped vegetation types. Through this IM, we are defining “vegetative type” for planning purposes as the Macrogroup level of the United States NVC. Consistent mapping of vegetation types requires that a scientific classification of existing vegetation be developed first, because classification defines the entities to be mapped. Any map based on vaguely defined types is inconsistent, hard to validate, and difficult to compare with other vegetation maps. Land Use Plans can include finer-scale maps when the resource warrants their use; for example, groups or associations that contain quaking aspen (*Populus tremuloides*) are often important. As the BLM implements the landscape approach, field offices will need to use the same units to describe vegetation that transcends jurisdictional boundaries, and that will be the macrogroup level of the NVC.*

There is no conflict between the NVC and the guidance sources currently listed in the planning handbook. According to the Natural Resource Conservation Service (NRCS) National Range and Pasture Handbook, a vegetation type is defined as a kind of existing plant community with distinguishable characteristics described in terms of the present vegetation that dominates the aspect of physiognomy of the area. In the NVC, vegetation types are named categories of plant community or vegetation defined on the basis of shared floristic and/or physiognomic characteristics that distinguish it from other kinds of plant communities or vegetation. The current handbook lists several sources to use for establishing desired outcomes for vegetation, but does not provide a consistent way to map or describe existing vegetation units.

8. This IM is for RMPs and other regional or national planning and assessment documents, but what about vegetation data for other plans or projects that covers a smaller area?

Response: *Describing existing land cover consistently at the RMP level is the major purpose of this IM. But, being in compliance with the directive requires using the NVC or cross-walking to it in all vegetation classification efforts. Using the lower classification units (Groups, Alliances and Associations) for finer-scale analyses in programmatic documents will provide information*

to increase the accuracy, consistency and clarity of vegetation map units at higher levels as well as describe existing vegetation for a specific project. Accuracy, consistency, and clarity are critical for making effective and efficient decisions about complex plant communities. For example, documenting vegetation in on-the-ground surveys at the Group level could be important for quantifying wildlife habitat or for documenting riparian vegetation locally. Alliances and Associations are important for recognizing and managing unique or rare vegetation elements. By using the lower levels of the NVC in our vegetation descriptions, we will also avoid the need to create the crosswalks required when other classifications are used. As states and field offices get to know the lower units of the classification that cover the lands included in their jurisdictions and build crosswalks to the NVC, the benefits of using the NVC will become clearer and our ability to exchange consistent vegetation information and cost share with neighboring field offices and partners will increase at all scales with all levels of the hierarchy.

9. Are there any guidance documents available to help me understand and use the classification?

***Response:** Other agencies and non-governmental organizations have been producing documents on the NVC for several years. The BLM has been developing a SharePoint site with information on vegetation classification. It is available to anyone in the BLM at the following link: http://teamspace/projects/remotesensing/Pages/Vegetation_Mapping.aspx. Matt Bobo (mbobo@blm.gov) is the site administrator. Contact Matt if you have trouble reaching the site. Two websites provide important sources of information on the classification: www.usnvc.org, and <http://www.natureserve.org/explorer/servlet/NatureServe>. Another source of information on local vegetation mapping using the NVC is your State Natural Heritage Program. Many of these programs have vegetation ecologists or GIS specialists on staff who do vegetation classification work, and might have available information on the units of the classification that are within a state, district or field office.*

10. What is the relationship between the NVC System and Ecological Site Descriptions? How does this system relate to the ecological site inventory?

***Response:** Ecological sites (defined as kinds of land with a specific potential natural community and specific physical site characteristics, differing from other kinds of land in their ability to produce distinctive kinds and amounts of vegetation and to respond to management) are associated with describing potential vegetation at a fine-scale. Ecological Site Descriptions have typically been written by Natural Resources Conservation Service staff and provide information about soils climate, species composition, annual production and management.*

Ecological site classification and descriptions are one of many vegetation systems used in the United States. Ecological sites contain differing kinds and amounts of vegetation that are categorized into community phases and describe potential vegetation. Typically, within an ecological site description there is a historic climax plant community description and descriptions of several community phases and transitional pathways that are all possible to be found on an ecological site. It is possible that one of the community phases will perfectly

describe the existing vegetation on a site. But to know that, we need to compare our mapped existing vegetation to the potential vegetation outlined in the ESD. It is also possible that the community phase name in the ESD is one that is included in the NVC at one of the lower levels. But use of the NVC in Ecological Site Descriptions is relatively new. For Federal agencies developing ESDs to be in compliance with FGDC requirements, the community phase name would need to be cross-walked to the corresponding name in the NVC. The community phases in ESDs are often named based on dominant overstory and understory species. When appropriate, plant communities (Associations) recognized within the NVC can and should be used in new ESDs. Guidance explaining this is included in the Interagency Ecological Site Description Handbook. The Handbook also outlines the requirements to crosswalk community phases to the NVC when other names are used.

The NVC (current or existing vegetation) and ecological site descriptions (potential vegetation) are related and must complement each other but will most often be different. For example, an ecological site description may describe a Mountain Big Sagebrush/Bluebunch Wheatgrass as the potential natural plant community but the existing vegetation is actually Western Juniper/Mountain Big Sagebrush Woodland Association due to juniper expansion. Both sets of information are important and one cannot replace the other.

11. My State has been using the Gap Analysis vegetation cover categories to describe existing land cover; is there a way to crosswalk to them so that we do not have to remap our current vegetation data layer?

***Response:** Since 2009 NatureServe has been working with the National Gap Analysis Program to develop a crosswalk from Ecological Systems to Macrogroups in order to display Macrogroups level in their National Map Viewer. The Washington Office is working with the FGDC Vegetation Subcommittee and the Ecological Society of America Vegetation Panel to determine where crosswalks to other vegetation classifications exist. These will be posted on the SharePoint site as they become available.*

12. How does the use of this system relate to the Assessment, Inventory and Monitoring (AIM) Strategy?

***Response:** Issuing policy requiring the use of the NVC is an implementation action for the BLM Assessment Inventory and Monitoring (AIM) Strategy. The AIM strategy intends to reach across programs, jurisdictions, stakeholders, and agencies to provide data and information valuable to decision-makers. It intends that the BLM integrate data acquisition and data management across programs and across jurisdictions to maximize the benefit of data collected. All programs in the BLM can benefit from sound vegetation management decisions that consider standardized vegetation data that is classified locally and regionally.*

The only way to detect landscape-level change in the extent and condition of vegetation types on BLM lands, analyze cumulative effects, develop regional mitigation strategies, report on landscape metrics (e.g., patch size and connectivity) including conservation targets and wildlife corridors, and improve regional datasets is to standardize what they are called and track them consistently across states and field offices and to work with other Federal and state agencies, and other partners to do the same. This is also essential for any national level reporting on any

changes in the extent of vegetation communities or trends in their condition or distribution that might be required in the future.

The approach the AIM strategy outlines is to collect data that can be used many times for many purposes. Core indicator data can be used to classify vegetation, as well as it is used for many other purposes. We can use the data we collect locally, regionally and nationally following the AIM strategy for vegetation classification. The AIM strategy also stresses that quantitative data essential for informed, defensible land management decision-making. Vegetation classification is based on quantitative data and the units of the classification go through a scientific peer review process. Finally, the AIM strategy fully embraces the use of remote sensed data to cost effectively track changes in the abundance, location and pattern of vegetation types and land cover.

13. What about climate change? How does this classification system help us?

Response: *Use of the NVC can help us to track the effects of climate change as it does not follow jurisdictional boundaries. Federal agencies are being asked to increase their understanding of how climate is changing and to apply that understanding to agency operations. To be most successful, we will need to build partnerships and work with other agencies to integrate policies, prioritize species and communities for conservation, and apply ecosystem approaches that will provide maximum benefits for all involved. All agencies collecting the same data, following the same protocols, and using data standards facilitates our ability to attain this integration.*

To adequately monitor the impacts of climate change, we need improved coordination among Federal and state agencies on integrated research, assessment, inventory and policy. We will need to improve monitoring coverage of plant communities through time and in geographic extent so that we can detect and track climate-induced shifts in ecosystem and plant community distribution regionally and nationally. Our current land use planning descriptions of vegetative types are not well suited for detecting and attributing the impacts of climate change to the wide range of affected vegetative types at the appropriate scale. Use of consistent, scientifically-credible standardized data and classified plant communities in the NVC will improve our ability to document climate impacts. It will allow communication with other Federal and state managers across landscapes to monitor climate change adaptation actions for vegetation.

14. How do I find the classification units that cover riparian vegetation?

Response: *Riparian areas are typically narrow linear bands or thin green line plant communities along a water feature. Riparian vegetation units are included in the first four classes of the system, Forests and Woodlands, Grasslands and Shrublands, Semi Desert, and Polar and High Montane Vegetation, rather than being described separately. In the NVC, the word riparian is most often associated with vegetation at the mid- and lower-levels of the hierarchy. Associations and Alliances of the riparian groups include species that are dominant in riparian areas.*

15. How do we map recently burned areas?

Response: *Recently burned areas are temporary phenomena that need to be placed in the classification category based on their resulting dominant land cover--in many cases a native grassland macrogroup, or the non-native annual or perennial grassland macrogroup. Fire perimeter data in conjunction with subsequent land treatment data are valuable aides in helping to decide the proper classification. Non-burned islands larger than the minimum mapping units that are within fire perimeters need to be accounted for when updating the land cover map.*

16. Why are botanists or ecologists recommended as the data stewards?

Response: *The data steward needs to be familiar with plant systematics and the plant communities associated with a variety of ecosystems including montane forests, cold deserts, alpine communities, wetlands, warm deserts and semi-desert woodlands. Most botanists and ecologists will have the botanical education in phylogeny, systematics and plant distribution as well as the experience needed for this broad array of ecosystems. However, there may be foresters, wildlife biologists or range management specialists that may have the experience and interest to be the data steward for a state or district office.*

Data stewards should be working closely with GIS specialists and the state office program managers to insure classification and mapping consistency across the BLM landscape. Existing land cover data needs to be consistently applied for mapping purposes so we can aggregate information beyond field office boundaries.