

SOP 9: U. S. National Vegetation Classification Measure

Version 1.33 (February 2021)

Time estimated: 5 minutes

Overview

Ecological communities can change over time, especially as succession, climate change, fire, herbivory pressure, disease, and other factors conspire to change the composition of canopy and understory species. Although these changes occur in most cases very slowly, we would like to document any tipping point at which a community's composition changes enough to call it a different community and instances where communities change very quickly (large-scale windthrow, catastrophic fire).

A U. S. National Vegetation Classification (US NVC) association is a vegetation classification unit defined on the basis of a characteristic range of species composition, diagnostic species occurrence, habitat conditions and physiognomy (Jennings et al. 2009). Associations reflect topo-edaphic climate, substrates, hydrology, and disturbance regimes (FGDC 2008).

The U. S. National Vegetation Classification (US NVC) is considered to be the Federal Geographic Data Committee vegetation standard (FGDC 2008). Association units of vegetation have been identified for all the NPS units in the Cumberland Piedmont I & M Network. This work was completed by NatureServe and partners, with support from the NPS.

Background

Vegetation can be quickly identified in the field using a document called a vegetation key. The key provides a series of choices pertaining to the species of trees, shrubs, grasses or other plants found at the location of interest and other characteristics of the site. The user identifies the vegetation by following the choices in the key which match the vegetation and other conditions at the site. Association keys are available for all the NPS units in the Cumberland Piedmont Network, and are listed in the references for this SOP.

Step by Step Instructions

Step 1. To collect this particular data, stand in the middle of the 20 x 20 meter plot and use the latest US NVC field key for that park (provided to each field team at the beginning of each field week) to determine the US NVC association of the plot. The US NVC association may be fairly stable over time, but in the case of early successional types, the US NVC association may change over time as the stand matures. Vegetation may also change as broad climate changes affect the survival and distributions of plants. In some cases, more than one call will need to be made either because the plot falls in an ecotone between more than one association or there is uncertainty about the vegetation association. Blank datasheets are provided during plot revisits so that an independent community ID is assigned during each plot visit.

Step 2. The keys for each CUPN park are dichotomous and hierarchical. The user is directed through a number of couplets, starting with couplet 1, and should select whichever side of the couplet (a or b) fits the vegetation best. The user should read **both** sides of the couplet (both a and b) before evaluating and proceeding. Answers to couplets will lead to either another couplet to be evaluated in progression or to a vegetation association (final answer). Note that there may be more than one path through the key that arrives at an individual vegetation association.

Keys are imperfect. It is always a good idea to confirm a final keyed answer by reading the corresponding vegetation description corresponding to the keyed type. If an answer seems implausible, re-key the stand, examining other possible couplets from those selected the first time through the key. If you do not have access to the classification unit descriptions, this step can wait until you return to the office and look up the full classification report for the park.

Also, if the plot seems to cover more than one community type, then focus on the dominants in each distinct community and come up with a second call or even third call of the vegetation association call if needed.

Finally, we need an idea of both fit and confidence. Fit is interpreted as how well the community type you see on the ground “fits” the key. If you had a difficult time getting to the community type because it didn’t seem to key out easily, then fit might be low for that site. In contrast, confidence is the confidence that you personally have about whether your call on the ground is correct, regardless of how well the concept does or does not fit the key.

Step 3. Refer to the community classification made during previous sampling event. A copy of the previous sampling event’s datasheets should have been provided to your field team. If your community classification differs from the previous, you should reconsider your own classification and consider changing or add a note as to why you believe the previous community classification was an error or is no longer applicable.

Equipment List

U. S. National Vegetation Classification key for park (used to determine the vegetation association)

Tree identification references

U. S. National Vegetation Classification descriptions document for the park

Completing Field Data Forms

A detailed list of field descriptions for each field on the field data form associated with this SOP (Figure 9.1), can be found below in Table 9.1.

CUPN Vegetation Monitoring Protocol Data Resample Form

Based on Data_Form_20150415 revised 2018-05-10 MTL printed 2/17 07:51

SOP 9

COWP001

U.S. National Vegetation Classification

Start Date: (mm/dd/yy) / /21

Data taker initials

Reviewed by

Call 1 US NVC Association: Fit (1=excellent, 2=good, 3=fair): Confidence (1=high, 2=medium, 3=low): Classifier Initials: Classification Date (if different from plot):	Notes:	
Call 2 US NVC Association: Fit (1=excellent, 2=good, 3=fair): Confidence (1=high, 2=medium, 3=low): Classifier Initials: Classification Date (if different from plot):	Notes:	
Call 3 US NVC Association: Fit (1=excellent, 2=good, 3=fair): Confidence (1=high, 2=medium, 3=low): Classifier Initials: Classification Date (if different from plot):	Notes:	
Call final US NVC Association: Fit (1=excellent, 2=good, 3=fair): Confidence (1=high, 2=medium, 3=low): Classifier Initials: Classification Date (if different from plot):	Notes:	

Classification notes about full plot and/or all classifications:

(fill in new page numbers if additional pages are added)
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Figure 9.1. Example CUPN Forest Vegetation Pre-printed data form (revisit form) for recording USNVC.

Table 9.1. Field data form field names and descriptions.

Field Name	Field Description
SOP 9: U. S. National Vegetation Classification Measure	
Reviewed by	Initials of individual who reviewed completed data sheet for SOP 9 elements. Ideally this should be someone other than individual who recorded data on this portion of datasheet.
US NVC association (first call)	Four-digit vegetation community code representing the dominant vegetation type of the point as determined with aid of park's vegetation key.
Fit (first call)	Fit is simply how well the community "keys out". If it keyed out without any assumptions or problems clearly to one community type, then it is high fit. If there were some small issues where you had some doubt about a particular couplet but ultimately feel good about the keyed community type, then it gets a medium. If you feel that the community could not key without making large assumptions or it did not fit at all into the key, then it would be considered a low fit.
Confidence (first call)	This is distinguished from fit in that it is a determination of how confident you are that the veg association selected is the correct community type for the point. This is independent of the key. For instance, you might have a low fit on the key because the community did not key well, but you may be very confident in the determination because you read the full description and the full description matches the community type on the ground perfectly. Or perhaps you are a very experienced ecologist that has seen this same community dozens of times so you feel very confident assigning it to a community.
Classifier initials (first call)	Initials of ecologist who made final determination for the team. In almost all circumstances this should be the field crew leader.
US NVC Notes	Record any notes related to selection of association codes, such as "key indicates association should be dominated by white oak, however QuerAlb < 50%", etc.
<i>Association, fit, confidence and classifier initials may be repeated for a second and sometimes a third call if there is some question in the field regarding the team's first call.</i>	

References

- Govus, T., and R. White. 2007. Vascular Plant Inventory and Plant Community Classification for Chickamauga & Chattanooga National Military Park. NatureServe. Durham, NC.
- Jones, E., and M. Pyne. 2008. Vascular Plant Inventory and Plant Community Classification for Abraham Lincoln National Historic Site. NatureServe. Durham, NC.
- Lea, Chris. 2009. Vegetation Field Key; Vicksburg National Military Park. National Park Service, Vegetation Mapping Program. Fort Collins, Colorado.
- Nordman, C. 2004. Plant Community Classification for Shiloh National Military Park. NatureServe. Durham, NC.
- Nordman, C. 2004. Vascular Plant Community Classification for Stones River National Battlefield. NatureServe. Durham, NC.

- Pyne, M., E. Jones, and R. White. 2010. Vascular Plant Inventory and Plant Community Classification for Mammoth Cave National Park. NatureServe. Durham, NC.
- Schotz, Alfred, Heather Summer, and Rickie White, Jr. 2008. Vascular Plant Inventory and Ecological Community Classification for Little River Canyon National Preserve. Durham, North Carolina: NatureServe. .
- Schotz, Alfred, Mark Hall, and Rickie White, Jr. 2007. Vascular Plant Inventory and Ecological Community Classification for Russell Cave National Monument. NatureServe. NatureServe. Durham, NC.
- White, R., and T. Govus. 2003. Vascular Plant Inventory and Plant Community Classification for Ninety Six National Historic Site. NatureServe. Durham, NC.
- White, R., and T. Govus. 2005. Vascular Plant Inventory and Plant Community Classification for Kings Mountain National Military Park. NatureServe. Durham, NC.
- White, R., and M. Pyne. 2003. Vascular Plant Inventory and Plant Community Classification for Guilford Courthouse National Military Park. NatureServe. Durham, NC.
- White, R. 2003. Vascular Plant Inventory and Plant Community Classification for Carl Sandburg Home National Historic Site. NatureServe. Durham, NC.
- White, R. 2004. Vascular Plant Community Classification for Cowpens National Battlefield. NatureServe. Durham, NC.
- White, R., 2005. Vascular Plant Inventory and Plant Community Classification for Fort Donelson National Battlefield. NatureServe. Durham, NC.
- White, R., 2006. Vascular Plant Inventory and Ecological Community Classification for Cumberland Gap National Historical Park. NatureServe. Durham, NC.

Revision History

Version numbers are incremented by decimals where minor grammatical changes or textual clarifications are incremented by hundredths (e.g., 1.01, 1.02, 1.03, ..., etc.) and moderate changes, such as equipment updates or changes in methodology that do not impact analysis are incremented by tenths (e.g., 1.1, 1.2, 1.3, ..., etc.). Whole number increments (e.g., 1.0, 2.0, 3.0, ..., etc.) are reserved for major revisions. Of course, differentiating between what is moderate vs. major may not always be clear, but it is anticipated that with a little “common sense” and discussion protocol leads can adequately document and track revisions through time to the benefit of future data users. It should be noted that prior to 2020 all revisions were incremented by tenths.

Revision History Log

Version #	Date	Revised by	Changes
1.1	1/15/12	B. Moore and R. White	- Removed sentence implying that modules could be keyed out separately. This was a typo. - Other minor editorial changes
1.2	9/27/12	B. Moore and R. White	- Minor editorial changes
1.3	4/4/17	C. Bledsoe	- Added sentence that blank datasheet is provided during revisits so that an independent community classification can be obtained for each sampling event
1.31	3/23/2020	B. Moore	- Added Step to compare previous teams' classification with your own. Consider changing to match the previous teams or document why you believe the previous classification was in error or no longer applicable - Moved Revision History to end of SOP and added more detailed list of changes made to date
1.32	8/10/2020	B. Moore	- Address grammatical changes and clarifying comments made by IMD regional program manager
1.33	2/19/2021	B. Moore	- Added image of field data form and table of field data form descriptions (moved from SOP 14) -