

Cumberland Piedmont Network

National Park Service
Inventory and Monitoring Division



Standard Operating Procedure 9

U. S. National Vegetation Classification Measure—Version 1.35

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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 (e.g., large-scale windthrow, catastrophic fire).

A U. S. National Vegetation Classification (US NVC) association is a vegetation classification unit defined based on 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 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 Inventory and Monitoring Network (CUPN). This work was completed by NatureServe and partners, with support from the NPS.

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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 listed in the references for this SOP (White 2003; White and Govus 2003; White and Pyne 2003; Nordman 2004a; Nordman 2004b; White 2004; White 2005; White and Govus 2005; White 2006; Govus and White 2007; Schotz et al. 2007; Schotz et al. 2008; Jones and Pyne 2008; Pyne and White 2010).

Step by Step Instructions

Step 1. To collect this data, stand in the middle of the 20 × 20-meter (65.6 × 65.6 feet [ft]) plot and use the latest US NVC field key for that park (provided to each field team at the start of each field week) to determine the US NVC association of the plot. The US NVC association may be 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 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 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 the fit might be low for that site. In contrast, confidence

is the confidence 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 1), can be found below in Table 1.

SOP 9

COWP001

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

U.S. National Vegetation Classification

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)
p. 12 (____) of 12 (____)

Figure 1. Example of CUPN Forest Vegetation pre-printed data form (revisit form) for recording USNVC.

Table 1. Field data form field names and descriptions for this SOP.

Field Name	Field Description
Reviewed by	Initials of individual who reviewed completed data sheet for elements in this SOP. 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 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 different from fit because it is a determination of how confident you are the veg association selected is the correct community type for the point. This is independent of the key. For example, 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. Or, you are an experienced ecologist who has seen this same community many times so you feel 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%."

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.

Literature Cited

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Revision Log

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

Version #	Date	Revised by	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).
1.35	8/7/2023	–	Formatted by editor to regional I&M publication standards.