

Southeast Coast Network

National Park Service
Inventory and Monitoring Division



Standard Operating Procedure 1.4.15

U.S. National Vegetation Classification Identification

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Summary

This standard operating procedure (SOP) describes how to identify vegetation associations defined by the U.S. National Vegetation Classification (USNVC) for each plot in the Southeast Coast Network (SECN). Dichotomous keys have been developed for each SECN park to aid in this process. This procedure is implemented as part of the vegetation community monitoring protocol.

The datasheet used for this SOP is *SECN Veg Form 8—Vegetation Community Assessment*. It is included in Appendix A of this SOP. Field descriptions for Veg Form 8 are available in Table 1.

Revision Log

Revision Date	Author	Changes Made	Reason for Change	New Version #

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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 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 US NVC is considered to be the Federal Geographic Data Committee (FGDC) vegetation standard (FGDC 2008). Association units of vegetation have been identified for all the parks in the Southeast Coast Network and dichotomous keys for association identification have been developed for all SECN parks except Congaree National Park. This work was completed by NatureServe and partners, with support from the NPS.

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 association by following the choices in the key which match the vegetation and other conditions at the site. The dichotomous keys are available on the SECN shared drive at \\INPSECNS01\SECNshare\NEW DIRECTORY STRUCTURE\Monitoring\VegetationCommunities\ReferenceMaterial.

SOP Source and How It Was Modified

This SOP is an adaptation of SOP 9 *U.S. National Vegetation Classification Measure—Version 1.3* of the *Cumberland Piedmont Network Vegetation Monitoring Protocol* (White et al. 2011). For a general explanation of how the Southeast Coast Network (SECN) modified the Cumberland Piedmont Network (CUPN) protocol and its SOPs, see *Terrestrial Vegetation Monitoring in Southeast Coast Network Parks Protocol Implementation Plan* (Boyle et al. 2019). With regards to this SOP, the Southeast Coast Network made only minor editorial changes.

Data Collection Procedures

Step 1. To collect these data, a crew member with familiarity with vegetation community types stands in the middle of the 20 × 20 meter (65.6 × 65.6 foot [ft]) plot and use the latest US NVC field key for that park (provided to each field team at the beginning of each field season) 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 many cases, more than one call will need to be made 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 SECN park are dichotomous and hierarchical. The user is directed through several couplets, starting with couplet 1, and should select whichever side of the couplet (a or b) fits the vegetation best. The user reads 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 to arriving 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 for the keyed type. If an answer seems implausible, one should 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 that 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, an idea of both fit and confidence is required. 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 did not 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.

Table 1. Datasheet field descriptions for SECN *Veg Form 8—Vegetation Community Assessment*.

Field Name	Field Description
Reviewed by	Initials of individual who reviewed completed data sheet for SOP 2.4.05 elements. Ideally this should be someone other than individual who recorded data on this portion of datasheet.
Physiognomy	Record the physical structure of the dominant vegetation (from the 1997 Federal Geographic Data Committee Vegetation Classification Standard): <u>forest</u> : trees with their crowns overlapping, and forming 60-100% cover; <u>woodland</u> : open stands of trees with crowns not usually touching, forming 25-60% cover; <u>shrubland</u> : shrubs generally greater than 0.5 meters tall with individuals or clumps overlapping to not touching (and includes vegetation dominated by woody vines); <u>dwarf-shrubland</u> : low-growing shrubs usually under 0.5 meters tall, and individuals or clumps overlapping to not touching; <u>herbaceous</u> : herbs (graminoids, forbs, and ferns) dominant; <u>sparse vegetation</u> : abiotic substrate features dominant; <u>barren vegetation</u> : vegetation almost absent, typically less than 1%)
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 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 is 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) ¹	This is distinguished from fit in that it is an assessment 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 <i>QuerAlb</i> < 50%,” etc.

¹Association, 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.

Equipment List

- U.S. National Vegetation Classification key and association descriptions for the park
- Field datasheets (*SECN Veg Form 8—Vegetation Community Assessment*)
- Pencil

Literature Cited

- Boyle, M. F., M. B. Gregory, M. W. Byrne, P. I. Capece, and S. Corbett. 2019. Terrestrial vegetation monitoring in Southeast Coast Network parks: Protocol implementation plan. Natural Resource Report NPS/SECN/NRR—2019/1930. National Park Service, Fort Collins, Colorado. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2263392> (last accessed May 2019).
- Federal Geographic Data Committee (FGDC). 2008. National vegetation classification standard, version 2: vegetation subcommittee, Federal Geographic Data Committee. FGDC-STD-005-2008 (Version 2).
- Jennings, M. J., D. Faber-Langendoen, O. L. Loucks, and R. K. Peet. 2009. Standards for associations and alliances of the U.S. National Vegetation Classification. *Ecological Monographs* 79(2): 173–199.
- White, R., C. Nordman, L. Smart, T. Leibfreid, B. Moore, R. Smyth, and T. Govus. 2011. Vegetation Monitoring Protocol for the Cumberland Piedmont Network, Version 1. Natural Resource Report NPS/CUPN/NRR—2011/XXX. National Park Service. Fort Collins, Colorado. Available at: <https://irma.nps.gov/DataStore/DownloadFile/515620> (last accessed March 2019).

Appendix A. Field Data Forms

SECN Vegetation Monitoring Protocol Veg Form 8 – Vegetation Community Assessment	Plot ID _____ (plot acronym + GRTS Order #)	Start Date _____ (mm/dd/yy)
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SOP VEG07 - U. S. National Vegetation Classification	Reviewed by: _____
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Physiognomy (Forest, Woodland, Shrubland, Herbaceous, Nonvascular, or Sparsely Vegetated)	
US NVC association (First call)	
Fit, first call (1=excellent, 2=good, 3=fair)	
Confidence, first call (1=high, 2=medium, 3=low)	
Classifier initials, first call	
US NVC association (Second call, optional)	
Fit, second call (1=excellent, 2=good, 3=fair)	
Confidence, second call (1=high, 2=medium, 3=low)	
Classifier initials, second call	
Final US NVC call (if revised later)	
Fit, final call (1=excellent, 2=good, 3=fair)	
Confidence, final call (1=high, 2=medium, 3=low)	
Classifier initials, date, final call	

NVC Notes:

Figure A-1. Sample of *SECN Veg Form 8—Vegetation Community Assessment*.