

Feature Dataset: INREV
Existing Vegetation Mapping Project
OSU Institute of Natural Resources – USDA Forest Service Southwestern Region

Background:

Existing vegetation mapping provides basic information on the current condition of vegetation structure and composition. Beginning in 2004 the Southwestern Region developed Mid-Scale Existing Vegetation Mapping on all National Forests and Grasslands (Mellin et al. 2008). The Southwestern Region collaborated with OSU's Institute of Natural Resources to develop new mid-scale mapping with the INREV project. Mid-scale mapping is compliant with agency technical guidance for existing vegetation (Brohman and Bryant 2005, Nelson et al. 2015). For business needs of natural resource organizations, existing vegetation mapping represents an important component in an overall inventory, monitoring, and analysis framework.

Application:

Existing vegetation mapping is often used in combination with ecosystem type mapping such as Ecological Response Units (Wahlberg et al. 2020) for purposes of landscape assessment and habitat modeling. Existing vegetation mapping can also be combined with ecological mapping such as TEUI (Winthers et al. 2006) for assessment involving Ecological Site Descriptions (Creque et al. 1999, SRM 1995). The INREV dataset is best applied and most appropriately summarized at the HUC12 subwatershed level (10,000 – 40,000 acres) or larger areal extents.

Creque, J.A., S.D. Bassett, and N.E. West. 1999. Viewpoint: Delineating ecological sites. *Journal of Range Management* 52: 546-549.

Mellin, T.C., F.J. Triepke, W.A. Robbie, and P.E. Joria. 2008. Mapping existing vegetation at the mid-scale level in the Forest Service Southwestern Region. In *Proceedings of the Twelfth Biennial USDA Forest Service Remote Sensing Applications Conference (RS-2008)*, 15-17 April 2008, Salt Lake City, UT. Remote Sensing Applications Center, Washington Office, Washington DC. Map data available online <<http://www.fs.usda.gov/detail/r3/landmanagement/gis>>.

SRM (Society for Rangeland Management). 1995. New concepts for assessment of rangeland condition. *Journal of Range Management* 48: 271-282.

Wahlberg, M., W. Robbie, S. Strenger, J. Triepke, D. Vandendriesche, E. Muldavin, J. Malusa, P. Shahani, J. Moreland, R. Crawford, and C. Bogart (in draft). Ecological Response Units of the Southwestern United States. USDA Forest Service technical report available online <<http://fsweb.r3.fs.fed.us/eap/nfma/assessments>>. Southwestern Region, Regional Office, Albuquerque, NM. 207 pp.

Winthers, E., D. Fallon, J. Haglund, T. DeMeo, G. Nowacki, D. Tart, M. Ferwerda, G. Robertson, A. Gallegos, A. Rorick, D.T. Cleland, and W. Robbie. 2005. Terrestrial Ecological Unit Inventory technical guide: Landscape and land unit scales. USDA Forest Service Gen. Tech. Report WO-68. Washington Office, Ecosystem Management Coordination Staff, Washington DC. 245 pp.

List of feature classes in this feature dataset:

- INREV *Polygon*

Vegetation Mapping

INREV.

Data Dictionary

INREV

<i>Field Name</i>	<i>Field Type</i>	<i>Description/Domain</i>
USFS_UNIT_NAME	Text 50	US Forest Service Region name, "USDA Forest Service, Southwestern Region" for each polygon. USDA Forest Service data dictionary standard field.
USFS_UNIT_ID	Text 4	US Forest Service Region name, "03" for each polygon. USDA Forest Service data dictionary standard field.
DOMINANCE_TYPE_REF	Text 75	Reference used to calculate Dominance Types. Example "USDA Forest Service Southwest Region FR-R3-16-1"
REASON_FOR_REVIS	Text 50	Reason for Revision. Example "periodic mid-scale remapping"
REVIS_DATE	Text 20	Month and year of revision. Example "May 2019"
SRC_PRIMARY_DATA	Text 75	Source of the primary data. Example "Landsat8 - NAIP - NED - PRISM - SSURGO_and_STATSGO"
DATE_PRIMARY_DATA	Long	The year of the primary source data. Example 2017
NVC_CLASS	Text 50	National Vegetation Classification. Upper Level, Level 1 Class. A broad combination of dominant general growth forms that correspond to global moisture and temperature regimes and/or substrate or aquatic conditions.
NVC_SUBCLASS	Text 50	National Vegetation Classification. Upper Level, Level 2 Subclass. A combination of general dominant and diagnostic growth forms reflecting global macroclimatic factors driven primarily by latitude and continental position or reflecting the overriding substrate or aquatic conditions.
NVC_FORMATION	Text 50	National Vegetation Classification. Upper Level, Level 3 Formation. A combination of general dominant and diagnostic growth forms reflecting global macroclimatic factors including by elevation,

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		seasonality of precipitation, and soil moisture conditions.
NVC_DIVISION	Text 50	National Vegetation Classification. Mid-Level, Level 4 Division. A combination of dominant and diagnostic growth forms and a broad set of diagnostic plant taxa reflecting biogeographic differences in composition, and continental differences in mesoclimate, geology, substrates, hydrology, and disturbance regimes.
NVC_MACROGROUP	Text 50	National Vegetation Classification. Mid-Level, Level 5 Macrogroup. A combination of moderate sets of diagnostic plant species and diagnostic growth forms reflecting biogeographic differences in composition and sub-continental to regional differences in mesoclimate, geology, substrates, hydrology, and disturbance regimes.
NVC_GROUP	Text 50	National Vegetation Classification. Mid-Level, Level 6 Group. A combination of relatively narrow sets of diagnostic plant species (including dominants and co-dominants), with broadly similar composition, and diagnostic growth forms reflecting biogeographic differences in mesoclimate, geology, substrates, hydrology, and disturbance regimes.
DOMINANCE_TYPE_GRP	Text 50	Vegetation Dominance Type Group
QUAD_MEAN_DIAM_TR_GR_1	Double	Quadratic mean diameter. Quadratic mean diameter is a measure of central tree diameter tendency rather than arithmetic mean for characterizing tree size (http://oak.snr.missouri.edu/forestry_functions/qm_d.php) and is based only on trees greater than 1.0" diameter. Compared to the arithmetic mean, QMD assigns greater weight to larger trees. QMD is determined for all tree-dominated image segments with the exception of image segments derived from the aridlands grid, which are given a value of zero.
QUAD_MEAN_DIAM_TOP20	Double	Quadratic mean diameter (see description for QMD) where the top 20 percent by tree diameter of the treelist, given at least 20 trees, is used to determine the respective quadratic mean diameter based only on trees >0.1" diameter.
BASAL_AREA_WEIGHT_DIA	Double	Basal area weighted diameter (including seedlings and saplings) is influenced to a greater extent by larger trees. Settings that have two or more stories, or a multi-modal diameter distribution, may end up with a diameter assignment that is not found in the

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		setting. BA_WT_DIA is determined for all tree-dominated image segments with the exception of image segments derived from the aridlands grid, which are given a value of zero.
TREE_SIZE_CLASS	Long	Represents the tree size class of greatest aerial extent according to one of five tree size classes: corresponding to the total tree cover for a given image segment), either '0 - Non-Tree', '1 - <5"', '2 - 5-9.9"', '3 - 10-19.9"', '4 - 20-29.9"', and '5 - 30"+'. Applies only to tree-dominated image segments, and all other image segments are given a value of '<null>'.
TREE_CANOPY_CLASS_AERANA	Double	This variable describes the proportion of a segment's area where the TREE_CANOPY_CLASS variable had a value of NA (usually corresponds with NLCD burn-in)
TREE_CANOPY_CLASS_AREA0	Double	This variable describes the proportion of a segment's area where the TREE_CANOPY_CLASS variable had a value of 0
TREE_CANOPY_CLASS_AREA1	Double	proportion of a segment's area where the TREE_CANOPY_CLASS variable had a value of 1
TREE_CANOPY_CLASS_AREA2	Double	proportion of a segment's area where the TREE_CANOPY_CLASS variable had a value of 2
TREE_CANOPY_CLASS_AREA3	Double	proportion of a segment's area that the TREE_CANOPY_CLASS variable had a value of 3
VEG_STRUCT_STATE	Text 10	Vegetative Structural Stage (VSS) is a system of about 26 classes to stratify growth stages of forested settings. VSS for Region 3 was developed in 1992 as an adaptation of the JWThomas classification and based on "Management Recommendations for the Northern Goshawk in the Southwestern United States" (Reynolds, Graham, and others 1992). VSS is based on tree size (diameter) and total canopy cover. The classification system is most useful for even-aged stands.
TREE_BA_ACRE	Double	Total tree basal area per acre in square feet only for trees >1.0" diameter only.
CANOPY_LAYERING	Long	R3 ruleset based on basal area per 8" sliding diameter range, four-category system of either 0 (non-forested), 1 (1 story), 2 (2 story), or 3 (3+ stories). This algorithm was updated by Vandendriesche in 2010.
CANOPY_LAYERINGO_PROP	Double	Four attribute fields that each represent the proportion of the image segment in a given

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		storiedness class. Classification is based on basal area per 8" sliding diameter range, four-category system of either 0 (non-forested), 1 (1 story), 2 (2 story), or 3 (3+ stories). This algorithm was updated by Vandendriesche in 2010. Story 0.
CANOPY_LAYERING1_PROP	Double	Four attribute fields that each represent the proportion of the image segment in a given storiedness class. Classification is based on basal area per 8" sliding diameter range, four-category system of either 0 (non-forested), 1 (1 story), 2 (2 story), or 3 (3+ stories). This algorithm was updated by Vandendriesche in 2010. Story 1.
CANOPY_LAYERING2_PROP	Double	Four attribute fields that each represent the proportion of the image segment in a given storiedness class. Classification is based on basal area per 8" sliding diameter range, four-category system of either 0 (non-forested), 1 (1 story), 2 (2 story), or 3 (3+ stories). This algorithm was updated by Vandendriesche in 2010. Story 2.
CANOPY_LAYERING3_PROP	Double	Four attribute fields that each represent the proportion of the image segment in a given storiedness class. Classification is based on basal area per 8" sliding diameter range, four-category system of either 0 (non-forested), 1 (1 story), 2 (2 story), or 3 (3+ stories). This algorithm was updated by Vandendriesche in 2010. Story 3.
STAND_AGE_ORIGIN	Long	Stand age according to the average age of trees representing the dominant size class (CAN_SIZCL).
STAND_DENS_ALL_TREES	Double	Total trees per acre including seedlings and saplings.
STAND_DENS_TREE_GR_1	Double	Total trees per acre that are >1.0" diameter.
INV_SH_P_MEAN	Double	Average value of variable "INV_SH_P", which describes the proportion of the shrub community that is comprised of invasive species.
EX_HB_P_MEAN	Double	Average value of variable "EX_HB_P", which describes the proportion of the herbaceous community (grasses and forbs) that is comprised of exotic species.
TREE_CANOPY_COV	Double	Total tree canopy cover corrected for overlap, and includes cover of seedling and sapling trees. Summarized for arid data. Sum of the cover of all species that usually grow as 'Tree' lifeform. Summarized for tree data using FVSStand, extracted from Veg_Class.txt FVSStand output file. See

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		Vandendriesche (2013) for a full description of the variable.
TREE_CANOPY_CLASS	Long	Represents the canopy cover class corresponding to the total tree cover for a given image segment), either '1 - 0-9.9%', '2 - 10-29.9%', '3 - 30-59.9%', or '4 - 60%+'.
SHRUB_COVER	Double	Total shrub canopy cover calculated for each image segment. All image segments will have a total shrub cover value between 0 and 100 (%).
HERB_COVER	Double	Total herb canopy cover calculated for each image segment. All image segments will have a total herb cover value between 0 and 100 (%).
LIFEFORM	Text 50	<p>Represents the dominant life form for a given image segment, either tree, shrub, herbaceous, or sparsely vegetated according to values for 'tree canopy cover', 'total shrub cover', and 'total herbaceous cover' (see classification rules based on 10% cover threshold).</p> <p>Summarized for arid data. Raster variables show the plot-level sum of the cover of all species that usually grow as each lifeform. HerbCov is sum of cover of all species that usually grow as forb and graminoid lifeforms. \n CAN_COV - Summarized for tree data using FVSSStand, extracted from Veg_Class.txt FVSSStand output file. See Vandendriesche (2013) for a full description of the variable. (NOTE: A Lifeform variable is also available for raster data. The ruleset above was applied to the plot-level vegetation summaries to yield that variable).</p>
DOMINANCE_TYPE	Text 50	<p>Represents dominance type of the dominant life form (e.g., if life form is 'Shrub' will have a shrub dominance type and will be a repeat value of 'shrub dominance type'. All other image segments (e.g., land use categories) are given a value of '<null>'. Dominance type assigned: 1) using the same logical flag developed for 'Tree canopy cover %', use values from DOM_TYPE_majority, and DomType_T_majority; 2) for all segments where Lifeform = "Shrub", replace values with DomType_S_majority; 3) for all segments where Lifeform = "Herb", replace values with DomType_H_majority; 4) correct NLCD classes.</p>

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TREE_DOMINANCE	Text 50	Represents stratum dominance for tree component only. Based on R3 dominance type classification (FR-R3-16-1) for tree species only, and only applies to image segments with tree canopy cover values of at least 10%. All other image segments are given a value of '<null>'. Combined using same ruleset as was used in the formulation of 'Tree canopy cover'. At end of script,, NA values assigned where prop.nlcd = 1.
SHRUB_DOMINANCE	Text 50	Represents stratum dominance for shrub component only. Based on R3 dominance type classification (FR-R3-16-1) for shrub species only, and only applies to image segments with total shrub cover values of at least 10%. All other image segments are given a value of '<null>'.
HERB_DOMINANCE	Text 50	Represents stratum dominance for herb component only. Based on R3 dominance type classification (FR-R3-16-1) for herb species only, and only applies to image segments with total herb cover values of at least 10%. All other image segments are given a value of '<null>'.
DATA_SOURCE_MIXED_VARIABLES	Text 50	Data Source. Examples AridRaster, ForestRaster, NLCD
PROPORTION_NLCD	Double	Proportion National Land Cover Database - USGS
PROPORTION_FOREST	Double	Proportion Forest
ZONE	Text 50	Ecological Zone. The data was created and processed by Ecological Zone. This tracks the original feature class of the polygon.

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Southwestern Region