

# LANDFIRE 2010 Existing Vegetation Type Legend Revisions

## Summary

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- In response to user feedback, the LANDFIRE Program enhanced the Existing Vegetation Type (EVT) map legend beginning with LF 2010 (LF\_1.2.0).
- LANDFIRE uses Ecological Systems as the primary legend framework. Individual Ecological Systems may represent multiple life-forms (herb, shrub, forest) and leaf-forms (deciduous, evergreen) across different seral stages.
- EVT uses different EVT codes for varying:
  - life-forms within the same Ecological Systems
  - leaf-forms in forest Ecological Systems that contain multiple leaf-forms
- To enable National Vegetation Classification Standard (NVCS) conversions, urban, agriculture and ruderal vegetation map units now carry a modifier: Eastern Cool Temperate, Western Cool Temperate, Eastern Warm Temperate, Western Warm Temperate.
- A new EVT coding scheme was designed and implemented to accommodate the changes above and ensure that map units are uniquely identifiable.
- Two attributes were added to the EVT layer:
  - EVT\_Fuel - collapses EVT codes not needed to support the fire behavior fuel model mapping ruleset
  - EVT\_LF- indicates life-form for every EVT map unit

## Indicating Current Life-form and Leaf-form

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### Natural and Semi-natural Vegetation

In areas where natural vegetation predominates, the EVT layer is mapped using decision tree models, field reference data, Landsat imagery, digital elevation model data, and biophysical gradient data. The EVT map units represent the current distribution of a suite of terrestrial Ecological Systems based on a classification developed by NatureServe for the western hemisphere. A terrestrial Ecological System is defined as a group of plant community types or associations that tend to co-occur within landscapes with similar ecological processes, substrates, and/or environmental gradients.

A single Ecological System can contain up to three life-forms including tree, shrub, and grass as well as a sparse life-form representing different seral states. Most EVT map units (Ecological Systems) represent one life-form, but some contain two or even three life-forms. This creates challenges for data users. For instance, one might expect to see a direct relationship for each EVT map unit to a single life-form in the EVT layer's attribute table. This is not possible if a particular EVT has more than one life-form. In addition, an EVT name often implies a single life-form and may reference fairly specific species composition information. However, in cases of EVTs with multiple life-forms, the EVT name may be vague and reference no particular life-form or species composition. In the former case, one is much better informed about the composition of that EVT, whereas in the latter, users may be confused about what the EVT map unit represents ecologically. The EVT legend was revised beginning with LF 2010 (LF\_1.2.0) by splitting EVTs with multiple life-forms into separate life-forms. This division retained the original

EVT to represent one of the life-forms, while new EVT map units were added to the legend to represent any other life-forms potentially included in that EVT. EVT names were updated to reflect the new life-form.

A similar situation existed with forested EVTs (Ecological Systems) where the basic tree leaf-forms - evergreen or deciduous – were combined. Many aspects of fuel modeling require knowing whether tree leaves are available fuel for burning, will dampen ground level winds, or will provide shading that may attenuate fuel moisture. Similar to the life-form situation, multiple leaf-forms within one EVT is problematic. This is especially true for fuel modeling, as the user may or may not need to include leaf cover for fuel modeling purposes based on whether the leaves are deciduous or evergreen, proving difficult if both leaf types are contained within one EVT. The EVT legend was revised beginning with LF 2010 (LF\_1.2.0) by dividing EVTs with multiple leaf-forms into separate map units, each with a single leaf-form. This division retained the original EVT to represent one of the leaf-forms, while new EVTs were added to the legend to represent any other leaf-forms potentially included in that EVT. EVT names were updated to reflect the new leaf-form.

### **Urban, Agricultural, and Ruderal Vegetation**

In areas where urban, agricultural, or ruderal vegetation predominates, the EVT layer was mapped using a combination of other map products, including NLCD2001, National Agricultural Statistical Service Cropland Data Layer, Conservation Reserve Program data, and conservation easement data. These map units are broad and generally emphasize life-form, leaf-form, and general crop type. In order to enhance the thematic resolution of these map units and to enable conversion to other existing classification systems such as the NVCS, each original EVT map unit was stratified into four broad geographic areas: Western Cool Temperate, Western Warm Temperate, Eastern Cool Temperate, and Eastern Warm Temperate.

### **Development of a New LANDFIRE EVT Legend Numbering System**

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Along with the development of a suite of new LANDFIRE EVTs, a new numbering strategy was created to accommodate the enhanced map units. A hierarchical set of attributes that provide each unique EVT to increasingly more general attributes was used. The EVT “Value” uses numbers in the 3000 series with a unique number for all original EVTs as well as the new EVTs created by either life-form, leaf-form, or geographic area enhancements. Two digit codes, which were previously used for water, barren, non-vegetated EVTs, urban, agricultural, and ruderal EVTs, were assigned a new four digit 3000 series code. A unique name was assigned to each of the EVTs in the attribute “Classname”.

The “EVT\_Fuel” attribute was created to aggregate many of these 3000 series EVTs and renumber them. The primary purpose of this activity was to preserve the linkage to fire behavior fuel model mapping rule-sets developed earlier based on the original EVT map unit legend. The EVT\_Fuel attribute code is based on 2000 series numbers and retains the majority of the original EVT legend. Life-form splits are not evident here as the fuel mapping rule-sets included rules for Existing Vegetation Cover (EVC) and Existing Vegetation Height (EVH) in order to differentiate life-form within EVTs with more than one life-form. Leaf-form splits are evident

so fuel mapping rule-sets can be adjusted for either leaf-on or leaf-off fire modeling situations. The urban, agricultural, and ruderal EVT's were aggregated back into their original classes by removing the geographic stratifications and assigned new 2000 series numbers. Non-vegetated EVT's were aggregated to their original two digit numbers. Unique names were assigned to each EVT\_Fuel number, called "EVT\_Fuel\_Name", and labeled to facilitate the sorting capabilities of the Fuel Mapping Tool.

A second EVT layer attribute, EVT\_LF, or EVT life-form, indicates the final, unique life-form assignment to each EVT map unit. Every EVT split is included as well as hard-coded life-forms for many of the non-vegetated, urban, agricultural, and ruderal EVT's. The remainder of the attributes included in the EVT layer are unchanged from previous version of LANDFIRE EVT legends.