**NONSPATIAL ATTRIBUTES**

Each landscape component (vegetation, land, aquatics, and manmade) must be represented in a separate feature class or coverage in ArcGIS. Attributes for each class are needed. The valid values for the nonspatial attributes for each geographic area are located under the links for each area. These fields must be manually added to the feature classes and must be identical to what is shown. There is no required order within the GIS files.

It is recommended that all these fields be created and edited within ArcMap or Catalog 9.3 or 9.3.1 on feature classes within a file geodatabase. The python scripts are case sensitive, so make sure all field names are upper case. **Null** cannot be a value in any field. The length of the text fields depend on the descriptors used for the specific geographic area.

**Vegetation**

The level of vegetation attributes required is dependent on the way that OpenSIMPPLLE uses them in combination with other variables to generate a probability for disturbance processes (Chew et al. 2004).

OpenSIMPPLLE can represent a single dominant vegetation life form for each plant community or any combination of three life forms: trees, shrubs, and herbaceous. All the species belonging to each life form will have separate pathways in the system.

Although the pathways are separate, an additional component allows for interaction between the life forms that are present, allowing for the density of one life form to be impacted by the density of the others (see “System Knowledge” section).

There are multiple ways to create files of the existing vegetation attributes and other optional fields for the units in the GIS coverages. The most common has been to use data from a vegetation management record system, satellite imagery, or a combination of the two. OpenSIMPPLLE can represent vegetation as irregular size units derived from vector GIS files or uniform sized units from raster GIS files.

The fields in an ArcGIS cover or feature class depend on whether you are using single life forms or multiple life forms and if you are using **Tracking Species**. The order in a cover or feature class attributes table is not important, however, the spelling is. The format for the field required by ArcGIS is specified in parenthesis.

Fields for the entire vegetation unit regardless of single or multiple life form:

**SLINK** (created by script). This field provides the link between the unit in OpenSIMPPLLE and the GIS environment.

It is added by one of the OpenSIMPPLLE ArcGIS toolbox options. If the field already exists, it will be recalculated by the script. Once OpenSIMPPLLE Spatial Relations has run, it is important to use the geodatabase created so the SLINK field will properly match what OpenSIMPPLLE is using as
Required Fields

HT_GRP (required – text)
This field for ecological stratification started as habitat type group values in the first geographic zones developed. HT-GRP has been broadened in concept and varies for each geographic zone (see appendices A through I). HT_GRP ranges from no stratification, to broad classes of elevation and aspect, to specific soil types. Within the user interface screens, the name has been changed to Ecological Grouping. All of the system knowledge can be varied by this stratification/grouping by the user choosing to add a column for this field to the probability and logic screens.

ACRES (required — long)
Acres of the individual unit.

STAND_ID (required — text)
A number (although represented as text) that can be tied to other record keeping systems. For vegetation, this is often a vegetation management record keeping number. It must be set to zero if it is not used.

SPECIES (required — text)
The dominant species may be assigned from any source of input that is available. Its assignment should match guidelines from the inventories in the geographic area.

SIZE_CLASS (required — text)
There is variability in how this attribute is represented across zones. One has to use values that are tied to inventories and needed for a combination of interpretation and influence on disturbance processes. The user must be aware that if structure is built into pathways it may not always be shown in initial vegetation conditions because of limitations from an inventory. However, simulation will “add” structure according to the vegetative pathways over time steps (see appendix for specific zone) showing a significant increase in structure.

FMZ (required — text)
This field is for designating the fire management zone (FMZ). These are delineations that have had some meaning for fire management planning (fire suppression and fire occurrence). There is usually variation in terms of numbers of past fires, suppression costs, and suppression policy. A delineation may be utilized to represent a wildland urban interface.

If no zone value is used, All is interpreted for the field.

DENSITY (required — text)
There is variability by zones, but all utilize absolute canopy cover because it is most easily obtained from remote sensing and most commonly found in inventories.
Optional Fields

SP_AREA (optional — text)
This field can be used to facilitate a spatial breakdown of the outcome from OpenSIMPLE in the reports. In past analyses we have seen drainage designations, wildlife management units, Forest Plan Management Areas, and a broad designation of Forest versus non forest ecological types used. If the field is used, it cannot be blank, have a space, or have a dash in the value. All of these cause problems in Excel macros or ArcGIS. An underscore can be used.

OWNERSHIP (optional — text)
To utilize the fire suppression logic, ownership needs to be: National Forest Wilderness (NF-WILDERNESS), National Forest Other (NF-OTHER), or OTHER. OTHER can be State, private or other federal ownership or more specific, but in its use with fire suppression logic it all is treated as other. The user does not have to make differences in fire suppression by ownership and wilderness versus non-wilderness, but the system does provide the capability.

ROADS (optional — text)
The road status can be identified in two ways. If road units are not created for the landscape file, the user can (in the GIS environment) decide what status to assign to each plant community. The road status can then be used in the fire suppression logic (if the logic includes road status). It needs to be one of the three: Open Roaded (O), Closed Roaded (C), or None (N).

If roads units are part of the landscape file, which they need to be for the Eastside Region One zone for invasive species, this status value is determined dynamically. Treatments can be utilized to close and open roads.

ELEV (optional — long)
If this field is not used, a digital elevation model must be identified when running the OpenSIMPLE spatial relations tool from the OpenSIMPLE toolbox. The system uses a difference of 10 percent in the mean elevation of a unit to determine if a neighbor is above or below a vegetation unit. At the time of area-file creation a window will appear, allowing the user to change the percent, or the Elevation Relative Position choice under the utilities menu can be used. Both the elevation and distance in the feature classes has to be in meters.

LANDTYPE (optional — text)
This field can be used to assign to a vegetation unit some feature of the land that it occupies. This can be utilized if a user does not want to create a GIS layer of land units to incorporate into OpenSIMPLE.

PROCESS (optional — text)
This can be used to provide SIMPLE with a disturbance process history that can be utilized in the initial simulation time steps. If used, the Process_T field must also be utilized.
The values must be one of the acceptable disturbance processes used in the system. This is not the same as identifying a current, ongoing process. See the “lock-in” process feature for current processes. Without specifying a disturbance process, each plant community starts out as if succession was occurring.

TREATMENT (optional — text)
This field can be used to provide a treatment history for the initial simulation time steps.

PROCESS_T (optional — long)
The number of time steps past that the process occurred. Although you can put values of more than 1, SIMPPLLE currently always uses a value of 1.

TREAT_T (optional — long)
The number of time steps past that the treatment occurred. Although you can put values of more than 1, OpenSIMPPLLE currently always uses a value of 1. This field is used inside OpenSIMPPLLE to keep track of time steps since simulated treatments as well.