Forest Vegetation Simulator Translocation Techniques with the Bureau of Land Management's Forest Vegetation Information System Database

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Abstract—The BLM uses a database, called the Forest Vegetation Information System (FORVIS), to store, retrieve, and analyze forest resource information on a majority of their forested lands. FORVIS also has the capability of easily transferring appropriate data electronically into Forest Vegetation Simulator (FVS) for simulation runs. Only minor additional data inputs or corrections are required to transfer FORVIS data to the FVS.

Introduction

The Bureau of Land Management (BLM) is responsible for the management of approximately 258 million acres of public land. About 69 million of these acres are forested (BLM 2006). The BLM manages these forested lands according to the principles of multiple-use and sustained-yield as required by the Federal Land Policy and Management Act (FLPMA) of 1976 and the Oregon and California Railroad Act, which covers forest lands in western Oregon. National priorities for these forests include maintaining and restoring forest health, salvaging dead and dying timber, providing high-quality wildlife and fish habitat, and providing economic opportunities in rural communities by making timber and other forest products, including biomass, available from vegetation management treatments.

Forest Vegetation Information System

With the exception of its public lands in western Oregon, the BLM uses an agency-developed database called the Forest Vegetation Information System (FORVIS) to store, retrieve, and analyze forest resource data. FORVIS was initially released in 2001, with an update (Version 2) released in 2006. FORVIS has distributed databases, stored at BLM State Offices, and uses an Informix relational database manager. Users can access the FORVIS database through a Microsoft (MS) Access application and an open database connectivity (ODBC) driver.

FORVIS allows data storage from inventories of various intensities—from photo interpretation to individual plot data. The database contains 32 related tables; however, only two ("stand_data" and "tree_data") are needed for retrieving data related to the Forest Vegetation Simulator (FVS). A view of the BLM FORVIS plot measurement record (fig.1) shows a very similar format to the order of data input for the stand list and tree data files of an FVS run. This similarity is due to the fact that those applicable tables in FORVIS were based on the requirements for the FVS runs.

In addition to simulating forest stand growth under a variety of different scenarios, the BLM also uses the FVS to make some basic stand-level calculations, such as trees per acre, quadratic mean diameter, basal area, stand density index, and volume per acre. This use of the FVS negates the need for the BLM to develop and maintain their own programs to make these calculations.

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BLM FORVIS PLOT MEASUREMENT RECORD

Location Common Name or Legal Desc: Page_____of_____

Polygon Identifier Observer Name : Date :

Stand Data and Sample Design

Habitat type:	**Slope:**	**BAF:**	**No. plots:**	**Dia. Grow period:**	**Site species:**
Birth year:	**Elevation:**	**Plot size:**	**Acres:**	**Mortality period:**	**Site index:**
Aspect:		**DBH break:**	**Stockable %:**		**Remarks**

Tree Data																				Plot Data					
Plot number	Tree number	Tree count	Tree history	Species	Diameter	Number of stems	Diameter growth	Tree age	Tree height	Height to top kill	Height growth	Crown ratio	Damage code 1	Damage severity 1	Damage code 2	Damage severity 2	Damage code 3	Damage severity 3	Tree value class	Prescription code	Slope	Aspect	Habitat type	Topographic position	Site preparation
XXXX	XXX	XX	X	XXX	XXX.X	XX	XXX	XXX	XXX	XXX	XXX.X	X	XX	XX	XX	XX	XX	X	X	X	XX	XXX	XXX	X	X

Figure 1—BLM FORVIS plot measurement record.

Data Transfer from FORVIS to FVS

A FORVIS user can select stand and plot data for a specific stand with the option of either first viewing or not viewing the raw data. Within the MS Access FORVIS application, a command button using a Visual Basic for Application script creates the stand list and tree data files. The user must create the location (*.loc) file. The user must also select the appropriate FVS variant and nearest National Forest location for the stand list file using the FVS SUPPOSE interface.

FORVIS also has the capability of electronically transferring and storing some of the results of the FVS runs, specifically the stand summary data described previously (i.e., year of summary data, trees per acre, quadratic mean diameters, basal area, stand density index, and volume).

One additional capability of FORVIS is the ArcMap extension created by the BLM that allows a link to spatially show much of the data that is in FORVIS.

Data Transfer Issues

Issues that have come up in transferring data from old BLM forest inventories are primarily the result of using "legacy data." For example, data collected in the late 1970s and early 1980s using the Forest Service's Stage II protocols result in seedling diameters being recorded as 0.00 inches instead of the FVS requirement of 0.01 inches. Additionally, some damage codes have changed. For example, the presence of dwarf mistletoe disease was originally recorded as "61." The FVS utilizes a code of "30" for dwarf mistletoe disease. Users must make both of these corrections prior to making a FVS run. These edits can be done either while in the FORVIS database or through use of the stand list file and the FVS tree data edit functions in SUPPOSE.

Conclusion

The BLM has found the FVS program a very valuable tool in forest resource management and has incorporated many of the data requirements for an FVS run in their forest inventory database, the Forest Vegetation Information System (FORVIS). Only minor issues with data transfer are encountered and these are related to "legacy data."

References

Bureau of Land Management. 2006. BLM Forest Lands Report—2006: Status and condition. BLM/ST/ST-07/001+5000. Denver, CO: Bureau of Land Management. 111 p.

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