Blue Mountains Demo Project (version 11)

Overview

This project contains a subset of prescriptions used in an analysis of opportunities to increase the pace and scale of fuel treatments in the Blue Mountains region of eastern Oregon. It covers all forest ownerships and types, as represented by data from 2370 FIA plots collected between 2006 and 2016 (one ten-year cycle with essentially equal sized panels collected in each year from 2007-2016, with a handful of 2006 measurements retained to fill in for plots that had to be carried over from 2016 to 2017). 1592 of these plots were observed to have one or more forested conditions during the visits to these plots between 2006 and 2016, and the total number of forested conditions (that in BioSum, become stands in FVS), is 1667, with a total of 34,712 measured live trees (and 8444 dead trees; note that while dead trees are not typically considered for removal in management operations, they do play a role in how FVS-FFE calculates and projects carbon in dead wood pools, which impacts future fuel loads and surface fuel model assignment).

As reflected in the "pop" (population) tables, a set of tables used to 1) assign an acres expansion value for each condition (stand) for developing readily computed estimates of BioSum projections for the entire forest area and 2) drive the OK tabling program that enables generating tables containing estimates of totals (e.g., area treated, by degree of effectiveness and economic feasibility, or quantity of wood delivered to mills and bioenergy facilities, by tree size and species classes) and ratio-means (e.g., per-acre treatment costs and wood production) for large areas of forest, by, for example, owner group, fire resistance class, initial density and volume classes, and numerous other stand level attributes, accompanied by estimated sampling errors. The pop tables in this BioSum project are linked to EVALID (Evaluation ID) 411601 (state FIPS code 41, for Oregon, end year [20]16, eval type 01 – OREGON 2016:2006-2016: Current Area, Current Volume). There are 185 strata spanning 3 "estimation units": Outside NFS (National Forest System), NFS wilderness and NFS non-wilderness. Note that the 411 wilderness (cond.reservcd=1) conditions should not be modeled with treatments, since these represent forest lands where mechanical treatment is not an option.

Four treatments are modeled on the non-wilderness (cond.reservcd=0), forested (cond.landclcd=1) conditions in this project:

rx					
rx	catid	subcatid	description	HarvestMethodLowSlope	HarvestMethodSteepSlope
104	1	5	Thin across Diameter range to BA=40 ft2/ac; (BA threshold=85); DBH 5-30; Target ABGR; burn	Ground-Based Mech WT	Cable Manual WT
105	1	5	Thin across Diameter range to BA=40 ft2/ac; (BA threshold=85); DBH 0-30; Target ABGR; lop and scatter	Ground-Based Mech WT	Cable Manual WT
107	1	5	Thin across Diameter range to BA=75 ft2/ac; (BA threshold=110); DBH 0-30; Target ABGR; lop and scatter	Ground-Based Mech WT	Cable Manual WT
113	1	5	Thin across Diameter range to BA=135 ft2/ac; (BA threshold=180); DBH 5-21; Target ABGR; burn	Tethered CTL	Tethered CTL
205	1	9	Thin from below to BA=40 ft2/ac; (BA threshold=85); DBH 0-30; Target ABGR; lop and scatter	Ground-Based Mech WT	Cable Manual Log
999	4		Grow Only	Ground-Based CTL	Cable Manual Log

Each differs in terms of the residual basal area target (it's a target that may or may not be reached when a treatment is implemented, given that diameter caps may preclude reaching it), diameter range subject to removals, and surface fuel treatment paired with the overstory density reduction activity. All have the same species removal preference (*Abies grandis* – grand fir) and all but 113 rely on the same harvest system (which affects both residual fuel loading, kinds and amounts of biomass recovered for utilization, and associated costs and revenues).

Treatments are arranged in silvicultural sequences called "packages". In this project, we assume that the same treatment would be repeatedly applied each decade, with actual activity contingent on (and coded in the FVS keyword control program [kcp]) whether 20 years had passed since the most recent entry, and whether triggering conditions for implementation of the prescription and been attained.

rxpackage	description	rxcycle_length	cycle 1rx	cycle 2rx	cycle 3rx	cycle 4rx
9	Thin across to BA 40 when BA more than 85 and remove 5-30 inch trees targeting ABGR followed with Rx Burn using ground based mech WT and Cable Manual WT	10	104	104	104	104
10	Thin across to BA 40 when BA more than 85 and remove 0-30 inch trees targeting ABGR followed	10	105	105	105	105

	with lop and scatter using ground based mech WT and Cable Manual WT					
12	Thin across to BA 75 when BA more than 110 and remove 0-30 inch trees targeting ABGR followed with lop and scatter using ground based mech WT and Cable Manual WT	10	107	107	107	107
24	Thin from below to BA 40 when BA more than 85 and remove 0-30 inch trees targeting ABGR followed with lop and scatter using ground based mech WT and Cable Manual Log	10	205	205	205	205
999	Grow only	10	999	999	999	999

Practice opportunity: Note that prescription 113 is not yet utilized by any package. As a practice exercise, it may be useful to create a package that utilizes that prescription and then run that package through FVS, load the FVS output data, process the FVS results through Processor and evaluate the package's efficacy and economic feasibility relative to the other packages in Optimizer—for those stands (and the acres they represent) relative to other packages. There is already a KCP file in the project for a package 18 that uses that prescription and that is a good place to start.

All packages in this project have been run, and were run through the legacy FVS Suppose system before loading back into BioSum. Those outputs can be reloaded if desired. If using FVS Online (for example to complete the practice opportunity above), that is doable given that FVS Online will read the Access FVSIn database already created in this starter project. Alternatively, it is easy to make a new input for FVS formatted as an SQLite db for reading into FVS Online. Just choose FVS Input from the FVS module in BioSum, select one of the packages, point BioSum to the FIADB SQLite database containing your downloaded FIA data (including the FVS_STANDINIT_COND and FVS_TREEINIT_COND tables) on the third tab of this dialog, Choose All_FIA_Conditions as the Selected Group, return to the first tab (main menu) and in the drop down next to the Execute Action button, choose "Create FVS Input Database files from FIA2FVS", then Execute. Note that at the current time (January 2022), the parameters on tab 2 (FVSIn Options) are not operative when creating an SQLite .DB input database- they only apply to the ACCDB input database workflow. Outputs from FVS Online must be written to an FVSOUT.DB SQLite file, and before these can be ingested by BioSum, they need to be translated back to ACCDB files to match the legacy workflow (for now). The "Create FVSOUY MDBs" button in the FVS Module accomplishes this task (over a lengthy period of time).

All packages have also been run through Processor (only one scenario was developed) and optimizer (two scenarios were developed). Inspecting these, and the outputs they generate can be instructive. Additional documentation for this tutorial will be developed in the coming months.

J.S. Fried 29 January 2022