# Introduction to the Forest Vegetation Simulator (FVS)

This lab is intended to introduce you to the basic principles of FVS, basic data format, and its potential uses in forest management.

Download and install the "*Introduction to Forest Vegetation Simulator*" that is listed under Week 2 on the course website:

http://www.webpages.uidaho.edu/for373new/FOR373_schedule.htm

After you have installed this .exe file, you should have a window appear that looks like:
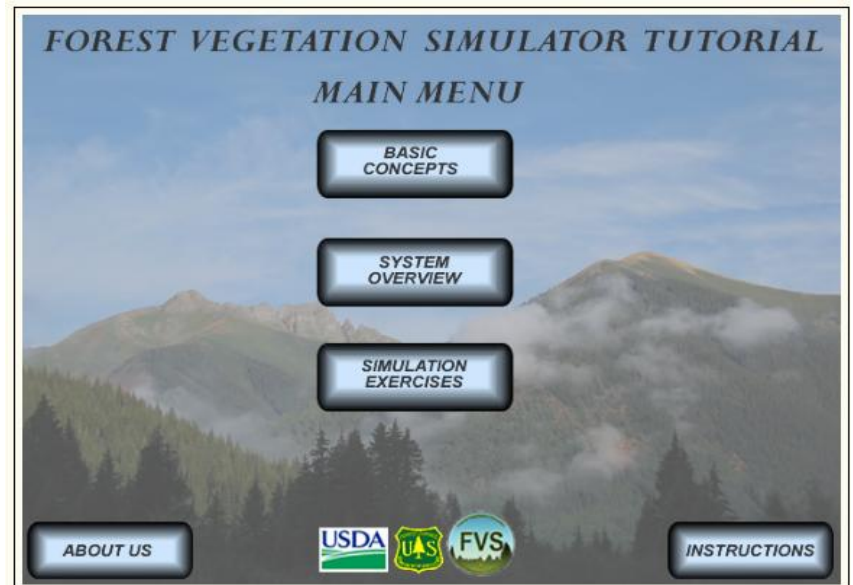
Once the .exe file is installed, explore the "Basic Concepts" and "System Overview" sections.

Accessing the Suppose package:

Once this is completed, begin the "Simulation Exercises" starting with Exercise 1-2.

If you do not see the "FVS Suppose" link on your Desktop, you will need to navigate to the following folder location: C:/FVSbin

From here, right-click on the "Suppose" program and select "Create Shortcut" and place the shortcut on the Desktop.

Acquire the Data:

Download and extract the 2 files inside the "Simulation Data" link on the schedule page of the course website. Extract the files into the C:/FVSbin folder, this will be the default working directory that Suppose will access.

Performing a Basic FVS Simulation

Instead of following the online Simulation Exercise, complete the following simulation steps.

Goal: Upon completion of this exercise, the student will be able to complete a basic stand projection, change the time scale, add post processors and interpret basic output.

The primary objective of this exercise is to simulate thirty years of growth of Stand 354 in the dataset provided. Follow these steps and then answer the questions at the end of the exercise.

1) Make sure no previous simulation is in memory. The title bar should say ***new file*** if the memory is clear. If a previous simulation is in memory, click **File > New**.

2) Click **Data Preparation > Modify/Create Locations**

3) Click the **Browse** button next to the "Locations File" field, select the **West_Hatter_Creek.loc** file and press **Open**.

4) Select the option next to "Edit records that define Locations using Databases (Type C)" and then delete the pathway that is in the "Data Source" field and click the associated **Browse** button. And select the West_Hatter_Creek.mdb file.

5) Click the **Save** button, you should get a pop-up that 1 Type C record was output. Then click the **Ok** button, you should get the same pop-up except the Edit Locations File interface should disappear.

Now you are ready to select the part of the dataset you want to work with:

1) Click the **File > Select locations file** menu option and select the **West_Hatter_Creek.loc** file and press **Open**.

2) Click on the **Select Stands** button.

3) In the large **Locations** box, select **West_Hatter_Creek**.

4) In the large **Groups** box, select **All_Stands**.

5) In the large **Stands** box, select **354**.

6) Click the **Add 1 Stand** button in the bottom left corner.

This will add the data for 8 variable radius plots collected in the polygon displayed in the map.

7) Click the Close button to close the Select Simulation Stands window.
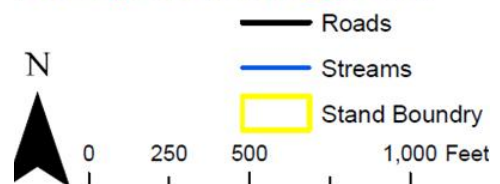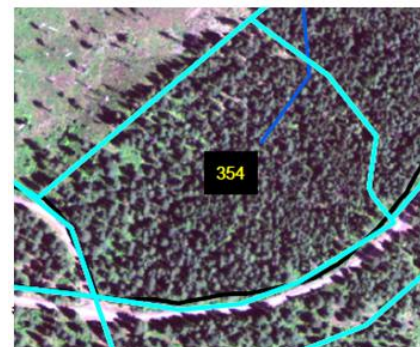
In the main window, look at the Simulation file contents window. As options are added to simulations, Suppose updates the Simulation file contents window tracking what has been added to a simulation. Notice stand **354** was added to the simulation and a component called **From Database** was added from the input database and attached to the *All* grouping code. This option contains database keywords stored in the input database telling the FVS growth model to link to the input database to get the stand and tree data.
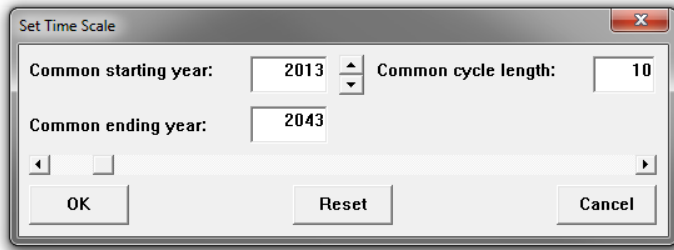
Now change the time scale so the stand is grown for thirty years starting in 2013.

8) Click on the **Set Time Scale** button.

9) Make sure the common starting year is set to **2013**. This makes FVS grow the stand up to the starting year of choice, in this case 2013.

10) Change the common ending year to **2043**. This grows the stand from 2013 to 2043 using the common cycle length of 10 years.

NOTE: The default common cycle length is 10 years for all variants except the Southern and Klamath Mountains variants which have common cycle lengths of 5 years. The default number of cycles is 10.

11) Click the **OK** button.

Next, let's view the main FVS output file after the simulation is run. This output is contained in a text file named after the simulation run and has a **.OUT** extension. To view the main FVS output file, select the **View the Main Output file using system editor** post processor.

12) Click on the **Select Outputs** button.

13) Highlight the **Base FVS Reports**, and select the **Build Structural Class Report** post processor.

14) The option menu for the **Build Structural Class** Report will open; click **Ok** to accept the default settings.

15) Click the **Close** button to close the **Model Outputs** window.

Now, run the simulation and view the main output file.

16) Click on the **Run Simulation** button.

17) A **Save As:** window appears. The default directory is the one containing the data.

18) Type **Example_Exercise.key** in the proper box in the File name window.

19) Click the **Save** button.

20) A **Run Command** window opens. Click the **Run** button.

The simulation scrolls across a command window, which automatically closes when the simulation completes. You can open the outputted report by right-clicking on the Example_Exercise.out file and selecting Open With Notepad.

Explore the output that you created!

Extra Credit Opportunity

Find the following answers from within the outputted report you created above. You must support your answer to the final question in order to receive credit, this will require talking about stand density and species dynamics.

At the **start** of the simulation what are the two tree species of greatest stem density and the two of greatest merchantable volume? (Hint: look inside the Stand Composition table)

At the **end** of the simulation what are the two tree species of greatest stem density and the two of greatest merchantable volume?

What species have the highest accretion (new stems created) and mortality (deaths) at the beginning and end of the simulation? What do you think causes the change seen in these species?