**OPCOST Settings**

This form is used to tell BioSum where to find the executable (or program) for R and the OPCOST.R script.

The top directory path should be automatically populated to the default directory, the Rscript executable file in the R folder on the C:\ drive. This link will point to the version of R that was installed during the “full installation” of BioSum. OpCost was written and tested in version 3.1.2 of R, and is not guaranteed to work in newer versions.

If you need to update the location of your R installation, be sure to choose the Rscript.exe version in the i386 directory. This is the 32-bit version that has been verified to work with OpCost/BioSum.

The second directory path needs to point to an OpCost R script. Select the folder icon next to Directory path of the OPCOST.R file name and navigate to the R script you wish to use. The OpCost R script packaged with your BioSum installation can always be found here: C:\Program Files (x86)\FIA PNW Portland Forestry Sciences Lab\FIA Biosum <current version>\opcost. Select the .R file and click <Open>.

Note that any errors generated when OpCost runs during processing can be found in a file named “opcost\_error\_log.txt” in your AppData\Local\Temp folder.

**Tree Diameter Groups List**

The Tree Diameter Groups List is used to specify diameter groups by which harvested tree volume and value will be summarized**.** In a later step, merchantable value per unit volume and energy wood value per unit weight will be assigned based, in part, on the diameter groups defined here.

Note: The diameter groups specified here determine how volume, biomass and value are summarized in the tree\_vol\_val\_by\_species\_diam\_groups table when Processor executes. If the user elects to alter these diameter group specifications later in the analysis, then the processor and any related core analysis scenarios will need to be re-run to reflect the changes to diameter group definitions.

1. To add a new diameter group, click <New>. Enter minimum and maximum diameter values in the **Tree Diameter Groups** edit window. Values are entered and displayed in inches. An unlimited number of non-overlapping diameter groups can be specified; they must be specified in ascending order. The maximum diameter for the last diameter group entered should be at least as large as the largest tree that might be cut by any prescription in any stand; 999 is a good choice to ensure that all trees will be accounted for in volume, biomass and value summaries. **Important! It is incumbent on the analyst to define diameter groups that comport with brush-cut, chip, small and large tree diameter thresholds limits specified during the work flow defined by the Start BioSum Processor task**.
2. To make changes to an existing diameter group definition, select the group from the list and click <Edit>.
3. To load, or revert to, the default diameter group specification click <**Use Default Values**>.
4. To delete a diameter group, select that group to highlight it and click **<Delete>**. To delete all diameter classes click **<Clear All>**.
5. When finished editing or adding tree diameter groups, click <Save>, and then <Close>.

**Tree Species help screen**

The Tree Species window initiates a dialog for conducting audits of cut list species attributes and for managing the tree\_species table stored in project\db\ref\_master. The purpose of this table is two-fold: 1) it provides a systematic method for assigning FVS species codes, that can vary by FVS variant, for every FIA species code in the FIA data, and 2) it stores the species specific parameters for wood density and green weight conversions that are used by BioSum to convert between volume and biomass, and from dry biomass to the green biomass values used in estimating haul costs. Audits should be run on the *tree\_species* table the first time FVS cut list output is used, to assess data readiness for subsequent processes. There are three audits to be completed: (1) check if an FVS tree species value is assigned to each tree species record, (2) identify any combinations of FIA tree species, FVS variant, and FVS tree species that are absent from the *tree\_species* table, and (3) confirm that non-null oven dry weight and green weight conversion parameters ratios exist in the *tree\_species* table for every FIA tree species present in the cut list. To assure successful completion of the rest the Processor module, it is wise to first make sure that all three audits are successful.

1. The data displayed in the *tree\_species* table in the bottom half of this window derives from a work table, generated by filtering the /db/ref\_master\_tree\_species table based on the FIA species codes present in the /fvs/data/ *variant/*BioSumCalc*/variant\_*Pxxx\_TREE\_CUTLIST.MDB database files. Note that ALL records for species with matches in the cut list will enter this work table, regardless of the variant associated with the record in the cut list. This table shows every combination of variant and FIA species code and the FVS species to which it is “mapped”, the species group assigned to that species in the current project, the scientific nomenclature, and the oven dry weight (wood density) and dry to green ratio—both of which are required to estimate green weight of merchantable and energy wood (for calculating transportation costs).
2. In the drop down list box above the tree\_species table, select the first audit by clicking the downward pointing triangle on the right side of the list box and selecting **“Check If a 2-Character FVS Tree Species Value is Assigned to Each Tree Species Table Record”**, then click **<Run Audit>**. If the audit passes, the analyst will see a window displaying that the audit has passed. The audit will display an error message if any tree species in the table record does not have an FVS value assigned to it.
3. If this audit fails, results will be displayed for cases where tree species in the table record do not have an FVS species assigned. These records can be selected (via checkboxes) for addition to the *tree\_species* table individually, or en masse (by clicking **<Check All>**), followed by **<Add Checked Items To Tree Species Table>** button. Be sure to **<Save>** changes after adding records. These additions to the work table will automatically propagate through to also update *ref\_master.tree\_species* in the Project/db directory
4. In the drop down list box above the tree\_species table, select the second audit by clicking the downward pointing triangle on the right side of the list box and selecting **“Check If Each FIA Tree Spc, FVS Variant, And FVS Tree Spc Combination Is In The Tree Spc Table”**), then click **<Run Audit>**. Within Processor, this second audit checks, using CUTLIST tables as the source, rather than the TREE table, to be sure that every combination of FIA tree species (as determined by the tree record in MASTER.TREE) and FVS tree species (as specified in the CUTLIST output) for a tree has a tree\_species record for the FVS variant where that tree exists. The audit will display an error message if this requirement is violated for any CUTLIST tree.
5. If this audit fails, results will be displayed for cases where combinations are missing from the *tree\_species* table. These records can be selected (via checkboxes) for addition to the *tree\_species* table individually, or en masse (by clicking **<Check All>**), followed by **<Add Checked Items To Tree Species Table>** button. Be sure to **<Save>** changes after adding records. These additions to the work table will automatically propagate through to also update *ref\_master.tree\_species*.
6. To run the third audit, select **“Check If Oven Dry Weight And Green Weight Conversion Ratios Exist In The Tree Spc Table”** from the drop-down menu; then click **<Run Audit>.** This audit willfind instances of *tree\_species* records wherethe *od\_weight* or *dry\_to\_green* fields are null and display them at the top of the Tree Species window. These can typically be corrected by sorting the table on *spcd* (by left clicking on its column heading), and finding these values for another variant for the same species. Click on a record in the audit results window to select that record in the *tree\_species* table. Values in the red-brown highlighted boxes can be edited directly, without opening the dialog, or select **<Edit>** to open the editing window. Do this for each specified record in the audit results window. **<Save>** changes when done, and these updates will also propagate through to *ref\_master.tree\_species*.
7. Repeat Step 6 to ensure that every record that matches a cutlist tree has a valid wood density (oven dry weight) and dry to green ratio.
8. After all audits have passed without error, **<Save>** changes and **<Close>** the Tree Species window.

**Tree Species Groups**

BioSum summarizes volume, biomass and value by size class (diameter group) and species group. When parameterizing Processor towards the end of this module, merchantable values for harvested trees will need to be assigned for each combination of diameter and species group. Before that can happen, species groups must be assigned.

1. Click the check box at the top of the window, next to **“Show only species found in the FVS Tree Tables”** to limit the display of tree species common names to only those present in the project dataset.
2. Select a species from the list on the left and click any of the <Group> buttons to insert the species into that group. Note that species are removed from the list on the left as they are entered into groups. Enter a group name in the text box above each group species listing; blank names are not allowed. The <Remove> button will remove the selected species from the group and the <Clear All> button will remove all species from the group, returning them to the full list of unallocated species at the left edge of the species groups form. Additional groups can be added by clicking the <Add Groups> button at the bottom of the form.
3. The **<Tree Audit Report>** button pulls up the Tree Species audit window, should the analyst need to edit tree species records or rerun an audit while using this form.
4. When finished assigning species to groups, the list of unallocated species will be empty. Click <Save>andthen <Close> to complete this task.

**Data Sources Tab**

The **Data Sources** tab displays pointers (file paths, file names, table names, status, records counts, etc.) to all types of source data used in the Processor scenario. Any of these data sources can be copied to another table or database and the pointer updated to point to the copy instead of the original data source. These copies can then be updated or customized to allow consideration of different situations. To edit the pointer to the data source, and to make copies of data sources, select a table type and click **<Edit>.** The **Edit Data Source** window will appear. Here you can move, copy, or rename existing Access DB files and tables, and reset links for any table type.   
  
Caution: Making changes to data sources is an advanced capability, not to be undertaken lightly or by BioSum beginners, and has the potential to be confusing or produce unintended consequences.