

## **Create New Project**

To create a new project, start the FIA BioSum Manager application and select **<File><New Project>**.

Upon selecting **<New Project>**, the Project form will open with no fields populated other than Date. The only required information is the **Project ID** field, but it is recommended to enter a creator **Name** and **Project Description** as well.

If this dialogue was summoned by the menu selection **View, Project Properties**, fields will be displayed as read-only until/unless the **<Edit>** button is selected.

By default, the project directory will be c:\FIA\_Biosum\project id. For example, if the project id is 'BlueMountains' the default project directory would be c:\FIA\_Biosum\BlueMountains. The default project directory can be changed by selecting the folder icon to the right of the **Project Directory** text box and navigating to a different directory.

To share project notes and documents with others, click on the folder icon to the right of **the Shared Notes and Document Links Directory**. **NOTE:** To effectively use the shared document links option, users must have access to the shared directory, and use the same drive letter when mapping to the shared directory. To keep personal project related notes and documents, click on the folder icon to the right of the **Personal Notes and Document Links Directory**.

**IMPORTANT:** Click the **<Save>** button to create the new project in the BioSum Manager. Clicking **<Cancel>** will not create the project.

The BioSum Manager will create the project directories and copy the necessary project files. Select **<Yes>** if you want the document links depository to keep track of project documents. Select **<Close>** to exit the **Project Properties** window once the project has been created.

When a project is created, the state of the **Project Properties** dialog will change to display-only and the **<Edit>** and **<Close>** buttons will be available. Selecting **<Edit>**, now, or in the future via the **View, Project Properties** menu choice, allows Name, Company and Project Description to be modified and saved.

## **Plot Data**

These tools generate, or modify the selection of, a set of FIA plots for analysis. Plots, and the condition and tree records linked to them, can be added (appended) to the BioSum project via the Add Plots button. All plots for a state can be added (or multiple states, appended one at a time); individual plots or sets of plots within selected counties can be loaded; or a custom-built set of plots, compiled outside of BioSum, can be loaded by referencing a text file containing the customized list of plot identifiers. Instructions for all **<Append>** functions can be viewed from **<Help>** buttons on the sequence of **Add Plot Data** user dialogs accessed via the button bearing that label.

The **<Delete Conditions>** button opens a **Delete Conditions** user dialog for specifying the name of the file containing the list of COND.CN values (control number [CN]) of the records in the COND table for which data removal is desired.

The **<Delete Packages>** button opens a **Delete Packages** user dialog for specifying the name of the file containing the list of package labels (these look like 3 digit numbers but are actually text, so it is important to include leading zeros, as in 001, not just 1 for package 1) of the packages for which data removal is desired. All rows in all tables that contain a package identifier matching one of the lines in the package label list provided to BioSum will be deleted.

### **Add Plot Data**

The first dialog box of the **Plot Data Input** form will appear. Click the folder icon to browse to the location of a state level FIADB Access database, and then select the database to load.

After clicking the desired database and then clicking **<Open>**, the 9 table name fields will populate automatically if the FIADB database contains tables with the standard table names for that each type of data.

For any table that is not found using the standard name, the table name field will be blank. Click the drop down list to select the desired table from the Access database that contains the data of the specified type (the data matching the dropdown box heading).

After ensuring that all table names are correctly specified, click **<Next>** to advance to the next step.

**NOTE:** Before loading the FIADB plots into BioSum, seedlings must first be added to the TREE table if planning to include regeneration activity in the FVS simulation using REPUTE. To add seedlings, run the Add-Seedlings script found in the fvs/scripts folder of your newly created project, using the VBA interface within the Access database. This adds the seedlings found in each plot, to the tree table.

### **Add Plot Data Input (choosing which plots to add)**

A combination of filters can be applied to choose plots, and in some cases, the conditions (full or partial plots) to be included in a BioSum project. In this dialog box, there are three levels of plot filtering available that will, in terms of internal program flow, be applied after selecting the desired evaluation set: **location**, **forested status**, and **condition proportion threshold**.

**Location:** All locations in the state associated with the Access database will be loaded if the “*Input all Plots*” radio button is selected. If, instead, *Filter by Menu Selection* is selected, BioSum presents an opportunity to select counties and plots at a later step. The third option is to provide a text file containing a list of *PLOT CN* (control number) values associated with the plots to be analyzed. If this option is selected, a text file must be browsed for and selected.

- a. **Option 1– Input All Plots.** All plots will be added. To add all plots select <Input All Plots>, after first selecting desired options for forested status and condition proportion (see below), then click <Next>.
- b. **Option 2– Filter Plots by Menu Selection.** Plots will be filtered based on selection of counties and plots. Select <Filter Plots by Menu Selection>, and desired options for forested status and condition proportion (see below), then click <Next>.
- c. **Option 3– Filter by File.** Plots will be filtered based on Plot CN (control number) values listed in a text file generated by the user, one Plot CN value per line. To designate the text file, select <Filter by File (Text File Containing Plot\_CN numbers)>, choose the text file, click <Open>, select the inventory of interest, and then click <Next>.

**Forested status:** The Forested and Non Forested check boxes act as follows. Checking **Forested** loads all conditions on any plot with one or more sampled forested conditions. Checking **Non Forested** loads any plot that contains no forested conditions. Checking both loads all sampled plots. Most users will want to only load plots containing forested conditions, so should check only the Forested box. The opportunity to load completely non-forest plots into BioSum will typically only be useful for an afforestation analysis.

**Condition Proportion:** Select a value for condition proportion threshold (expressed as a percent) between 1 and 99 using the dropdown list; the default is **25**. At the default value, tree data for conditions with condition proportion (fraction of the plot the condition accounts for) of 0.25 or larger (equivalent to the size of one subplot) will be imported into the BioSum Project; for conditions with smaller condition proportions, the condition will be considered nonsampled, and the area accounted for by that condition will re-assigned proportionally to all the other conditions within the same stratum (for example, national forest - forested land) with condition proportion of 0.25 or greater.

This helps to protect against modeling conditions containing so few trees that the degree to which the data adequately represents a “stand” for the purpose of exploring management options, is called into question. This threshold can be adjusted, if desired. Increasing the threshold towards 100% will exclude more conditions from contributing to the BioSum analysis while increasing the average count of trees per plot associated with the conditions that remain in the sample; decreasing towards zero will exclude

fewer conditions, and increase the inclusion of conditions that may contain very few trees, and may thus generate anomalous results for some conditions.

**Down Wood Data:** Down wood data from FIA plots, which includes coarse and fine wood loadings assessed from measured pieces of down wood on transects, duff and litter loadings developed from duff and litter depth measurements and field crew-assessed surface fuelbed category (also referred to as a fuel model) can be loaded to a project along with the plot, condition and tree data. If loaded into the project, it can be used later when building FVS input files, for example, to provide better information on surface fuels to be accounted for by FFE-FVS when estimating potential fire characteristics or accounting for woody carbon that does not reside in standing trees. Checking the **Use Down Woody Materials Data** box will load this data, if available in the FIADB database, into the project's \db\master\_aux.accdb database as the tables DWM\_COARSE\_WOODY\_DEBRIS, DWM\_FINE\_WOODY\_DEBRIS, DWM\_DUFF\_LITTER\_FUEL and DWM\_TRANSECT\_SEGMENT and into the dwm\_fuelbed\_typed column of the COND table in the project's \db\master.accdb database. These data must be loaded if they are to be used in building the FVS input files. There is no reason not to load these data when building the project unless there is no possibility that these data will be needed in FVS, disk space is so limited that there is no room for the master\_aux.accdb file if populated, or glitches are encountered when loading down wood.

**GRM data:** Growth, removals and mortality data from the FIA plots can be loaded by checking the box with this name before proceeding with an **<Append>**. If GRM data is available for some or all of the plots being loaded, it will load to the project's \db\master\_aux.accdb into the GRM\_STAND and GRM\_TREE tables. The motivation for including this data in a BioSum project is that the data can optionally be passed to the FVS input files generated by BioSum, for use in calibrating diameter growth in FVS projections, if the box on the **Create FVS Inputs Options** tab labeled **Use GRM calibration data if available** is checked. This may result in more accurate FVS stand projections, at least with respect to growth.

Note that this data can be loaded for any plot that contains GRM (remeasurement) data, regardless of the EVALID selected. For example, it is not necessary (nor likely desirable) to choose an EVALID labeled **"AREA CHANGE, GROWTH, REMOVALS AND MORTALITY"**, as this will typically contain fewer plots than one labeled **"CURRENT AREA, CURRENT VOLUME"**. If choosing the latter EVALID, GRM data will be loaded into the BioSum project for all plots within that EVALID that have remeasurement data; no GRM data will be loaded for stands derived from conditions lacking remeasurement data, but those stands are still useful and used in BioSum simulation.

### **Add Plot Data Input (select FIADB inventory evaluation)**

Choose an “Eval ID” (Evaluation Identifier), which defines a set of FIA plots to represent a state, or portion thereof (if adding selected plots or counties), for a given time period, to load. The status at the time an attempt is made to sample these plots in the field, and the status of conditions that comprise them (e.g., forested, non-sampled, etc.), and the post stratification data encoded in the associated “POP” (population) tables (e.g., POP\_EVAL, POP\_STRATUM) in the FIADB database, are analyzed to determine how many acres each stand will represent.

Choose **ONLY ONE EVALID** per state! If loading additional plots later for the same state, choose the same EVALID. If loading plots from a different state, choose one EVALID from that state’s FIADB database and be consistent in that choice if later loading additional plots. Typically, it makes sense to choose EVALIDs representing the same period of time for all the states loaded into a BioSum project, if only for ease of interpretation of BioSum results drawn from a multi-state analysis.

The contents of POP tables in FIADB state databases change as new Eval ID’s are added. For BioSum, look for an Eval Description that references the time period of interest (for example, the most recent 10 years of available data). One will typically be interested in the EVALID description that contains the phrase “Current Area, Current Volume”, or “Sampled Plots”. When in doubt, contact an FIA analyst in your region for advice. After selecting an EVALID, click **<Next>**.

**Note:** loading of population tables and inventory data may continue for several minutes so please be patient.

### **Plot Data Input (filter by state and county)**

Select desired counties (counties in only one state can be displayed for any given load operation). To select all counties in the evaluation set of interest, click **<Select All>**. To clear any selection made, click **<Clear All>**. Click **<Append>** to add all plots within the selected counties. Alternatively, select specific plots within the chosen state(s) and counties, by clicking the **<Next>** button to display the **Filter by Plot** form.

**Plot Data Input (filter by plot)**

Select the desired plots found in the county(s) selected in the previous step, then click **<Append>**. To select all possible plots in the selected county(s), click **<Select All>**. To clear any selection made, click **<Clear All>**.



## **Delete Conditions**

The text file listing the COND.CN values to be deleted is typically generated via queries in project\db\master.mdb and may include, for example, conditions with COND.RESERVCD=1, if removing wilderness areas and parks from potential management were the objective, or with COND.FORTYPCD<>371 if only conditions with a mixed conifer forest type were intended to be included in the BioSum analysis.

Three checkboxes offer access to options for creating a log file listing the BioSum project tables searched for data associated with the specified condition records and the number of records deleted from each, compacting each project database after deletions are accomplished, to conserve disk space, and for conducting an inspection and reporting of record counts associated with the targeted conditions, rather than performing the deletions.

Caution should be exercised when enabling the “compact databases” option because limitations of MS Access result in this step failing intermittently, such that some of the project databases do not successfully compact.

To proceed (irrevocably) with the deletion, select **<Delete>**. This function will delete ALL records associated with the submitted condition list, throughout the BioSum project directory structure, i.e., in ALL tables in ALL databases in ALL folders within *projectname*, regardless of table or database name or whether or not the database and table contain data used in the project—thus, even “backup” versions of databases or tables that a user has located within the *projectname* directory structure will have these conditions deleted by the end of the condition deletion operation.

## **Delete Packages**

As with the condition zapper, three checkboxes offer access to options for 1) creating a log file listing the BioSum project tables searched for data associated with the records associated with the specified packages and the number of records deleted from each, 2) compacting each project database after deletions are accomplished to conserve disk space, and 3) for conducting an inspection and reporting of record counts associated with the targeted packages, without actually performing the deletions.

Caution should be exercised when enabling the “compact databases” option because limitations of MS Access result in this step failing intermittently, such that some of the project databases do not successfully compact.

To proceed (irrevocably) with the deletion, select **<Delete>**. This function will delete ALL records associated with the submitted package list, throughout the BioSum project directory structure, i.e., in ALL tables in ALL databases in ALL folders within *projectname*, regardless of table or database name or whether or not the database and table contain data used in the project—thus, even “backup” versions of databases or tables that a user has located within the *projectname* directory structure will have records associated with these packages deleted by the end of the package deletion operation.

## **Wood Processing Sites**

The **Wood Processing Sites** task allows entry and editing of wood processing sites-- the locations where harvested wood is delivered for conversion into products or bioenergy. Wood processing sites can be attributed as accepting logs, wood chips, or both and as final delivery terminals or as railheads where wood can be collected and forwarded by rail to a final delivery terminal. Wood processing sites can account for facilities that already exist, or that are under consideration to be built; either way, individual facilities can be toggled on or off during analysis.

To create a new wood processing site, click **<New>**. To edit a current wood processing site, select the desired site then click **<Edit>**. To delete a wood processing site, select the desired site then click **<Delete>**. If any changes are made (i.e.: a new site is created or a wood processing site is edited or deleted), be sure to click **<Save>** before exiting this window.

## **Project Data Sources**

This screen allows the user to view the directory paths and names of the project database files and tables, determine whether or not the file and table names exist, and view table record counts. This tool can also be used to change the information source for particular tables in a project (i.e., to point to a different database or table).

Each table has a unique identifier, or '*Table Type*.' The '*Path*' column displays the directory path for the corresponding MDB File. The '*MDB File*' column contains the file name for the Microsoft Access database. '*File Status*' indicates whether or not a file is found, while '*Table Name*' contains the name of the table. The '*Table Status*' column indicates whether the table is found in the MDB file. '*Record Count*' shows the number of records in the table. All columns may be updated by clicking on the **<Refresh>** button.

Data sources can also be edited using this tool, giving the user the ability to manage tables that are used in a BioSum project. To edit a data source, select a table type and click the **<Edit>** button on the top left of the screen.

### **Edit Project Data Source**

This tool displays where the selected table is currently stored and allows the user to move the selected table to a different mdb file, copy the selected table to a different mdb file, or make a copy of the table within the same mdb file, assigning a new name to the copy. One useful feature of this tool is that it allows the user to overcome the MS ACCESS **2GB** file size limit by allowing a table to be copied to another MDB. Once the desired changes are made, select **<Commit Change>** then close the window with **<Close>** or the close control **<x>**.

## **Manage Tables**

The **Manage Tables** task lists the project MDB files in a tree directory format, the tables in a MDB file, and the columns in a table. This tree directory can be utilized to locate and inspect all Access databases and tables in a BioSum project. When a MDB file is selected, it can be compacted by clicking on the **<Compact>** button, or opened in Access by clicking on the **<Open in Access>** button. Opening the MDB file in Microsoft Access allows the user to view the tables in an MDB file, the data within each table, and make edits to the MDB file and associated data (though this is not generally advised). The user may also select a table and columns of their choice, and click on **<Browse>** to view the records. To select all columns in a table, click **<Check All>**. To clear the column selection click **<Clear All>**. Once columns in a table are selected (boxes next to the column names are checked), the **<Browse>** button allows users to review the data populating those columns in the selected table, without risk of inadvertently introducing unwanted edits.

## **Manage SQLite Tables**

Note: As of BioSum v5.9.0, most BioSum data is stored in MS Access databases and not accessible with this tool. However, SQLite tables can be found in the db, fvs/data, fvs/data/variant, and optimizer/scenario/db folders. Future plans for BioSum include migrating all data storage to SQLite so the list of potentially viewable SQLite databases will continue to grow.

The **Manage SQLite Tables** task lists the project DB and DB3 files in a tree directory format, the tables in a DB/DB3 file, and the columns in a table. This tree directory can be utilized to locate and inspect all SQLite databases and tables in a BioSum project. When an SQLite file is selected, it can be opened using the SQLite editor installed on the computer by clicking on the **<Open With SQLite Editor>** button. Opening the file in an SQLite editor allows the user to view the tables in an SQLite database, the data within each table, and make edits to the DB/DB3 file and associated data (though this is not generally advised). The user may also select a table and columns of their choice, and click on **<Browse>** to view the records. To select all columns in a table, click **<Check All>**. To clear the column selection click **<Clear All>**. Once columns in a table are selected (boxes next to the column names are checked), the **<Browse>** button allows users to review the data populating those columns in the selected table, in read-only format without risk of inadvertently saving unwanted edits.