

## BioSum 5.8.8 Release Notes

21 January, 2020

### What's changed

BioSum version 5.8.8 offers numerous improvements since version 5.8.6, the most recent previous public release. Version 5.8.7 was an interim version that was quickly superseded by 5.8.8 (a version increment was needed to support version migration of projects that has been upgraded to 5.8.7, but those with version 5.8.6 BioSum projects can migrate directly to 5.8.8, without first opening their project in 5.8.7). For the deeply curious, an exhaustive list of bug fixes and enhancements is provided at:

<https://github.com/USFS-PNW/Fia-Biosum-Manager/releases>

but we'll highlight a few of the major functional improvements here:

1. Treatment Optimizer (formerly core analysis) received a major revamp in version 5.8.6 with the ability to utilize FVS attributes from multiple cycles, not just cycle 1, and their change from a baseline (usually grow-only) scenario. Additional enhancements to this module in version 5.8.8 include the ability to load weights applied to the Pre and Post values, by cycle, from a text file prepared by the analyst, making processing site lists scenario specific, and reporting on which harvest system was used for each stand and cycle.

Some of these, and other, enhancements introduced significant changes in table architecture and attribute names within optimizer\_results (and elsewhere) that we believe make the outputs much more useful and easier to understand. Moreover, Optimizer can now generate databases of simulation inputs that can be maintained and linked with simulation outputs to help analysts keep track of what assumptions underlie the results from each scenario. We call these context databases, because they provide context that is important for interpreting and evaluating simulation outputs.

2. Substantial improvements were made in travel time data management by providing a database of all currently extant wood processing facilities and pre-calculating the travel times between them and all FIA plots in the BioSum covered states. Loading the travel times from these pre-calculated values is a cinch via a button now implemented in Optimizer. The analyst must first download the file [gis\\_travel\\_times\\_master.accdb](#) (a zip compressed file which will need to be unzipped) and place it in the hidden "C:\Users\\AppData\Roaming\FIABiosum" folder. GIS yarding distance is also pre-calculated and loadable from the biosum\_ref database in the FVS module whenever new plots are loaded from FIADB to a BioSum project. Moreover, Chapter 3 has been significantly updated to include documentation of how the [gis\\_travel\\_times\\_master.accdb](#) was developed, and of the vector and raster approaches to calculating travel times. Road data and the HaulTime script are now provided.

3. Of particular importance to Forest Service users, an incompatibility in the Oracle Express Edition 11G (that BioSum relies on for volume and biomass calculation) which arose when Forest Service computers were upgraded from ORACLE 11 to ORACLE 12 has been addressed and resolved.
4. We've added condition and package "zapping" utilities that are useful for subsetting a biosum project—for example, from a whole state dataset to a subregion within the state, perhaps to hand off to another user, and for thinning out a project to remove cases not needed for analysis—for example, conditions that are non-forest, in reserved areas where treatment need not be modeled, or for which no contemplated treatments can be implemented (e.g., if too little tree stocking). Providing the condition zapper with a text file containing the COND.CN values, one per line, for all the conditions to be removed from the project, will allow those conditions to be deleted from every table in every database in a BioSum project (there can be hundreds of tables), leaving no "orphaned" data linked to those conditions. The package zapper is great for removing, from all tables in the project databases, any silvicultural sequences that seemed like a good idea when developed, but which have been superseded by others or no longer make sense to keep. Optionally, both zappers can compact and repair the databases processed following deletion of the unwanted material, leading to a smaller project footprint. Both also have options to write a log file detailing the tables from which records were deleted and to perform record counts, written to the log file, without performing the actual deletion. Zapping is an undoable action so is best undertaken after making a project backup.
5. As of 2019, FIADB data is no longer distributed in the form of Access databases for a couple of reasons. 1) In some states, the accumulated data available exceeds the 2 GB database size limit inherent to Access. 2) The tree table now contains more than 255 columns (attributes) for each tree; while not all attributes are populated in all FIA regions, tables exceeding 255 columns are not compatible with Microsoft Access. The national web site at <https://apps.fs.usda.gov/fia/datamart/datamart.html> makes FIA data available as POSTGRES and SQLite 3 databases and comma separated value (CSV) files. For the foreseeable future, BioSum will continue to be developed on the MS Access platform, so the FIADB data must first be converted to the Access format. A section in chapter 2 of the BioSum User Guide now describes the workflow for converting a state-level SQLite 3 FIADB database into Access format. Chapter 2 was also updated to explain the import options for GRM (growth removals and mortality) for use in FVS calibration and DWM (down wood material) for use in FVS-FFE's representation of surface fuels.

## **Installing BioSum 5.8.8 and migrating projects**

Installation is easy—just right click on the MSI file downloaded from biosum.info and select run elevated or run as administrator, after first making sure that there is no existing installation of BioSum 5.8.8 on your computer. Earlier (with release numbers lower than 5.8.8) versions present on your computer will not generate conflict as long as you take care NOT to open a project using a version of BioSum that is older than the version used to create or work with a project. BioSum projects must be migrated one version at a time, so if you have a project in 5.8.4 and want to take it to version 5.8.6, you will need to first open the project in 5.8.5, save it, close it and reopen and resave it in 5.8.5 before attempting to open it in 5.8.6 (it's recommended that you first close the project in 5.8.5 before doing so). Version 5.8.8 is an exception in that it can open (and migrate data structures for) a project created in either 5.8.6 or 5.8.7, so there is no need to keep version 5.8.7 around for project upgrading purposes. Legacy BioSum versions, needed for migrating old projects, can be found at: <http://biosum.info/downloads/legacy.html>

Note that forward-migrated projects for which treatment optimizer (or core analysis) has already generated outputs will contain BioSum results in the old formats. New format output will only be available for treatment optimizations run in the new BioSum version.