FIA Biosum

BIOREGIONAL INVENTORY ORIGINATED SIMULATION UNDER MANAGEMENT

Installation Guide

For Version 5.11.1, released on 12 November 2024 and in effect until further notice

Introduction

This guide details the 22 steps required to install FIA BioSum version 5.11.1 software on your Windows computer for the first time—what we call a "full installation". If upgrading from a version of BioSum earlier than 5.10.1, there are many considerations to work through and you are advised contact the developers before attempting an upgrade. **This is especially important for upgrading from a BioSum version earlier than 5.8.9 as BioSum transitioned to 64-bit architecture with the 5.8.9 release**. If upgrading from 5.10.1, all workflows downstream from FVS simulation must be reloaded after upgrading the project (which happens automatically the first time you open a 5.10.1 project in 5.11.1) because data storage for the FVS Output load function and the Processor and Optimizer scenarios has been converted from Access to SQLite.

BioSum should be installed from an account with administrative privileges. One benefit of installing all components from an "admin" account is that all components are then available to be run from any user account on the computer. It is also essential that BioSum "projects", the datasets assembled and analyzed during the BioSum workflow, be in "trusted locations" as defined in the MS Access configuration to eliminate disk write failures in a project's database.

If installing on a Forest Service computer, full administrative account access is not available to most users and it will be necessary to have the FS Customer Help Desk perform the installation.

The full installation can be initiated from FIA_BIOSUM_SETUP.ZIP. Use your favorite archive program (e.g., 7-zip, WinZip) to extract this archive to C:\ -- this will create the folder C:\FIA_BioSum and subfolders such as C:\FIA_BioSum\Setup. After archive extraction, three critical installation tasks must be performed:

1. Install R, if not already installed, (version 3.4 or later, available from https://cran.r-project.org/)
2. Install the RSQLite package, if not already installed
3. Install FIA Biosum Manager—the analyst-friendly software that manages workflow associated with the many data manipulation and analysis procedures in a BioSum project.

Software Requirements for Computers Running BioSum

For BioSum to install and function at all, requirements 1-3 must already be met. Requirement 4 can be met following installation.

1. Microsoft Windows 7 Professional, Enterprise, or Ultimate editions, or Windows 10.
2. Microsoft Office 2016 or greater (through Office 365), which BioSum uses for data storage, but **must be** 64-bit Version and include MS Access. **IMPORTANT: Microsoft Access Database Engine 2016 64-bit Redistributable, a "runtime library" that allows non-Microsoft applications like BioSum to interact with MS Access databases, must also be installed**. This redistributable, 'accessdatabaseengine_**X64**.exe', can be downloaded from https://www.microsoft.com/en-us/download/details.aspx?id=54920, and then installed with admin privileges (FS users may need help from the Customer Help Desk).
3. 64-bit SQLite ODBC driver: Forest Service users can install this driver from the Software Center (making sure they are downloading the 64 bit version). All other users should download it from http://www.ch-werner.de/sqliteodbc/.
4. A Java SDK (v1.8 or later, equivalent to Java 8 client version). BioSum has been tested with both the Oracle SDK and OpenJDK. Forest Service users should install/run the 'Java Update' from the Software Center. If a Java SDK has already been installed via procedures consistent with those specified in this guide, there is no need to reinstall this component. BioSum has not been tested with Open JDK 11.

Setup Overview

Faithfully (and patiently) following these instructions will get you up and running with BioSum soon.

Unless BioSum will be used only to create FVS files for purposes unrelated to BIOSUM analysis, the R software and RSQLite package must also be installed to enable OPCOST to estimate costs of forest operations. Install the FIA BIOSUM MANAGER last.

If RSQLite is already installed on your computer, it does not need to be reinstalled. The fia_biosum_setup.zip archive file contains all the files needed for a full install (other than the R and FVS Online software which are available separately at https://cran.r-project.org/ and https://www.fs.fed.us/fvs/ respectively. It is best to unzip this to the root directory of the C drive (specify C:\ as the location to install—the installed will then create folder named C:\fia_biosum, with a setup folder, these installation instructions, and release notes).

RUN ELEVATED PRIVILEGES OVERVIEW (Forest Service users)

To install or uninstall the software (via the .MSI file) requires administrative privileges. Forest Service users will typically be operating with a Forest Service computer with a standardized "imaged" operating system that does not grant the user admin privileges. For installation steps requiring administrative privileges there are 2 alternatives for the CHD representative to follow when they remote into your computer:

1. Right-click the install file (e.g., the msi) or command (e.g., odbcad32.exe) and select <Install> or <Open> , or
2. Shell to a command prompt by selecting locating (in File Explorer) and right-clicking on the file C:\Windows\SysWOW64\cmd.exe, then selecting <Run as Administrator>. From the administrator-enable command prompt, navigate to the folder location of the BIOSUM install files and run each of them from the this administrator privileged command prompt. This is the PREFERRED and only FULLY TESTED approach.

Running the BioSum software, once it has been successfully installed, does not require administrative privileges. By default, the BIOSUM software is installed for all user accounts.

If you intend to open and edit BIOSUM MS Access files, make sure that the directory location that houses a BioSum project (which consists of a great many Access database files) of the file is set as a trusted location in the Access software settings (under options, trust center settings).

The best way to make sure that installation components are installed under the admin privileges is to open a command window as admin and type the commands out in that command window. For example:

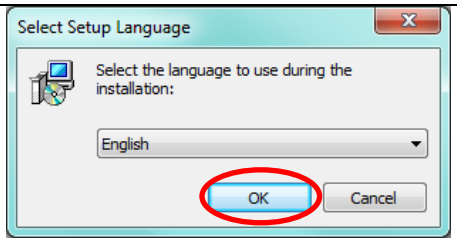
When defining the ODBC entries make sure ODBCAD32.EXE is started from the c:\windows\System32 folder, as a user with admin privileges. Note that the System32 folder contains the 64-bit ODBC Data Source Administrator.

Setup Instructions

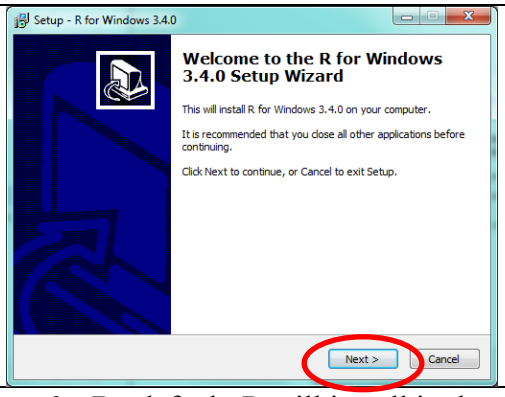
1. Login to your computer as an administrator

2. **Install R:** If R is already installed then skip to step 12; otherwise, download and install R, with Admin or Run Elevated privileges.

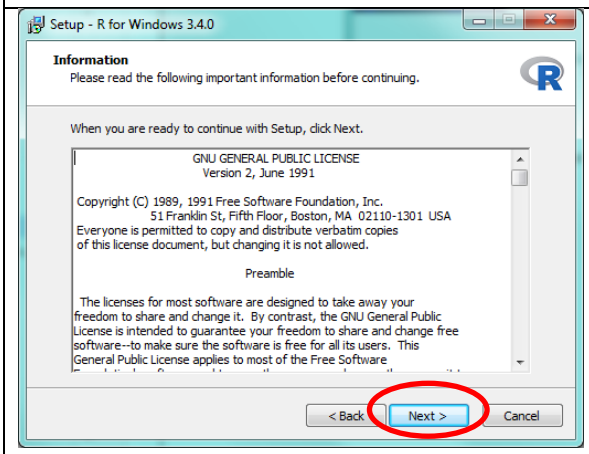
3. Click <OK>.



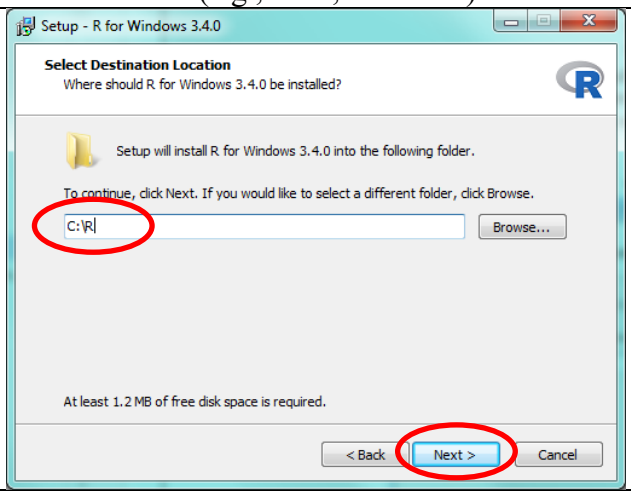
4. Click <Next>.



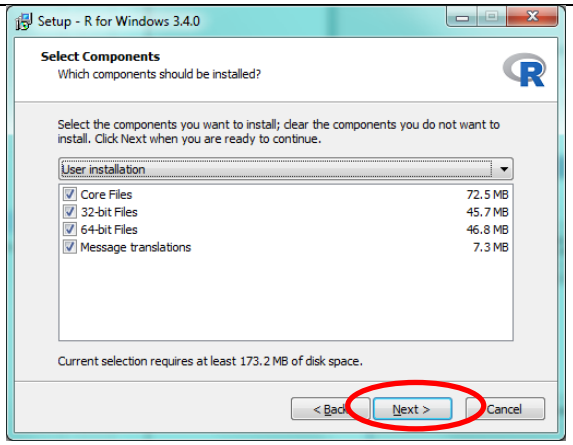
5. Click <Next>.



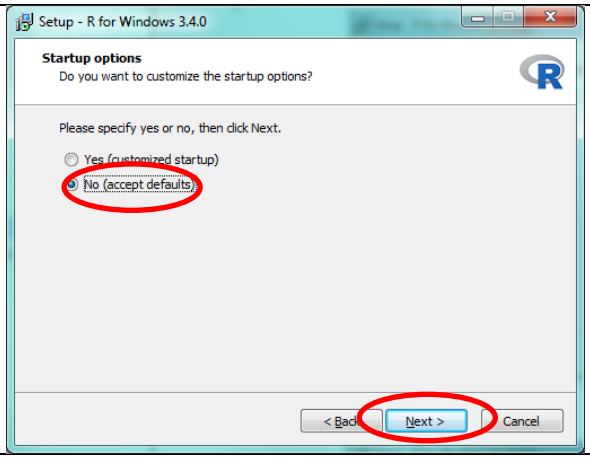
6. By default, R will install in the <Program Files> folder. Click <Browse> to navigate elsewhere, if desired (e.g., C:\R, as shown).



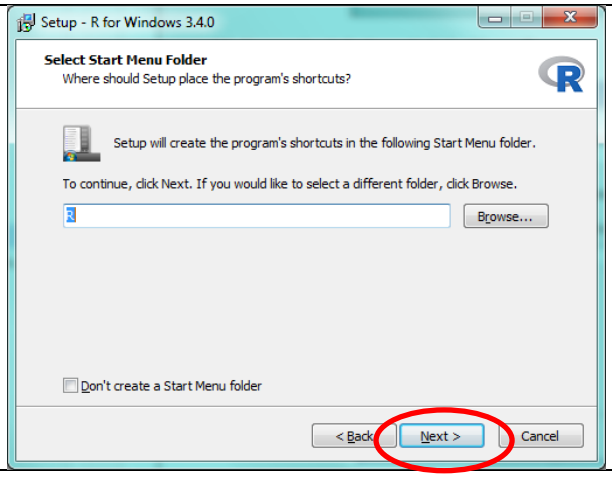
7. Accept the defaults and click <Next>.



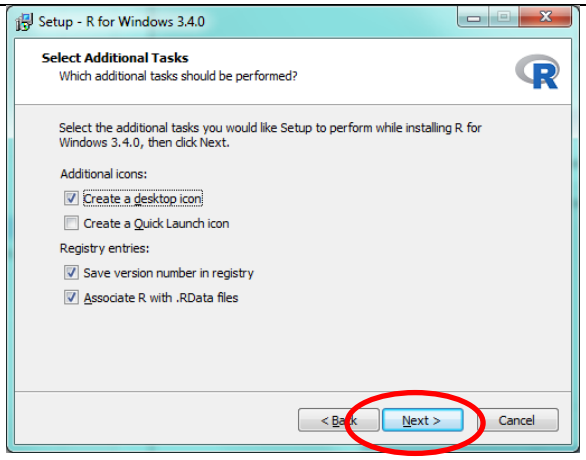
8. Accept the defaults and click <Next>.



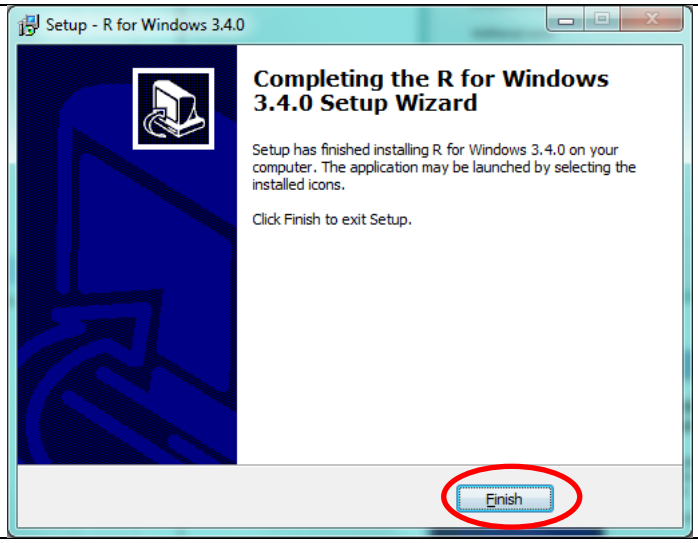
9. Accept the defaults and click <Next>.



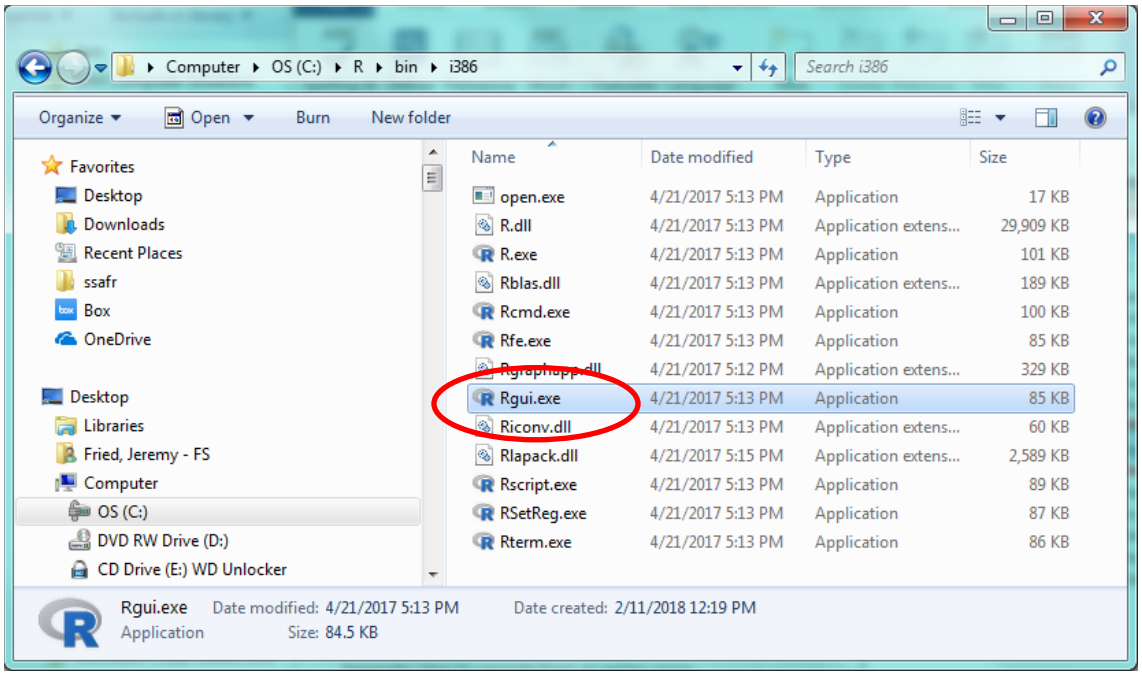
10. Accept the defaults and click <Next>.



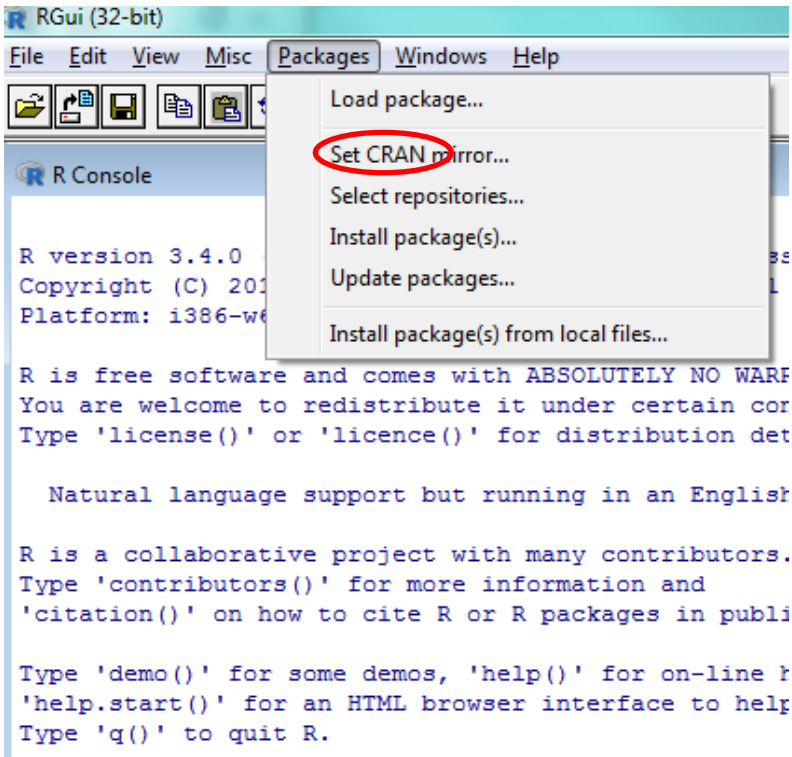
11. Click <Finish>.

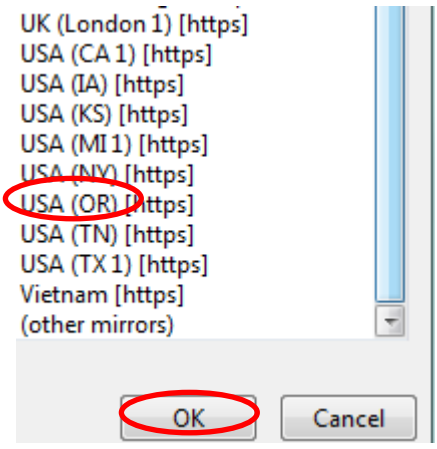


12. **Install RSQLite:** If **RSQLite** is already installed then skip to step #17. RSQLite enables R to connect to SQLite tables. Navigate to the folder containing the R x64 program called RGui.exe (in a directory location such as C:\Program Files\R\R-4.4.0\bin\x64) and open it. NOTE: An internet connection is required for the RSQLite install.

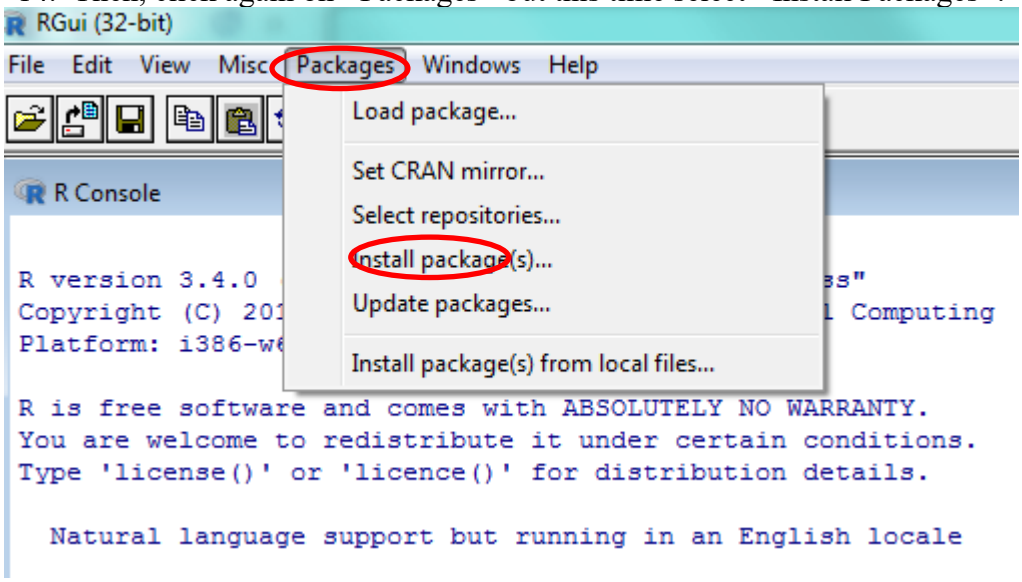


13. Click on <Packages> <Set CRAN mirror>, and choose a mirror location near you.

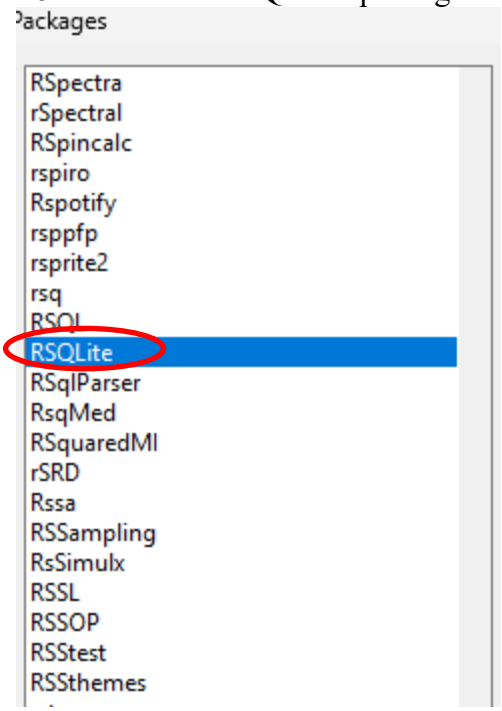




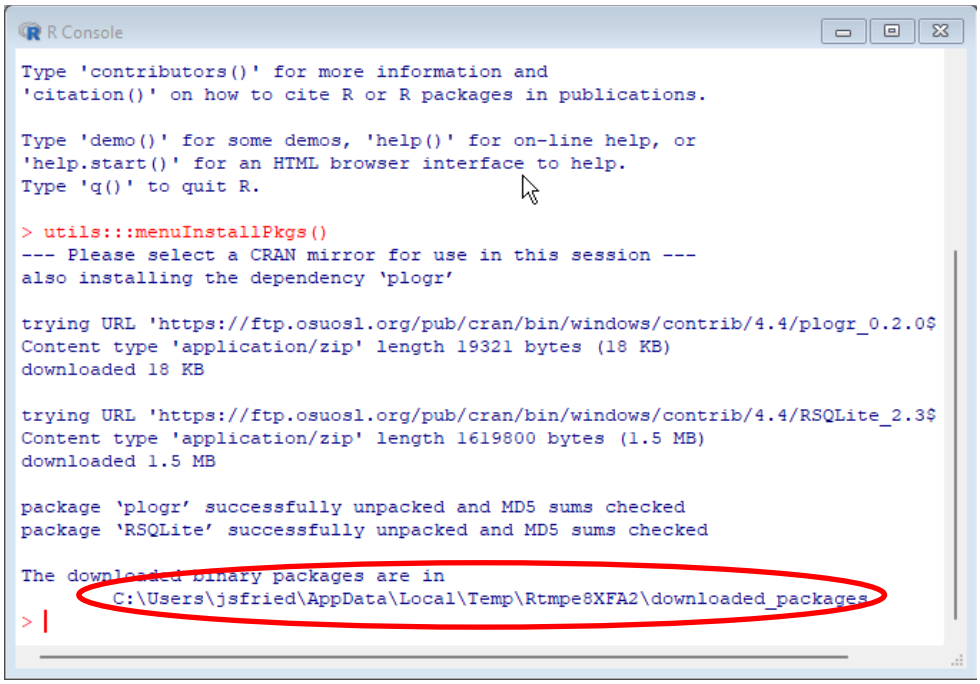
14. Then, click again on <Packages> but this time select <Install Packages>.



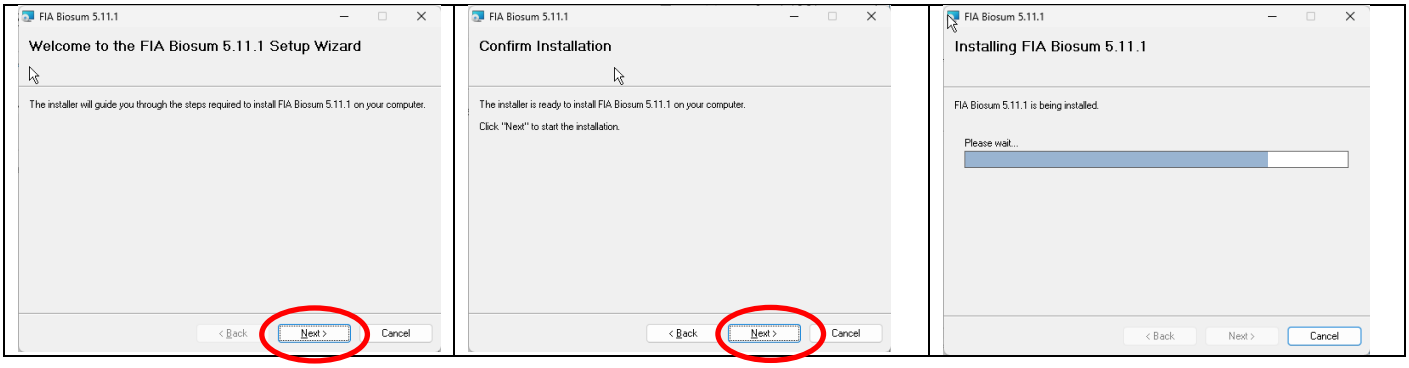
15. Select the <RSQLite> package to download and install. Click <OK>.



16. Check to see if successfully installed.

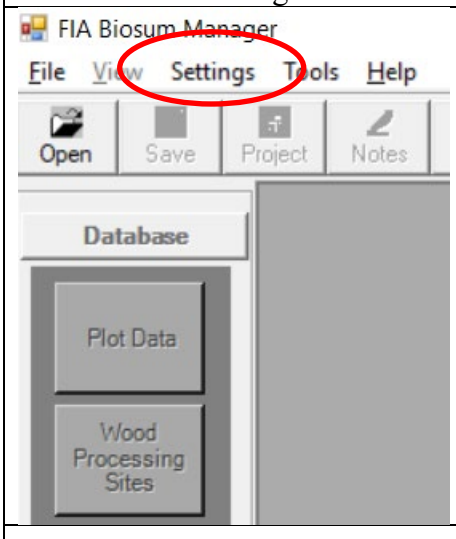

R Console
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
> utils:::menuInstallPkgs()
--- Please select a CRAN mirror for use in this session ---
also installing the dependency 'plogr'
trying URL 'https://ftp.osuosl.org/pub/cran/bin/windows/contrib/4.4/plogr_0.2.0$
Content type 'application/zip' length 19321 bytes (18 KB)
downloaded 18 KB
trying URL 'https://ftp.osuosl.org/pub/cran/bin/windows/contrib/4.4/RSQLite_2.3$
Content type 'application/zip' length 1619800 bytes (1.5 MB)
downloaded 1.5 MB
package 'plogr' successfully unpacked and MD5 sums checked
package 'RSQLite' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:\Users\jsfried\AppData\Local\Temp\Rtmpe8XFA2\downloaded_packages
>

17. **Install FIA Biosum Manager:** Navigate to the c:\ fia_biosum\setup folder. Open the file 'fia_biosum_setup_versionnumber.msi via right click, Install (or Open, depending on the version of Windows) as admin. Click on <Next> to begin the installation, <Next> again to confirm proceeding with the installation, and <Close> upon completion of the installation. If Windows displays a message that installation is not allowed, right click on the .MSI file and choose properties; then tic the unblock check box and try the install again.



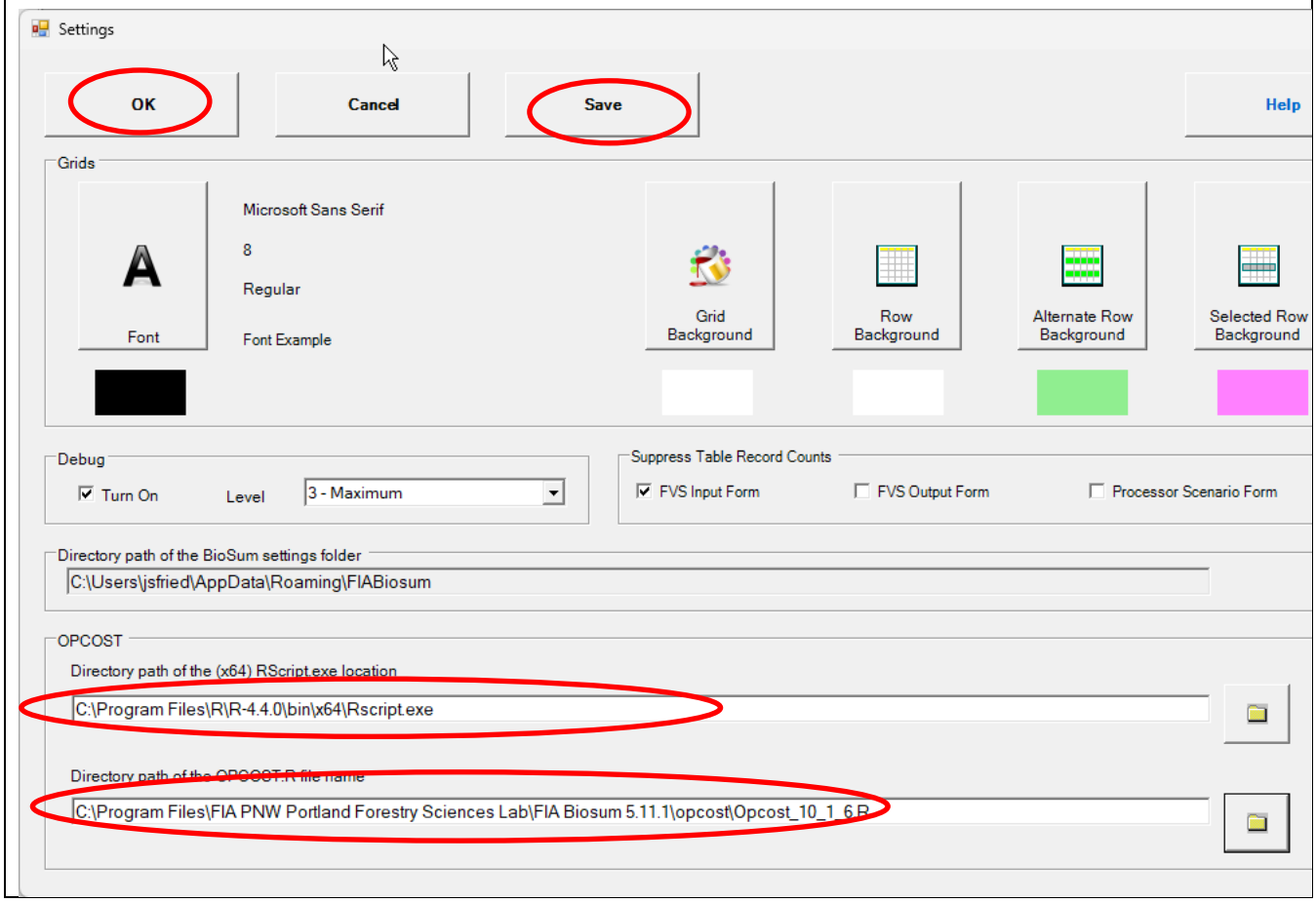
18. If running Access 2016, Office 365 or any other version later than 2013, you will need to install the **Microsoft Access Database Engine 2016 64-bit Redistributable**. This can be downloaded via https://www.microsoft.com/en-us/download/details.aspx?id=54920, and must be installed with admin privileges. Forest service users may find this component in the Software Center, but if not, will need to have the Customer Help Desk perform this install remotely, as admin.

Start BioSum Manager and select the Settings menu

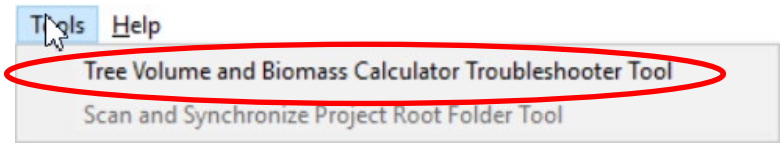


19. Navigate to the directory containing Rscript.exe on your computer. Be sure to select the 64 bit version of Rscript, which is stored in the x64 folder within your R version bin folder. Also navigate to and select the OpCost script file (10_1_6.R as of this version of BioSum); it can be found in the C:\Program

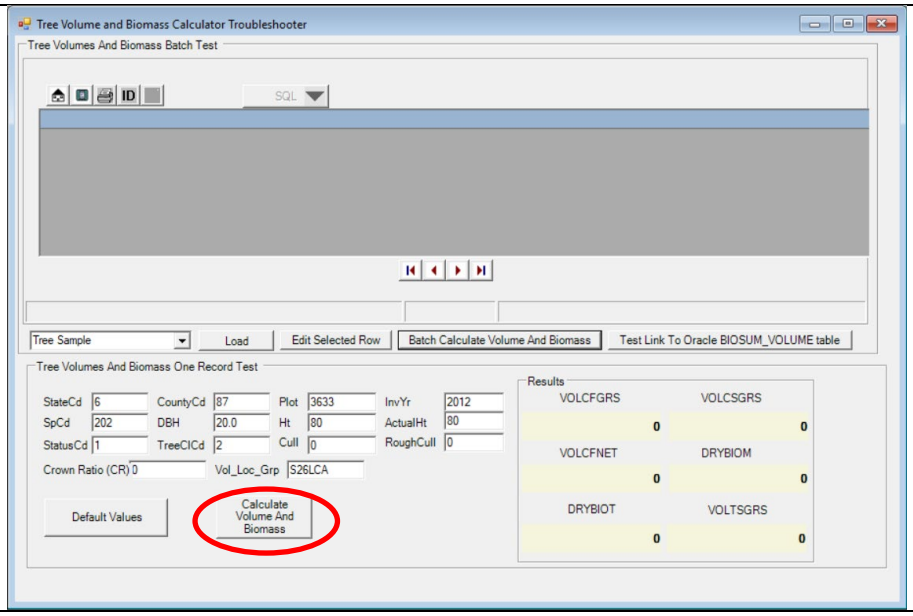
Files\FIA PNW Portland Forestry Sciences Lab\FIA Biosum 5.11.1\opcost\ folder. Then click <Save> to save these choices, then <OK> to close the Settings window.



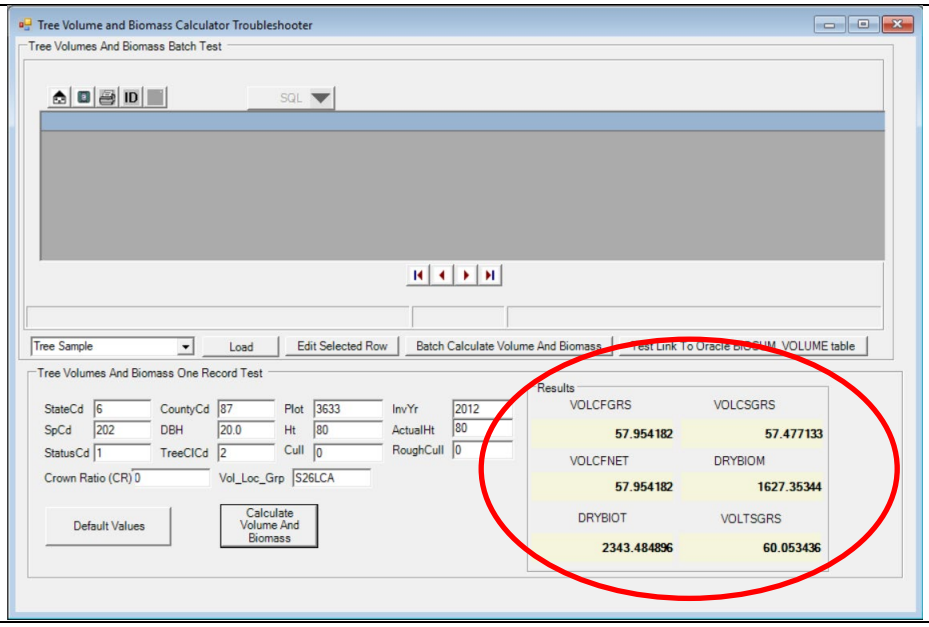
20. Start the BioSum Troubleshooter tool



21. Click the <Calculate Volume and Biomass> button



22. If numbers show up in the results table, typically after 10 to 20 seconds, all is well with the Java installation. The tool can be closed by clicking the close (x) button in the upper right corner of the dialog. If errors or no results, the Java installation issue needs resolution before BioSum can operate correctly.



Appendix 1: Troubleshooting the Java installation

1. **IMPORTANT**!: Forest service users should run the Java Update from the Software Center to ensure that the Java client on their computer is current (JDK 1.8 or Java 8). External users need to install Java 1.8 or higher. This is essential for BioSum to calculate volume and biomass of the trees in the inventory sample that are the basis of management simulations.

2. The first time BioSum runs, it copies these 4 files to the %APPDATA% directory:

   a) **BioSumComps.jar,**

   b) **BiosumSpeciesConfig.db,**

   c) **fcs_tree.db, and**

   d) **fcs_tree_calc.bat.**

3. To test the functioning of the Java client, open a cmd window and type:
   ```
   JAVA -jar "%APPDATA%"/FIABiosum/BiosumComps.jar -v
   ```

   If all is well, you'll see a response like:
   ```
   Biosum FICS Client version 0.3.04
   ```

4. If all is not well, check to make sure that the 4 files mentioned in step 2 are in the %APPDATA% directory. To verify the location of the %APPDATA% directory, start BioSum and click on the 'Settings' menu item at the top of the BioSum to review the path to the BioSum settings folder. If any of these files are missing, they can be copied from C:\Program Files\FIA PNW Portland Forestry Sciences Lab\FIA Biosum 5.9.0\fcs (after installing the BioSum 5.9.0 msi). Once these files are in place, return to step 3 again.

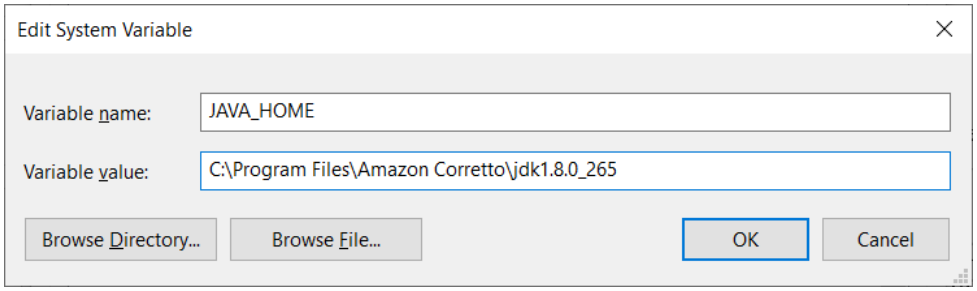
5. If all is still not well, there may be a problem with your Java installation. Open a cmd window and type:
   ```
   JAVA – version
   ```

   If all is well, you'll see a response like:
   ```
   openjdk version "1.8.0_265"
   OpenJDK Runtime Environment Corretto-8.265.01.1 (build 1.8.0_265-b01)
   OpenJDK 64-Bit Server VM Corretto-8.265.01.1 (build 25.265-b01, mixed mode)
   ```

6. If all is still not well, try reinstalling Java. Note that the computer should be restarted after reinstalling Java so that the environment variables can be updated. Return again to step 3 to see if the problem is resolved.

7. If you believe your Java installation is good, but BioSum is still having trouble running the Tree Troubleshooter, try setting your JAVA_HOME environment variable to your Java bin directory:
   - Run a command prompt (CMD.EXE) with admin access
   - Type sysdm.cpl <Enter>

- Click the <Advanced> tab
- Click the button <Environment Variables>
- Find or create the JAVA_HOME variable in the bottom 'System' list
- See an example of a JAVA_HOME entry below



Restart your computer after saving the JAVA_HOME variable and try running the Tree Troubleshooter again. The test from step 3 does not recognize the JAVA_HOME variable.

8. If multiple users share a computer, this troubleshooting may need to be completed by each user.

Appendix 2: Installing FIA BioSum on a Virtual Machine (VM)

While BioSum has been run by some users on virtual machines, we don't recommend this approach, and do not commit to supporting it, as it increase the complexity of the software environment and can make it more difficult to troubleshoot issues that arise (the developers do not have virtual environments to test in and the BioSum development project does not have the resources to fully support users who attempt this).

In our attempts to support those who despite these challenges attempt to run BioSum in a virtual machine (e.g., on a Mac), here are some helpful tips:

1. Make sure Java runtime 8 or later is installed. See Appendix 1 for troubleshooting a Java installation.

2. Simplify your ODBC environment by installing ONLY the 64-bit SQLite driver

3. File permissions can be an issue when BioSum tries to connect to existing SQLite databases because Windows has one way of managing these and your VM may have another. It is best practice to install BioSum as the same user who will be using the program, NOT as admin. Also, the Access DB engine and SQLite driver may need to be installed by the same user who will be using BioSum.