

MASTtreedist 1.0

User Manual

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MASTreedist Installation Instructions:

1) Download and install Mesquite1.01 class files (Mesquite1.01 is compatible with Tree Set Viz 2.1:treecomp-classfile-022004.tar)from this link:

<http://mesquiteproject.org/mesquite1.01/mesquite/download/download.html>

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The packages here include the base system and several specialized packages (parsimony, likelihood, simulations, multivariate analysis, coalescence). There are example data files. Please see the comments on the page about [publishing results](#) from Mesquite. Please email us (info@mesquiteproject.org) with questions or comments about downloading and installing Mesquite. Mesquite requires Java 1.1 or higher; see installation instructions for details.

Macintosh OS

- [installation instructions](#)
- [.dmg \(Disk image\) file \(this may not work on versions of the Mac OS prior to OS X\)](#)
- [.sit \(Stuffit\) file](#)

Windows

- [installation instructions](#)
- [installer](#)
- [.zip file](#)

UNIX/LINUX

- [installation instructions](#)
- [.tgz file](#)

The Mesquite manual is included in the downloads below, as html pages. The manual can also be downloaded as a single [pdf file](#), which can be more conveniently printed.

2) Download and install the Tree Set Viz module (treecomp-classfile-022004.tar). This is correspondent class files available along with the source code (treecomp-source2.1.tar.gz). The treecompsource2.1.tar.gz is the most current source code available from the website:

http://comet.lehman.cuny.edu/treeviz/treeviz_unix.html

← → ↻ comet.lehman.cuny.edu/treeviz/treeviz_unix.html EN English (United States) ? Help

```
jre -cp /home/wmaddisn/Mesquite_Folder mesquite.Mesquite
```

On some systems the java virtual machine is started by "java" instead of "jre", and thus the command would be:

```
java -cp /home/wmaddisn/Mesquite_Folder mesquite.Mesquite
```

By executing this shell script, I get Mesquite running. A dialog box commenting that Mesquite is still in beta stage will appear, then a window with the File menu to open a file.

If the current user directory is not the Mesquite_Folder, and Mesquite has not been run before, Mesquite may ask you to find the file "manual.htm" directory. This will help Mesquite find and remember where its files are.

Window Managers

Mesquite attempts to place windows in particular places on the screen for ease of use, using standard Java calls. Some window managers overri need to change your window manager if this sort of thing is happening.

Tree Set Visualization

Step 1: Click on this button to download the treecomp module. Save this file to your computer.

treecomp-classfiles.tar.gz

Step 2:Decompress this file and take the resultant folder "treecomp", which contains the Mesquite package and place it in the Mesquite director

Step 3:For the source files, click this button. You can put the source anywhere, but it might be more convenient to put it in a new folder and save source-2.0.tar.gz directory.

treecomp-source-2.1.tar.gz

- *Mesquite* - © W. Maddison & D. Maddison 2002-2003
- *Tree Set Visualization Module* - Center for Computational Biology and Bioinformatics, University of Texas at Austin; and Math CUNY

- 3) Create a folder “treecomp” under the Mesquite program folder “Mesquite_Folder/mesquite” and put treecomp class file there.
- 4) Thirdly, create a folder named “MAST” under “treecomp”, and put all the class files of MASTtreedist into “MAST”.

Run the Mesquite program using the following command line in Windows or Linux

Windows:

```
java -cp C:\hong\Mesquite_folder mesquite.Mesquite
```

Linux:

```
java -cp ~hong/Mesquite_folder mesquite.Mesquite
```

If want to compile MAST.java, run the following command line in Windows or Linux (the MAST.java shall reside in the proper folder with Mesquite and Tree Set Viz files):

Windows:

```
javac -cp C:\hong\Mesquite_folder mesquite/treecomp/MAST/MAST.java
```

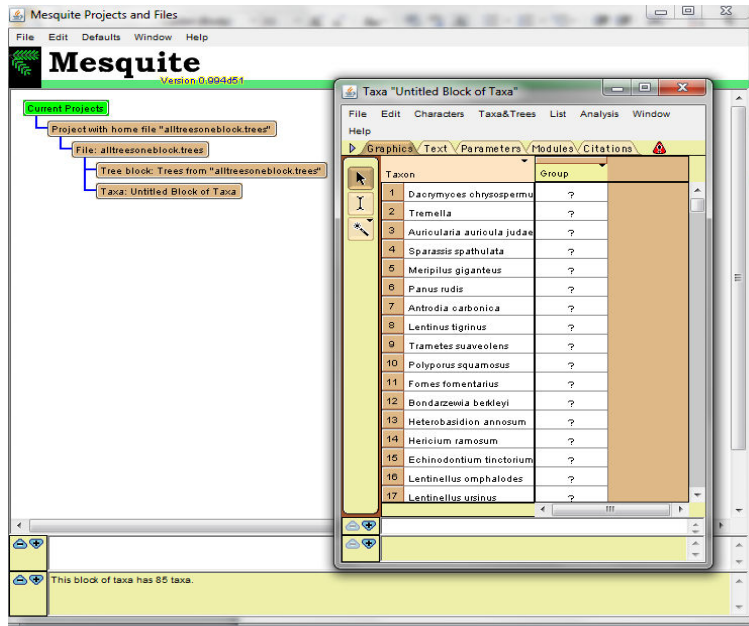
Linux:

```
javac -cp ~hong/Mesquite_folder mesquite/treecomp/MAST/MAST.java
```

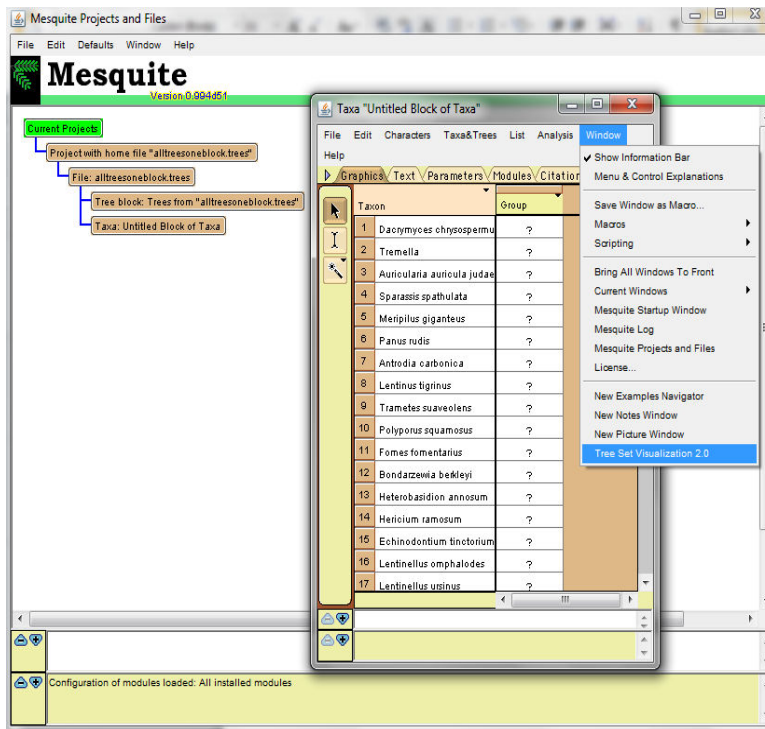
How to run the program:

When Mesquite is reopened and a file is loaded, the Tree Set Visualization module should be accessible with the following steps:

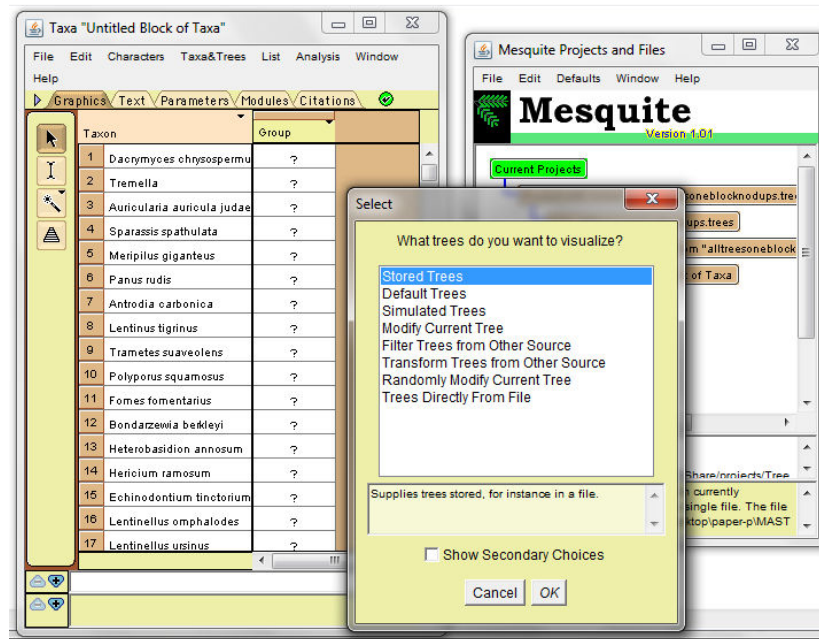
- 1) Open a file (using the file “alltreesoneblocknodups.trees” from Hibbett data as an example) in Mesquite, then click on “Taxa: Untitled Block of Taxa”.



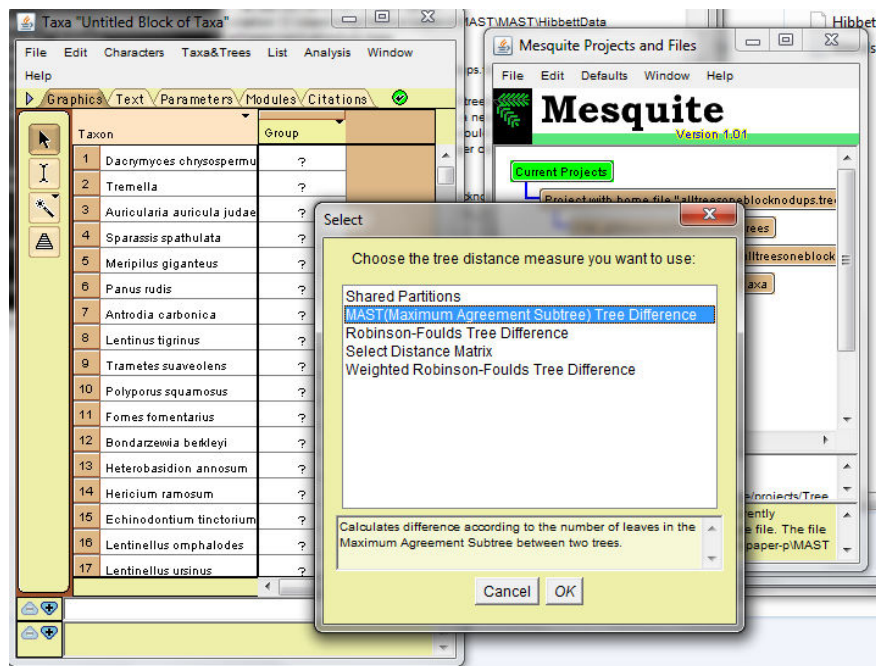
2) Select "Window", and the pop-up window of the "Tree Set Visualization 2.0"



3) Select “Stored Trees” then click “OK”

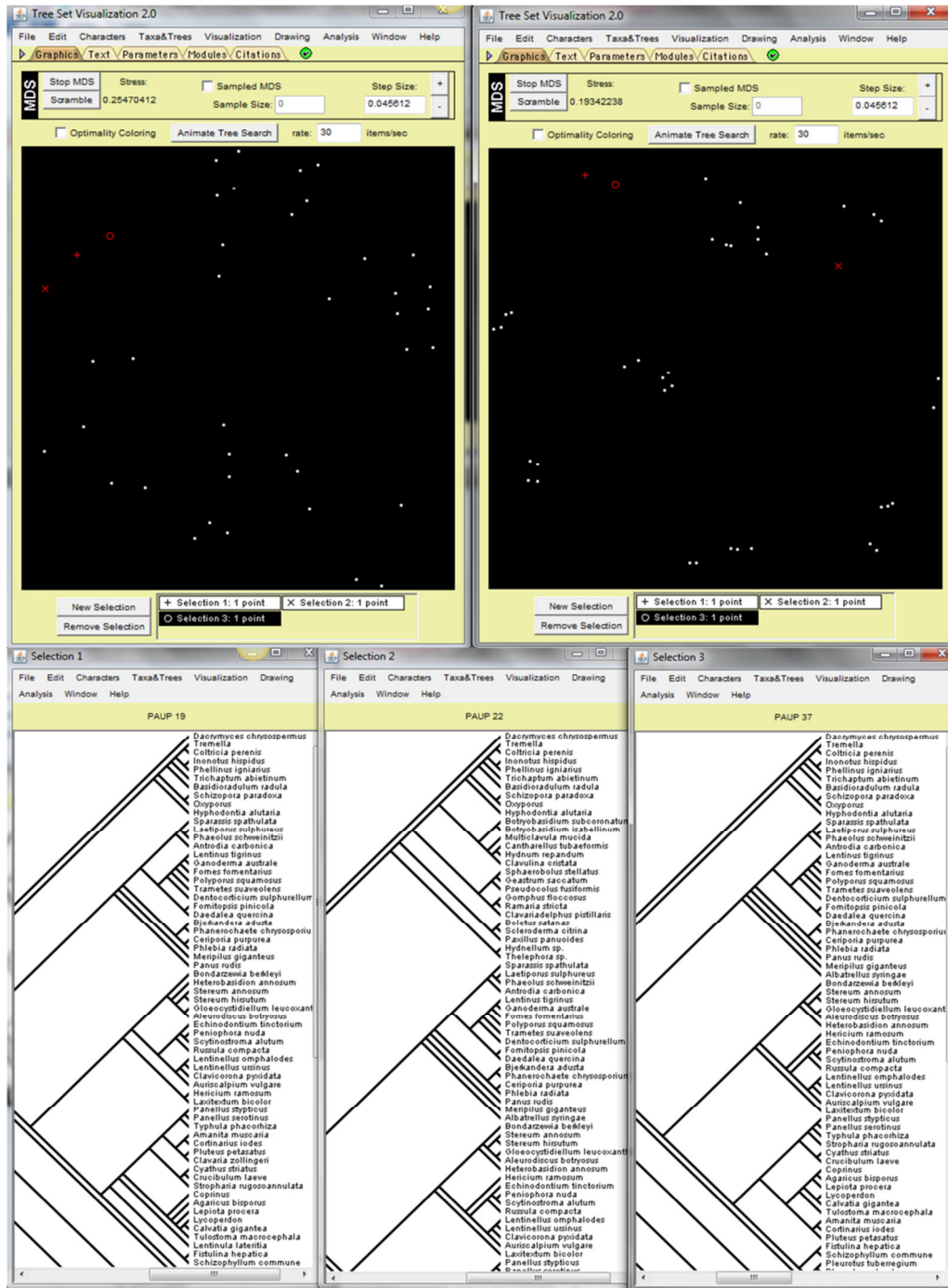


4) Select the pop-up window for the “MAST(Maximum Agreement Subtree) tree Difference” .



Case studies

- 1) Figure 1: using “alltreesoneblocknodups.trees” from Hibbett data as input file, “MAST” (left) metric differentiate the structure of three trees, highlighted as tree 19 (+), tree 22(x), and 37 (o), and tree 19 and 37 are close to each other. However, Robinson-Fouods (right) could not differentiate their relationships.



- 2) Figure 2: using “example_scissor.nexus” as input file, “MAST” (left), show distinct patterns(e.g., “cissor” “mushroom”, “Key west archipelago” for the trees, where Robinson-Foulds (right) could not.

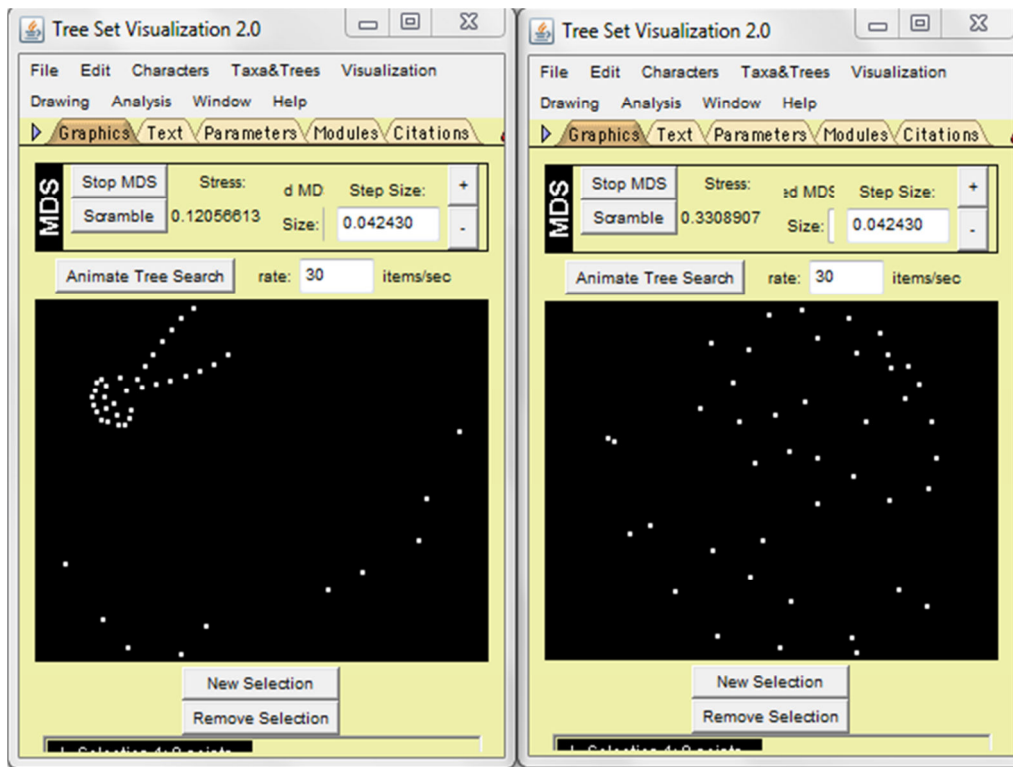


Figure 3: Selected trees cladograms for “Key west archipelago” shape cluster using “MAST” metric

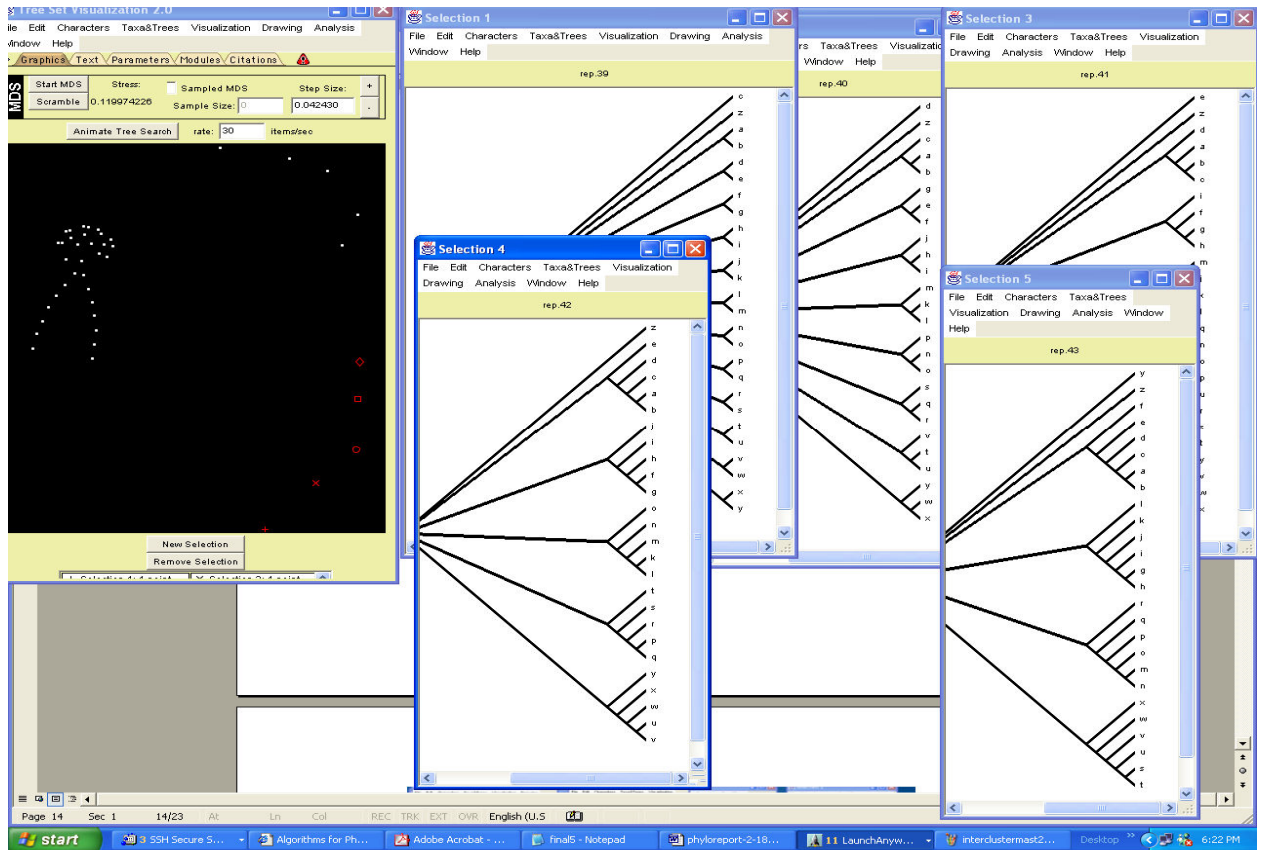


Figure 4: selected trees cladograms in “Scissor” shape cluster using “MAST” metric

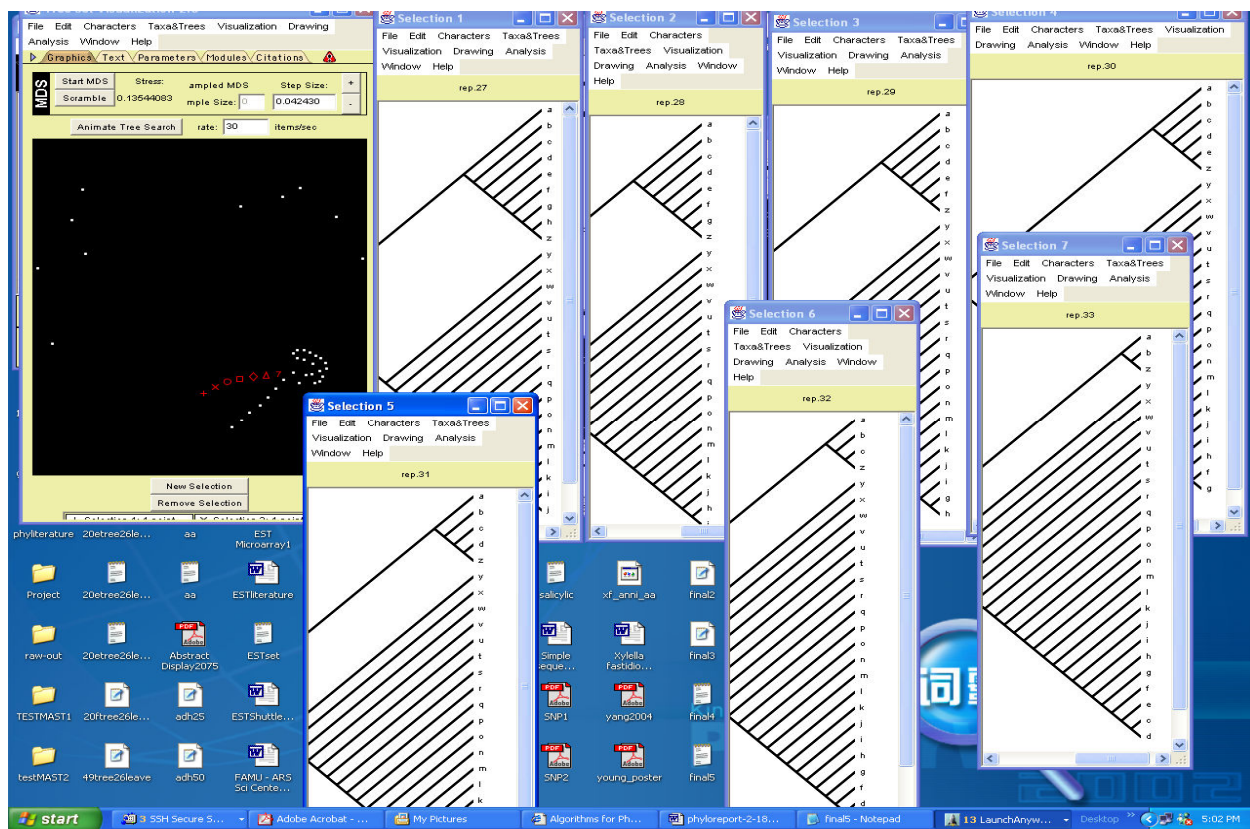


Figure 5. Selected trees for closest and farthest pair of trees cladograms in “Scissor” shape cluster using “MAST” metric

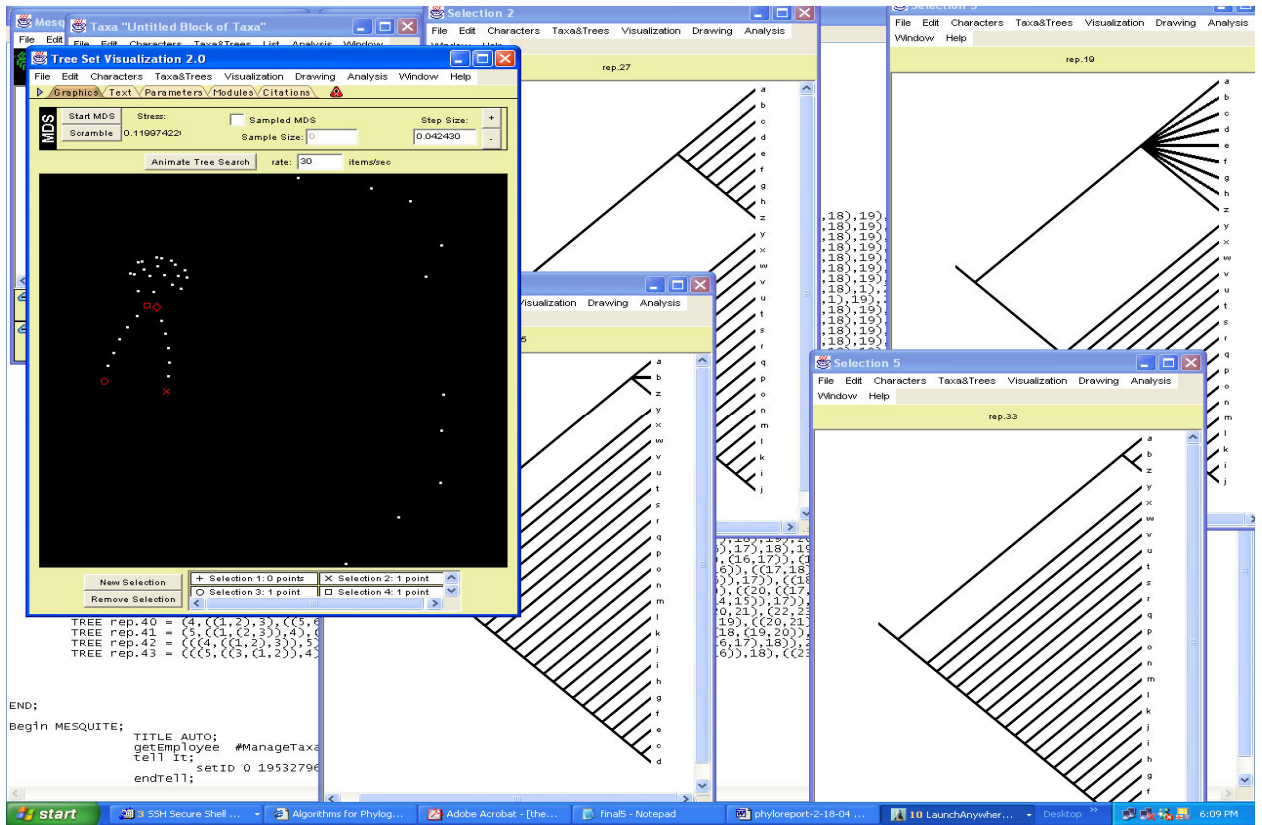


Figure 6. Selected trees for trees cladograms in “Mushroom head” shape cluster using “MAST” metric

