MASTtreedist 1.0

User Manual

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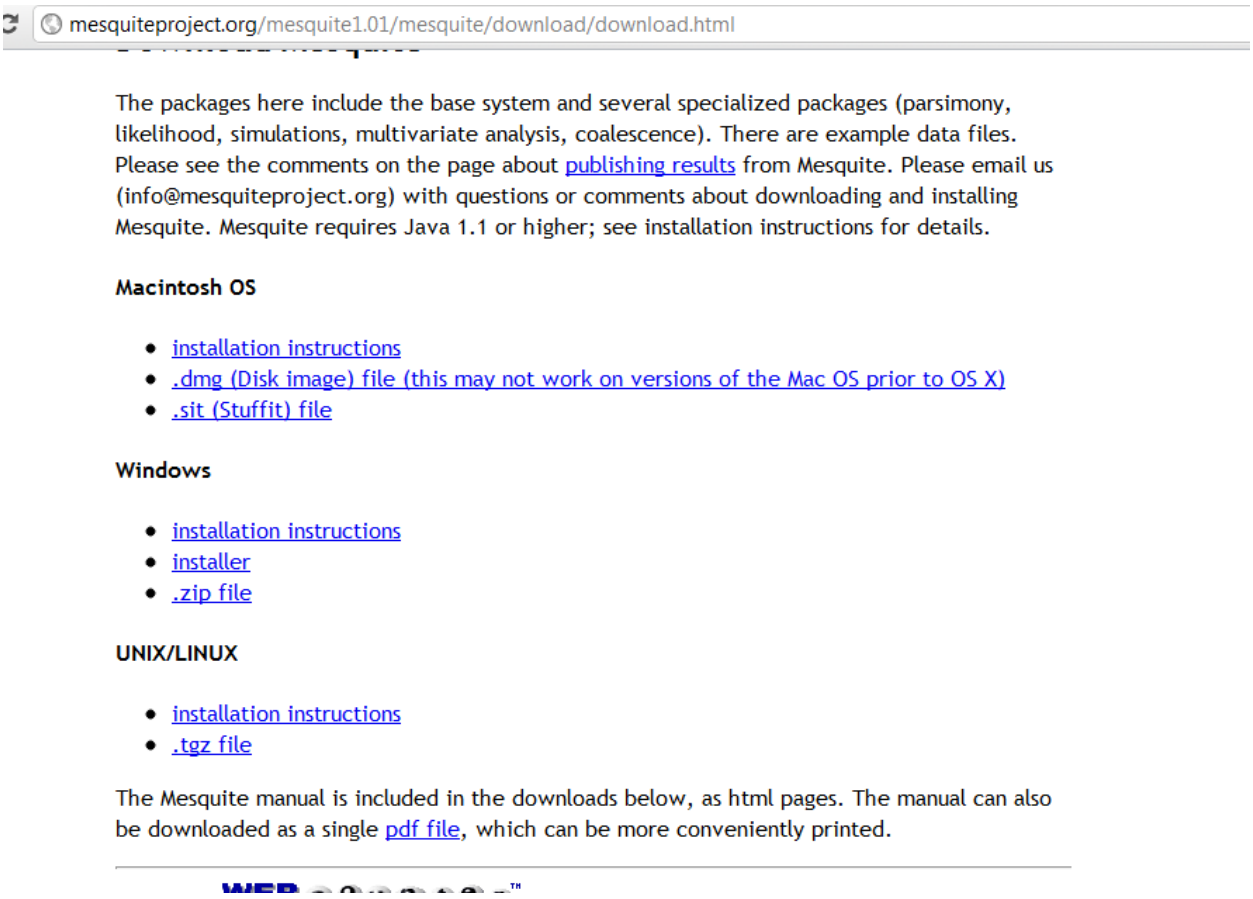
MASTtreedist Installation Instructions:

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



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

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\Mequite_folder mesquite.Mesquite

Linux:

java -cp ~hong/Mequite_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

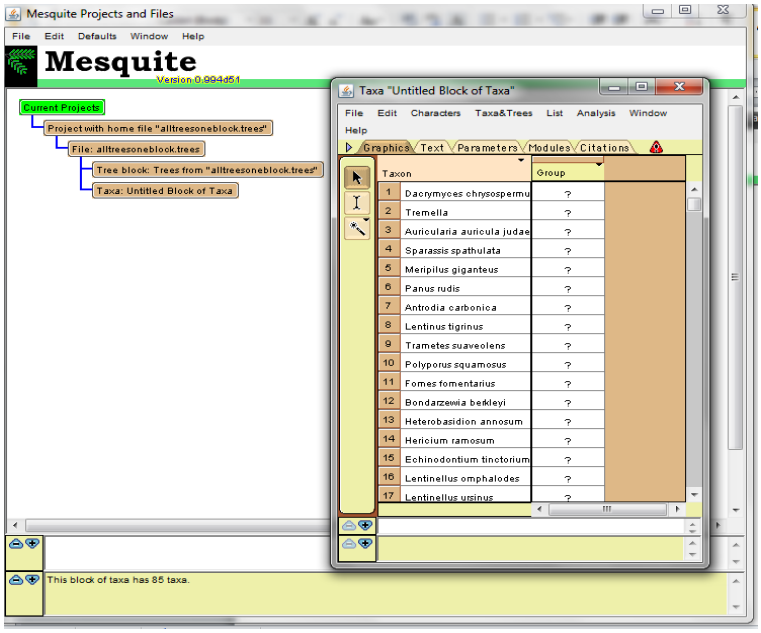
Linux:

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

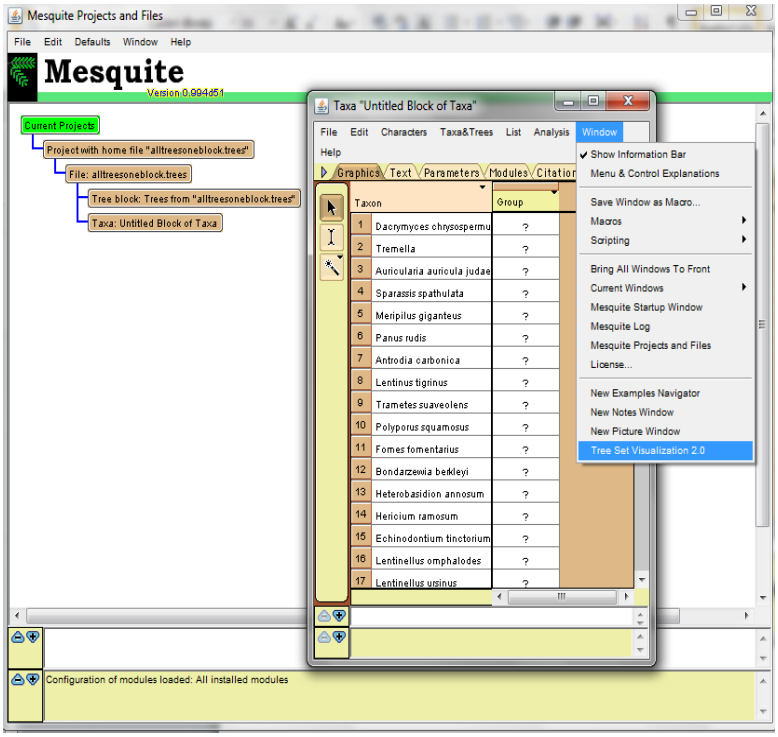
How to run the program:

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

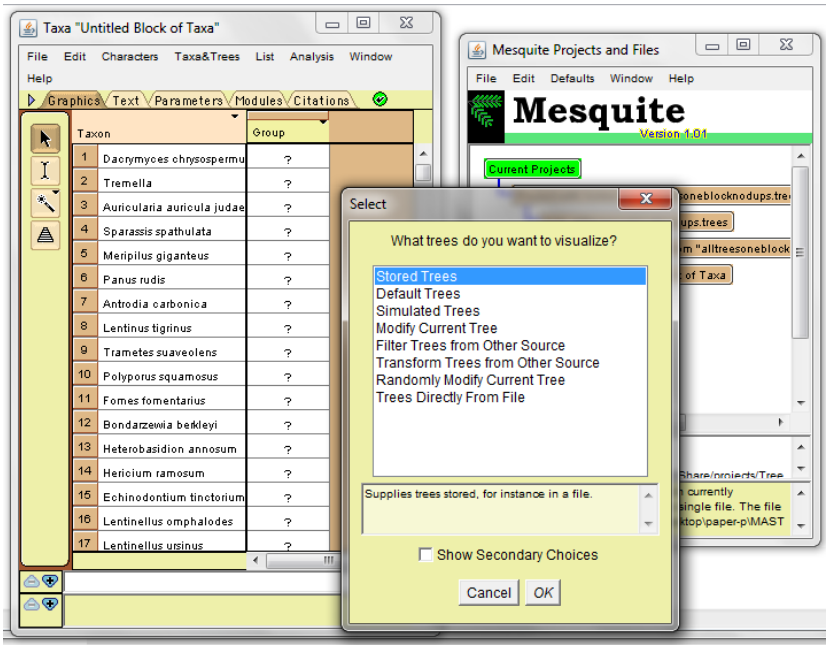
1) Open a file (using the file "alltreesoneblocknodups.trees" from Hibbett data as an example) in Mesquite, then click on "Taxa: Untitled Block of Taxa".



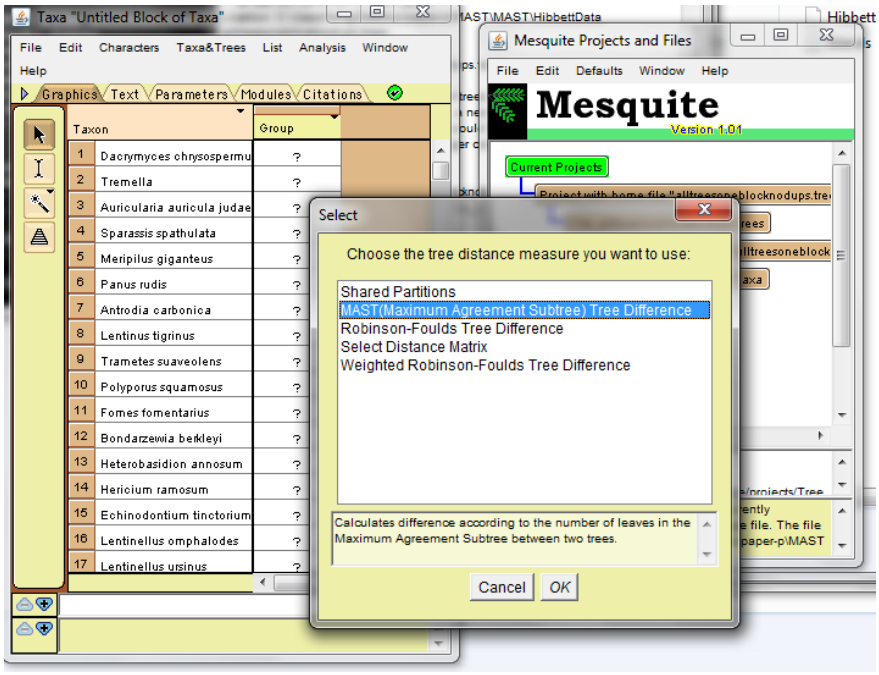
2) Select “Window”, and the pop-up window of the “Tree Set Visualization 2.0”



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

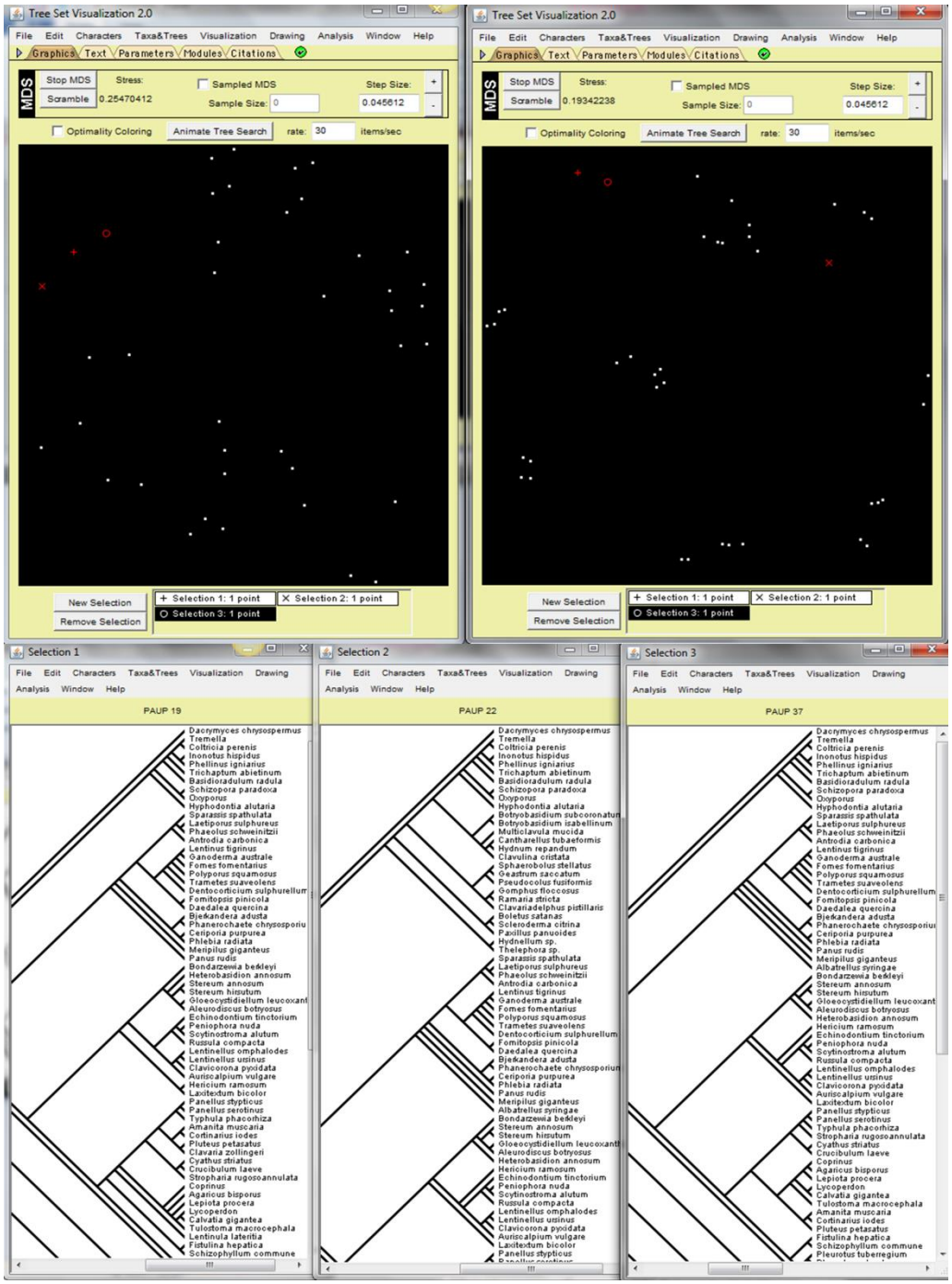


4) Select the pop-up window for the “MAST(Maximum Agreement Subtree) tree Difference” .



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 (○), and tree 19 and 37 are close each other. However, Robinson-Fouds (right) could not differentiate their relationships.



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

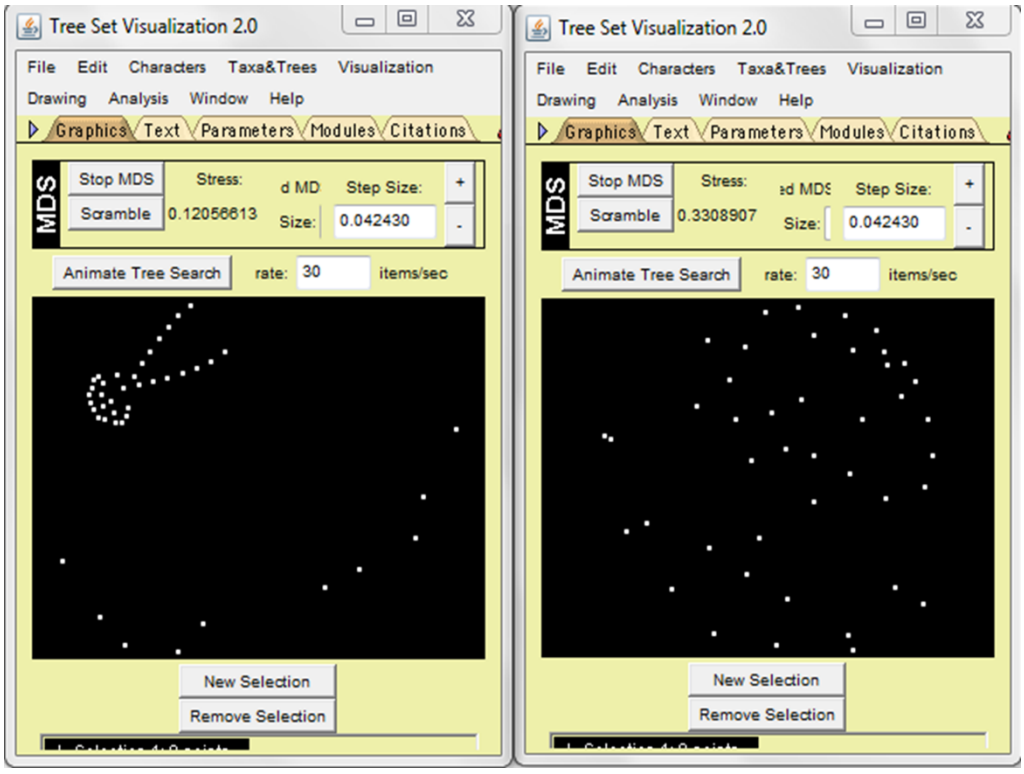


Figure 3: Selected trees cladograms from the “ Key west archipelago” cluster using “MAST”.

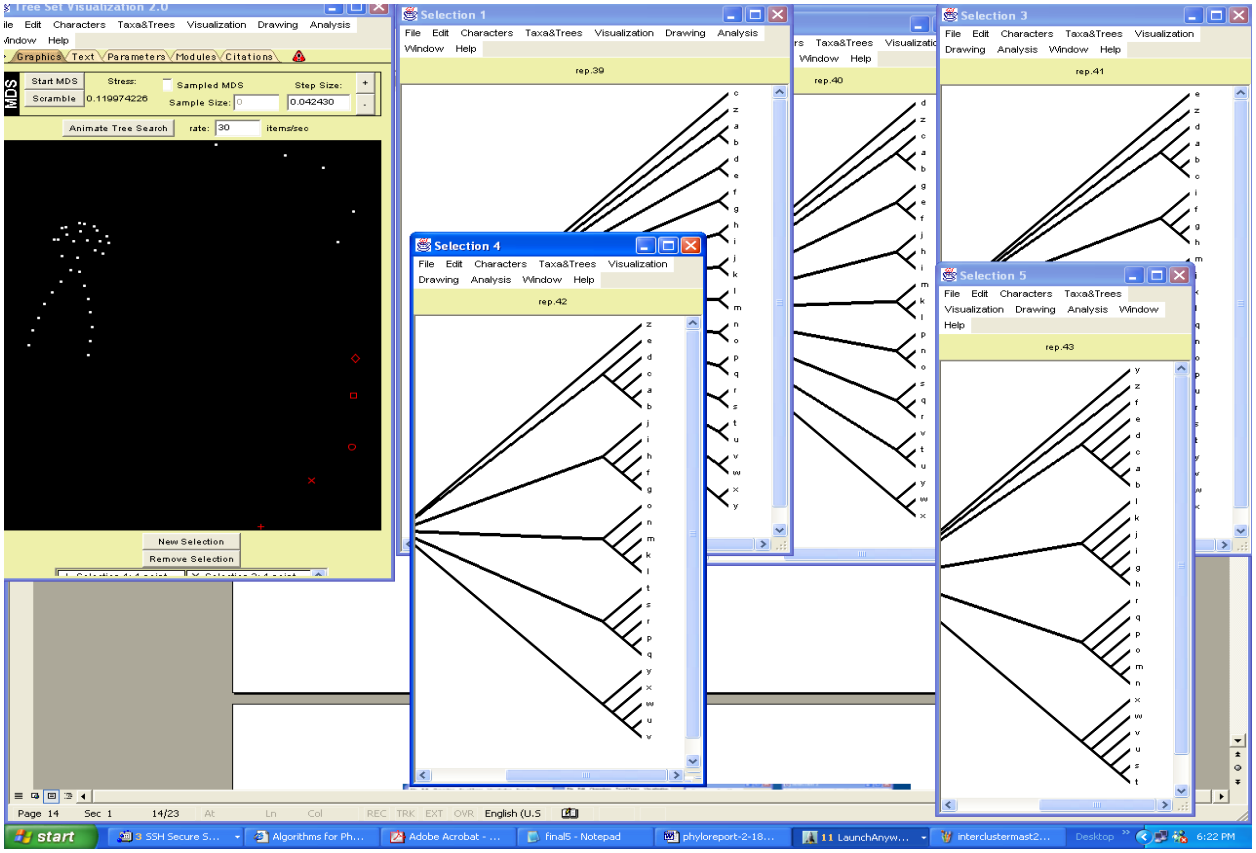


Figure 4: Selected trees cladograms from the “Scissor” cluster using “MAST”.

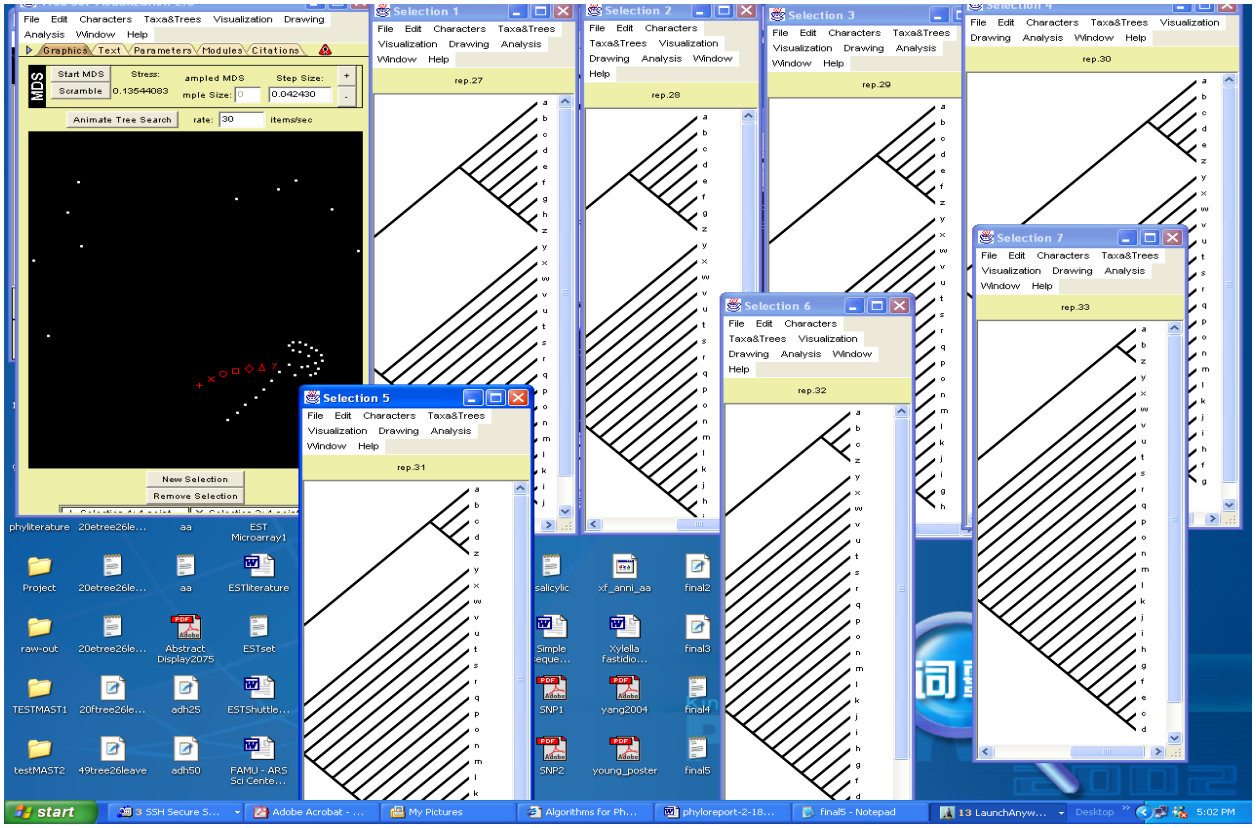


Figure 5. Selected trees for closest and farthest pair of trees cladograms in “Scissor” shape cluster using “MAST” metric

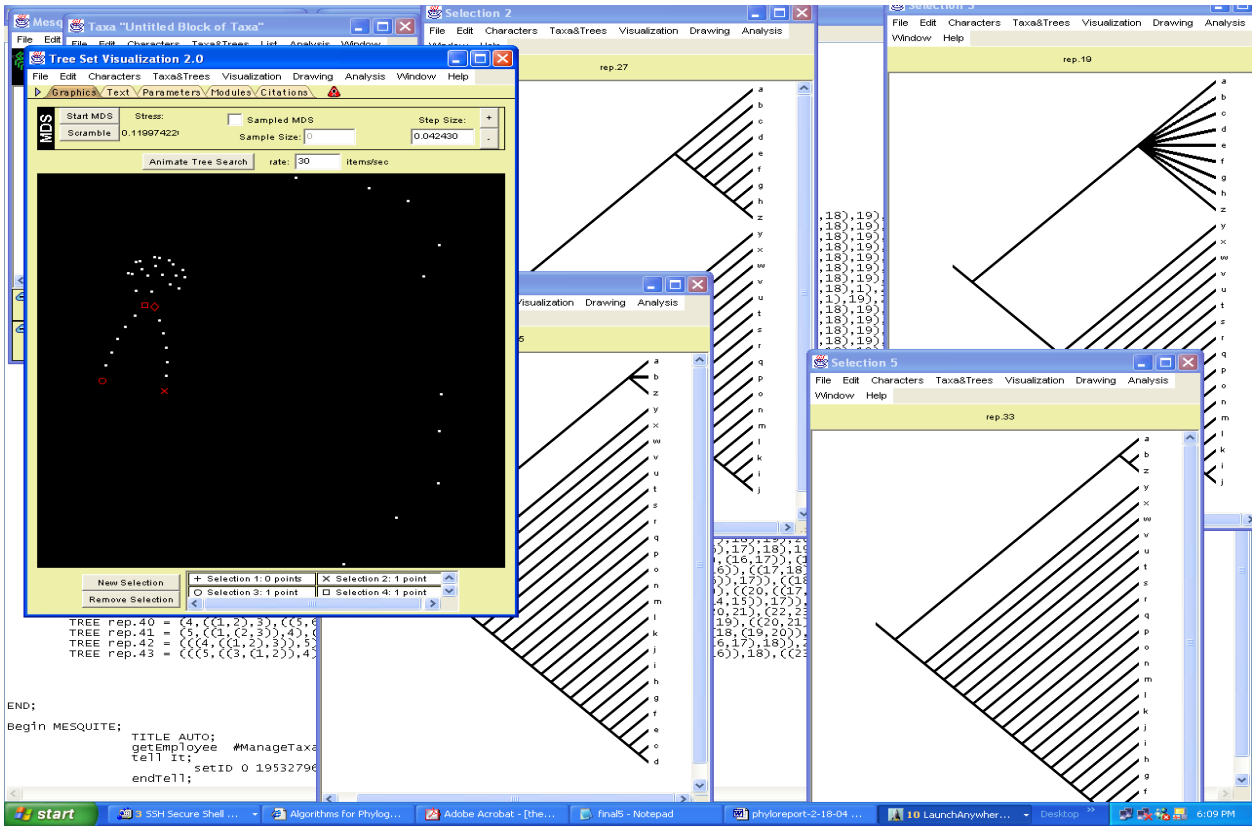


Figure 6. Selected trees for trees cladograms in “Mushroom head” shape cluster using “MAST” metric