**Using IMAGEJ to Digitize Plot Maps**

1. Open the ImageJ application and then open the specific JPEG map file that will be digitized and ultimately recorded as a text file. Two possible naming conventions for JPEG map files are as follows:
e.g. **“Q0312.jpg”** or **“Map\_0503\_2.jpg”**This denotes the quadrat number and in the second case, the specific subquad. These examples follow the standard naming convention for how the text file should be saved.
 e.g. **“Q0312.jpg”** or **“Map\_0503\_2.txt”**This text file may be saved in the following directory:
 **“C:\Maps\Column\_05\Quadrat\_0503”**

 or

 **“C:\Maps\Column\_05”**

1. Once the JPEG image is open in ImageJ, the “PointPicker” menu option must be selected as follows:
 **Plugins → pointpicker3 → PointPicker**
2. Select the “Add crosses” button  (the very first option with the plus sign) to add points to the four corners of the map, and also to add points over the very center of all drawn in tagged stems.
**Before any points (crosses) are added**, it is highly recommended that the original paper copy of the hand-drawn map be examined alongside the corresponding datasheet to make sure all stems are actually mapped for the specific subquad, and that all tag numbers correspond

When adding crosses, the four corners of the subquad map should be done first in the following order and labeled as follows:
 **“p1” = lower left
 “p2” = upper left**

**“p3” = upper right**

**“p4” = lower right**

1. It is then suggested that crosses be added using the six digit tag number (e.g. **“050798”**) to all the tagged stems in sequential order with out-of-sequence tags done at the very end. Another approach would be to finish one subquadrat at a time, making sure to digitize all the stems from that subquadrat. Check the Results list after all crosses have been added to the map image. If there is a case where only one dot is drawn in for a group of multiple stems, it is suggested that crosses be added to the main stem tag (the drawn dot) *and* the non-represented stems around the dot to account for the multiple stem tags. The “Magnifying glass” feature  may be used to zoom in to areas of the map where stem dots or tag numbers appear small at the original magnification, or where many dots are clustered close together. Added cross values may be edited using the “Edit labels” button  (the second icon with a plus sign), and crosses may be deleted using the “Remove crosses” button .
2. Once all crosses have been added, check over the map image to ensure that every drawn-in tagged stem has an added cross to it. If any crosses added appear off center with the drawn in dot, the crosses may be adjusted using the “Move crosses” button .
Next, the Results list should be reviewed to ensure that all four corners and all the tagged stems have crosses associated with each, and that all added crosses are labeled correctly. The Results list is accessed by clicking the “Export/Import list of points” button  and then clicking on the “Show” option.
3. When everything is verified as being correct for the now digitized qudrat or subquad map, a text file containing the list of points and corresponding x/y coordinates needs to be saved into the proper directory:
 e.g. **“C:\Maps\Column\_09”**using the proper file naming convention:
 e.g. **“Map\_0914\_1.txt”**The text file may be saved by clicking the “Export/Import list of points” button  and then clicking the “Save as” option.
4. Following completion of the digitized subquad map, the image must be closed to open up the next subquad map image in one of two ways:
**a)**  Click on the “Exit PointPicker” button , then click the “Done” option to exit the “PointPicker” feature which will remove all added crosses from the map image and return to the original ImageJ configuration. Then close the map image. Now the next map image may be opened.
or,
**b)** Simply close the ImageJ application all together and then reopen the application to completely reset it for the next map image.
5. If a completed digitized map needs to be reopened to refer to placement of crosses on the map image or the Results list; simply open the specific subquad map image in ImageJ, select the “PointPicker” menu option, click on the “Export/Import list of points” button , and then click the “Open” option to open the text file that corresponds with the matching subquad map image. All added crosses should appear in correct placement over the map image and the Results list should then be able to be accessed following the same procedure outlined in step 5.