SOP 21: Digitizing slides with flatbed scanner

Andrew R. Deans and Laura Porturas
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Preamble

The purpose of this SOP is to describe the process by which we scan microscope slides for the purpose of digitizing them. This protocol is adapted from the Illinois Natural History Survey's method: https://www.idigbio.org/content/slide-scanning-protocol

Procedure

1. Prepare your imaging station
    a. Sign into the computer
    b. Turn scanner on
    c. You have Kimwipes, DI water, a roll of adhesive catalog numbers, fine-tipped forceps, Scotch positionable mounting adhesive, an extra slide cabinet tray, your slide placement film, image registration items, and metadata labels
2. On the computer, open Preview (in applications in Finder)
    a. Select "File" => "Import from Epson Perfection V600" and a new window will pop up
    b. Check the settings, which should be as follows: Colors = Millions; Resolution = 600 dpi; Format = TIFF; Unsharp Mask = Medium
3. Retrieve slides from the collection room, or ask the collection manager to retrieve slides from the collection room. It's best to start with one tray at a time from the slide cabinet or a couple slide boxes from the shelf
4. Prepare slides for scanning:
    a. Use the kimwipe and DI water to clean areas on the slide where you will attach PSUC_FEM catalog numbers if it looks dirty. Clean all sides on tray before moving to next step
    b. With forceps, pull a PSUC_FEM catalog number label off of roll and place onto slide. Make sure the number is oriented horizontally if at all possible and is primarily on the glass
    c. After applying catalog numbers to 18 slides, move them to the scanner upside down. Important! Organize the slides so that the catalog numbers are sequential (Figure 1)

    ***Note*:** When deciding which slides to scan together consider that *downstream processes will be much easier if the slides are the same*. For example, if all slides are of the same

species and/or the same collecting event further digitization will be trivial. A hodgepodge of species and collecting events requires more human processing downstream.

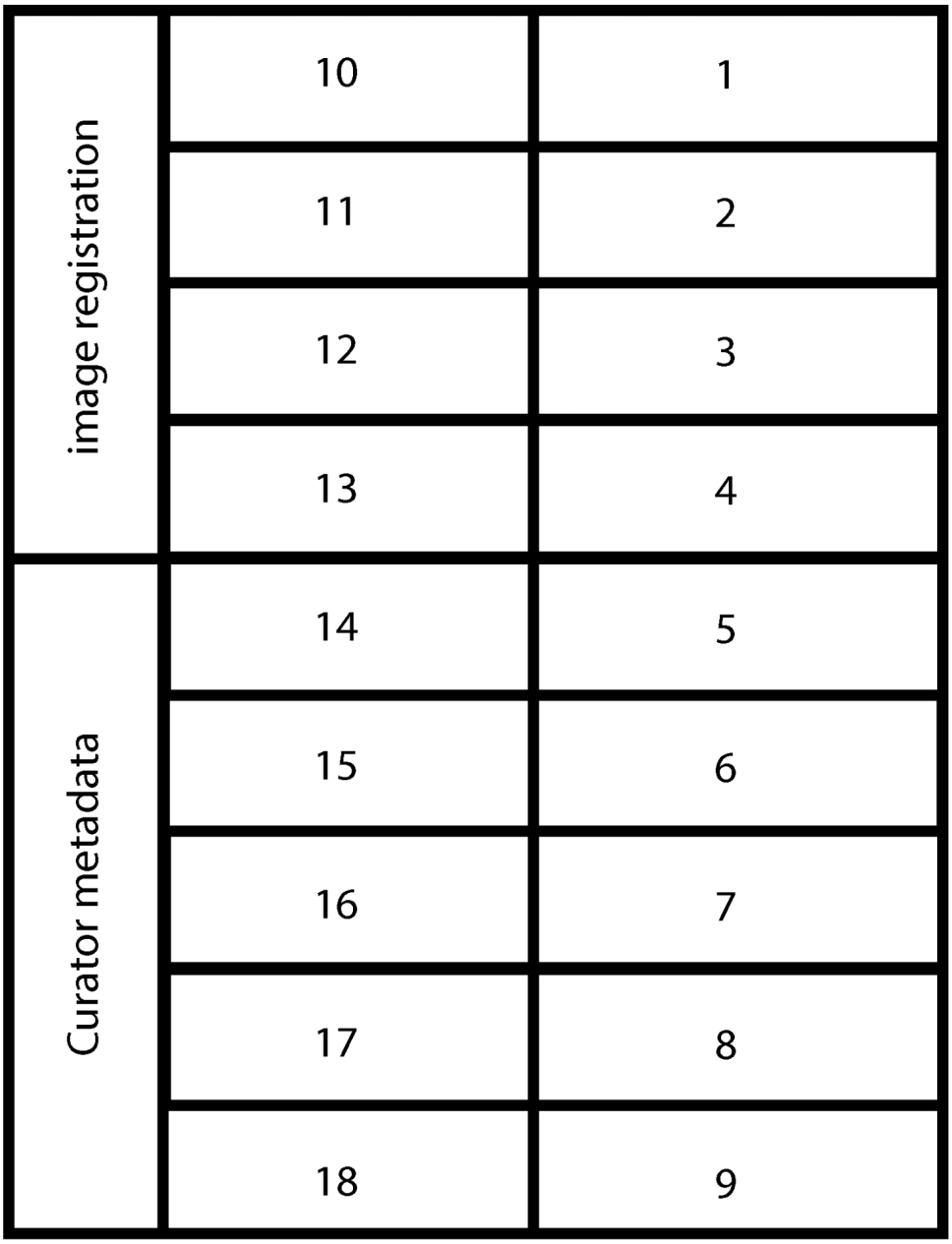
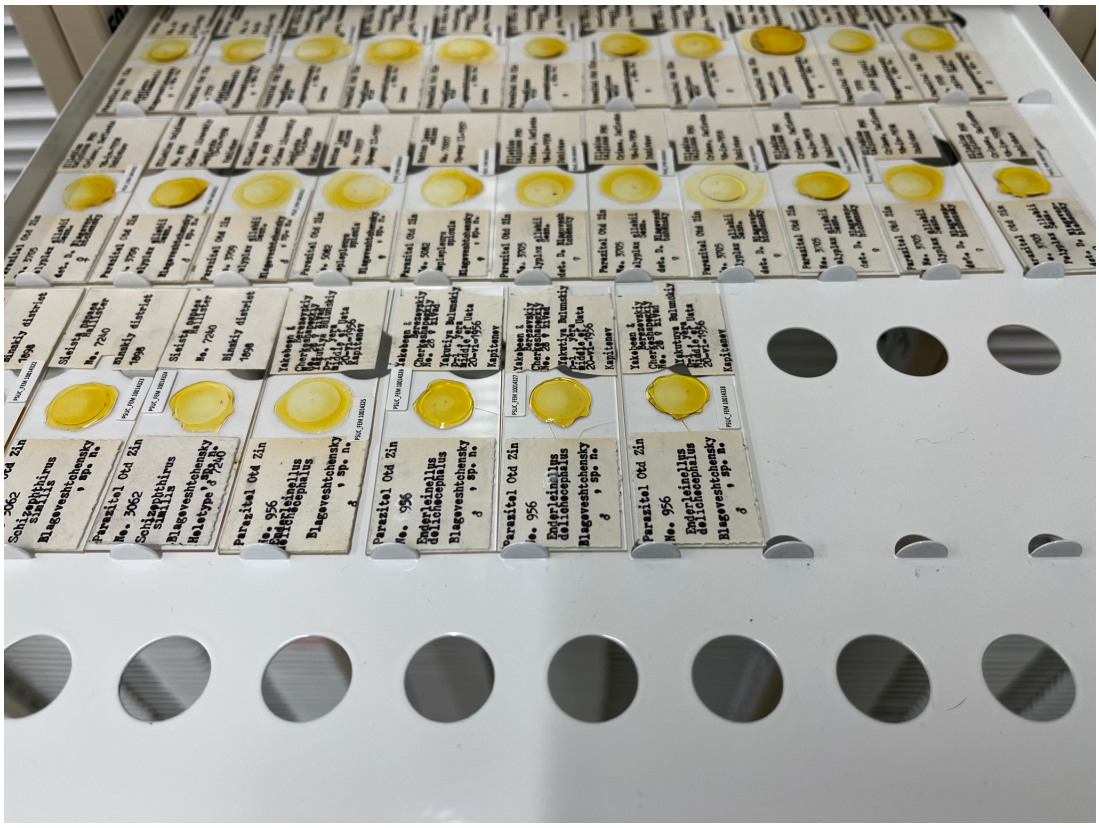


Figure 1. Bird's eye view of slides on the scanner. Slide number corresponds to order of catalog numbers. All components, including metadata and image registration elements (color standard, scale bar) must be upside down on the scanner!

5. Fix metadata label and Image registration items in place (upside down) with tape so they don't shift between scans

6. In the Preview window, click on ‘Overview’ to see what will be scanned. Reduce the size of the selected rectangle to include only the Image metadata, Image registration, and imaged slides.
7. Click ‘Scan’ to scan the slides, and save the image in the folder on the Desktop and label the image with your last name and the date (e.g., “Smith4March2020_01”).
8. To remove slides, lift the scanner lid slowly, because sometimes the slides stick to the top of the scanner lid
9. Gently place scanned slides back onto the extra tray and ensure they are oriented as in the image below



10. Using lab tape and a sharpie, label the lip of the tray with what taxa are present on the tray. This will help us know what types of specimens are on this tray and will quicken the process of organizing them later on.

More notes and hints

- Consider scanning slides that represent a single species. If we only have one slide for each species that needs to be scanned consider scanning a batch for each genus
- Consider scanning sides that are all from the same collecting event if possible
- The more consistent we can make data across slides in a scan the more completely digitized they will be when uploaded