

PROTOCOL: Digital Archiving of Herbarium Voucher Specimens

(i) Equipment

- Epson Expression 10000 XL scanner
- Computer running EPSONScan (included with scanner), and Google Picasa (free at picasa.google.com)
- Portable hard drive with 20 GB minimum capacity, high-speed USB3 preferred
- 2x3" ColorChecker card (Cameratrac CT24-23-1063 or equivalent)
- 10 cm scale bar
- 1/2" thick soft foam sheet, cut in various sizes to compress and flatten vouchers

(ii) Voucher preparation and scanning

- Vouchers should be scanned in small batches to ensure they stay dry.
- Scanning area is maintained in low ambient light to increase scan image quality.
- Position ColorChecker and scale bar in the white space around the specimen, and adhere with double-sided tape. Where possible, place them along the bottom edge of the voucher next to the specimen label.
- Invert the voucher and position flush with the top and left edges of the scanner bed, with the top edge of the voucher to the right.
- Place foam pad on top of the voucher. If voucher is not flat, use additional foam pieced to depress bulges. For thick or irregular specimens, multiple smaller pieces can be used to achieve more uniform results.
- Preview in EPSONScan to adjust the scan area and to confirm alignment of ColorChecker and scale bar.
- Scan the voucher with the following settings:
 - Document Type: Reflective Image Type: 24-bit Color Resolution: 600 dpi
- Save image in uncompressed TIFF file format (.tif) to the portable hard drive. Image sizes may vary with the scan area and voucher dimensions: 11.5 x 16.5" vouchers yield 65 megapixel images at 184 MB each.

(iii) Image processing

- Images are processed for web publication in large groups at the end of each day.
- All image manipulation and processing can be done with Google Picasa.
- Rotate all images clockwise to restore original "portrait" orientation.
- Rename files to remove serial three-digit suffixes appended to file names by EPSONScan software.
- Export correctly-named and oriented images as compressed JPG (.jpg) files, resized to 3200 pixels.
- Compressed .jpg images may vary significantly in size, due to variations in compression ratio. Vouchers with more white space will yield smaller files. Most images are typically ~1.2 MB.
- Compressed images are ready for web publication.
- Original uncompressed files may be archived on a file server for high-resolution sample analysis.