

UNM Museum of Southwestern Biology - Herbarium Specimen Imaging Protocol

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Scrophulariaceae
HERBARIUM OF THE NEW YORK BOTANICAL GARDEN
PARATYPE
Castilleja kaibabensis N. Holmgren
ARIZONA, COCONINO CO.: Kaibab Plateau, 3.5
miles west of Ariz. 67, on 422D, 20 airline
miles south of Jacob Lake, T. 35 N., R. 2 E.,
Sec. 15. Elevation 9000 feet.
Common to frequent in meadow and borders of
aspen-spruce forest.
Inflorescence reddish.
Noel H. Holmgren 4668 August 6, 1970
Patricia K. Holmgren

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1. Introduction:

This is to serve as a guide for the imaging and archiving of plant specimens. This method is not cut and dry and many other places do it different ways. I put together this process by experimentation and research to gain the best results with the equipment we have. It is important to stay open and informed of processes being done elsewhere and some advances that they might have made. The imaging process has three main parts: capturing, computer editing, and archiving. Capturing is the actual process of taking the picture, as best as possible so lighting is key. Computer editing involves uploading the captured files onto the computer, filing them, naming them, and editing them with Adobe Photoshop to insure proper color balance and levels. Finally, the last step is to archive them on the server, this is the easier but more tedious step.

2. Equipment:

- Beseler Copy Stand
- Sony DSC-F717 Digital still camera 5 Megapixels
- Kodak color separation guide and gray scale
- 2 Lowell Tota lights with umbrellas and stands
- Foamcore – black and white
- Small Level (still in need of one)
- Small ruler – metric and standard

Set-Up:

1. Attach camera to copy stand, tripod mount is on lens of camera. Use level to make sure that camera is level in comparison with the copy stand base. You will want camera far enough away from the specimen so that there is minimal lens distortion, i usually put it up to about 24 inches.
2. Rotate camera body so that it is upside down but facing you. It takes a while to get used to using the camera like this.
3. Position black foamcore so that it is centered underneath the camera. Set-up the kodak color separation guide, grayscale, and ruler as it is in the first picture with the specimen. (this should already be done and should not need to be moved at all) It might help to place one or two pieces of masking tape underneath the foamcore so that it can be repositioned but does not move around a lot.
4. Plug in the lights and position them as close to the copy stand as possible without causing glare. You can usually check this by looking down at the grayscale from the camera. When there is glare you will see it in the darkest area of the scale. You also want the lighting set-up to be symmetrical so a measuring tape might be useful to position the lights in terms of distance from the camera lens and distance from table. See above picture to see an example.

Camera Settings:

Manual mode:

1. Press the menu button while you are in manual mode (the big M on the dial). You will want to set ISO to 100, Image Size to 2560 x 1920, P. Quality to Fine, Rec. Mode to TIFF (If you are imaging lots of files, not type specimens, you can set this to normal to save a bit of time and then you can also fit more

files on the memory card), Flash will not be used so Flash Level does not matter, P. Effect off, and Sharpness set to 0.

2. White balance. With the lights on, place the white foamcore on the copy stand and zoom in so that the entire frame is filled with white. On the side of the lens is a button that says WHT BAL, press the round button next to it and the screen should turn blue and then go back to white. This is to set what white actually looks like under these lights.
3. Exposure. Exposure should be 1/25th of a second at F 4.5. You can change this by using the black wheel by the shutter release to select and then turn it to change the setting. The computer editing is set-up at this exposure so if you change it then you will have to readjust it in Photoshop.
4. Capturing. After the camera is set-up and the image is in place. Use the zoom feature on the side of the lens to get as close in as possible to the specimen while not cutting off anything. (see front page picture) Make sure the macro focus is set (the little flower on the round arrow buttons) it will also display the flower on the screen in the upper right hand corner. Make sure the flash is off (press the little lightning button on the round arrow button). Before every picture you will want to select the timer button on the round arrow button. This is to make sure the camera is perfectly still when the picture is taken. It sets the camera to take a picture on a 10 second timer (an alternative to this would be to buy a shutter release cable). Finally, to focus the camera press the shutter release button down halfway, the camera will beep when it is in focus. Then you will fully depress the button and wait while the camera timer ticks down and the shot is taken.

Note: If you have any questions consult the camera manual, Advanced still image shooting, Manual mode.

Capturing Process:

Most of the actual capturing process has been described above but here is a short explanation and also a checklist.

1. You will want to first set up the lighting and camera as described above. Set up the base and set the whitebalance.
2. Then you will want to clear room for your specimens. Set-up your first specimen and go through the checklist to make sure everything is consistent. When you are ready, take the picture and review it in play mode (the play triangle on the dial) to make sure it looks good. If everything looks alright return the specimen to its folder and stamp IMAGED in the bottom left-hand corner of the specimen sheet.
3. Continue process until card is full or you are finished imaging the specimens.

Computer:

File Management

1. First of all you will want to take the card from the camera and place it into the SanDisk card reader that is connected to the computer via the USB port. Some automatic programs might pop up but just cancel them and open *C:\Documents and Settings\students\My Documents\Herbarium*

Photographs/Raw Images/ and create a new folder, the name should include the type of specimens you are imaging and the date. Then under My Computer open *F:\DCIM\101MSDCF* and highlight all files, select cut, and paste them into the file you have just created in *Raw Images*.

2. You will also want to open *C:\Documents and Settings\students\My Documents\Herbarium Photographs\Processed Images* and create another folder named the same as the previous one. This is the file that the final pictures will be deposited into before being uploaded.

Naming

1. Open ACDS_{ee} 7 and find the file you have just created with the pictures in it.
2. Enlarge the preview viewing window so that you have a decent view of the specimen.
3. You will want to click on one file so that it is shown in the window, select ½ Size (it seems to be a good size for viewing) and locate the catalog number, this is what you will be naming the file from and it will be crossreferenced in the database to locate the file so it must be correct. If need be you can zoom in more.
4. After locating the catalog number right click on the file and select *Rename*.
5. You will then rename the file as its catalog number.
6. After you have finished renaming all files you will process them.

Photoshop

1. First of all you will want to open Adobe Photoshop.
2. Then under File, select Automate, Batch.
3. Under Play: Set, select Plants and action: Type Process
4. Under source select choose, and find the folder under raw images that you created. Likewise under Destination select choose and select the folder that you created under Processed Images.
5. Finally click OK and sit back and relax as Photoshop processes all of your files.
6. When Photoshop is done, open up ACDS_{ee} again and select the newly created folder under Processed Images. Scroll through all of the images to insure that they all look good and none are washed out or too dark.

Note: This process has been set for a very specific exposure and set-up, such as is described above, and if anything changes you will have to adjust the process Under the Action Tab in the right History Toolbar. Most adjusting will be done in curves and can be done once a file is open. To do this double click on curves under actions/plants/type process. This will open a window with adjustments that you can make.