SERNEC – TCN Imaging Station Setup: Camera

This document is based on a document that was written at a Herbarium Workflows Workshop in Valdosta Georgia in January 2015. This document is specific to a set up for a camera used with a lightbox that has a copy stand camera mount. The full list of equipment can be found at http://bit.ly/1OeWtGb.

Task ID	Task Description	Explanations and Comments	Resources
T1	Change or attach lens to camera.	Lens choice is selected based upon subject to be recorded, which in this case is herbarium sheets. The Canon 50mm f/2.5 EF Compact Macro lens is used by most SERNEC – TCN institutions.	Equipment list: http://bit.ly/1OeWtGb.
T2	Mount camera on copy stand; connect computer to camera and power source via surge protection.	USB connection to computer. Lens may be mounted to camera prior to mounting camera on copy stand.	Appropriate cables and surge protection.
T3	Connect remote shutter release to camera.	Allows remote release of the shutter without jarring the camera.	Wireless or tethered camera release. The computer mouse can also be used for this purpose.
T4	Set up and start lightbox and allow time to warm up.	See the full instructions in the Imaging Station Lightbox Set Up document.	http://bit.ly/1aOhFow
T5	Place and/or affix scale and color standard; ensure both are clean, visible in the field of view, and that the colors on the color standard have not faded from their original hue and brightness.	It may be best to have these attached to the copy stand, specimen frame, or base surface of a light box.	Color standard, scale bar.
T6	Start camera.		Canon EOS 5D Mark III digital camera
T7	Start compatible image acquisition or camera control software.	Most digital cameras used for imaging scientific specimens can be completely controlled by a computer using compatible camera control software (EOS remote capture). This is currently the common practice.	Computer and software.

T8	Start ancillary image management/processing software.	The suggest software is Adobe Lightroom.	
T9	Adjust or ensure appropriate camera height, lens zoom (if variable focal length lens is used), and specimen framing.	A pre-measured camera height is helpful for this step, as is a visually delimited region or framing mechanism (e.g. black, metal carpenter square) for ensuring appropriate placement of the specimen and associated scale and color standard for imaging.	This should already be set during the process of setting up the lighbox (see T6 in the Imaging Station Lightbox Set Up document).
T10	Ensure correct aspect ratio for highest resolution.	This may require recording one or more test exposures and examining the resulting images.	
T11	Set aperture, shutter speed, ISO, white balance, color temperature, and focus point to desired settings, or load these settings from a previously configured settings file.	For flat sheets, adjusting most of these settings occurs once for each new imaging session. Some camera control software is capable of saving these settings to a file that can be reloaded for future, similarly situated shooting sessions. White Balance can be set to Auto. Color temperature should match the color temperature on the light source (bulbs) being used. The ordering of this task may be dependent upon whether camera settings are adjusted from a computer via camera control software, as assumed here, or manually. If manually, adjustments might be made prior to attaching the camera to the copy stand. A neutral gray card designed specifically for digital cameras (e.g., the Robin Myers Imaging Digital Gray Card or WhiBal G7 White Balance Reference Gray Card) is inexpensive and helpful in this process. An option used by some institutions is to open a test image in Adobe Lightroom	[Note: Seeking good reference to add here. It would be helpful to have more guidance for aperture, shutter speed and focus point]

		and rest the cursor over the white square in the color standard (affixed in T7) while reading the RGB values, then adjusting the camera, reshooting, and re-testing until all values are in the range 240 ±3 (237–243).	
T12	Perform initial quality control for image color prior to imaging session.	Options include software examination of color standard in image or human examination of sheet and image with a color calibrated monitor.	