Paleobotany, Micropaleontology, & Mineralogy Collection Sam Noble Oklahoma Museum of Natural History

Photographing Macrofossils Procedures

The following procedures are to assist with making photographs of macrofossils (except for overall oversized specimens which have their own procedures see "Photographing Oversized Macrofossils Procedures"); however, if you have any doubts, questions, or need further clarifications at any step, please consult the Collection Manager before proceeding. Note that this does not include anything in the Mineral Collection (meteorites, minerals, and rock specimens) since they are not macrofossils and have their own procedures see "Photographing Mineral Collection Specimens Procedures".

- 1. Carefully gather the macrofossils you are photographing. [See "Storage & Retrieval of Microscope Slide or Thin Section Slide Boxes Procedures" for details.]
- 2. Double check to make sure that all screws on the copy stand are secure, especially those associated with lights.
- 3. Check, that appropriate lens & filter are attached. Please, do not remove/change unless told to do so by Collection Manager.
- Check that the camera mode is set to "Av" (on "top" of camera). 4.



(Illustration of correct setting on camera)

Check that the focus is set to "AF" (on the side of the lens). 5.



(Illustration of correct setting on lens)

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6. Check that the focus limiter switch on the lens is set to "FULL" (on the side of the lens).



(Illustration of correct setting on lens)

- 7. Log onto computer using assigned account on the computer with the camera attached.
- 8. Turn the camera on (on back of camera).



(Illustration of correct setting on camera)

9. Cancel the window that pops up automatically when computer detects camera.



(Section of screenshot of window popped up on SNOMNH computer)

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10. Start Canon Remote Capture Program by double-clicking on the icon.



(Section of screenshot of Remote Capture Icon on desktop @ SNOMNH)

11. Connect to the Camera by selecting the connect button. The program should open and look something like:



(Section of screenshot of Remote Capture program opened on SNOMNH computer)

- 12. Under the File menu, select Preferences. When window opens check that preferences are set correctly.
 - Check to make sure that the File Prefix is "Pbot."
 - Check to make sure that the Folder to save files in is "New_Images."
 - Select OK once settings correct.

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(Section of screenshot of Remote Capture preferences on SNOMNH computer)

- 13. Prepare the background.
 - Use gray fabric.
 - Eliminate dirt/dust/debris/lint from fabric using vacuum on a "low" setting (if it shows signs of wear flip over or replace and let collection manager know).
 - Determine appropriate support for fabric to support specimens and create a level fossil surface and flat background from the various possibilities.
 - → Poly-Pellets[®] (be sure that they are in sealed zip bag(s) before handling).
 - Several sizes are available (a larger size under fabric will help support the specimen and minimize wrinkles in the fabric).
 - *Choosing the wrong size bag is only an inconvenience as readjustments will be required.*
 - > You may change volume of pellets in the bags; however:
 - ! Do not spill pellets. (They disappear on white floor and are a tripping hazard!)
 - ! Minimize air in resealed bag. (Makes leveling easier.)
 - → Boxes
 - Several sizes are available (a larger size under fabric will help support the fabric and minimize wrinkles and allows for closer photos of smaller specimens or details).
 - *Choosing the wrong size box is only an inconvenience as readjustments will be required.*
 - Place the support for background under the fabric on the copy stand.
 - Place gray fabric in middle third of the copy stand on top of any specimen supports (helps avoid having fabric edges visible in picture and allows the autofocus to focus correctly).
 - Make sure the fabric is free from wrinkles.
 - Make sure the fabric is at least 4 inches beyond footprint of specimen.

- 14. Prepare the specimens to be photographed (best done as entire drawer/shelf or "cart" at a time).
 - Determine how specimen should be handled, oriented, and supported before moving.
 - When multiple localities are present within drawer, specimens must be returned to same side/position, so take note of specimen's location within drawer (make a list of each specimen number and its drawer location <u>before</u> you begin).
 - Check Photo Checklist to make sure both sides of specimen have not already been photographed.
 - Determine what size specimens are to be photographed: standard macrofossils, 2 cm only (fits in smallest specimen box 5 cm X 5 cm) or Oversize specimen (entire specimen fits only in oversized template ~27 cm x 39 cm). Note: Oversized specimen photos except for close-ups take a different set up and procedures, so add the specimen to the Oversize Specimens Photography List, complete any close-ups, then mainly concentrate on the others.
 - It is best to group the specimens by size and type (saves time & energy minimizes camera & light adjustments), this is permissible as long as you:
 - → Keep specimens in their specimen boxes when grouping.
 - → Know where to put back.
 - → Record the correct case/shelving number and drawer/shelf number in Photo Log.
 - Locate the <u>5 cm and 2 cm</u> Cardstock Specimen Number for each specimen to be photographed (if done as entire drawer/shelf or "cart" at a time it is helpful to make a list and check it off for both sizes as they are located).
 - → The 5 cm Cardstock Specimen Numbers and 2 cm Cardstock Specimen Number are stored separately in numerical order.
 - > They may be cut and waiting. If so, get them and use them.
 - They may be printed and not cut. If so, they will need to be cut before you use them.
 - ! If you know how to cut them proceed to do so.
 - ! If you do not know how to cut them, prepare a list so that someone who does can prepare them for you.
 - > They may be unprinted and need to be printed.
 - If you know how to print them, proceed to do so.
 - ! If you do not know how to print them, prepare a list so that someone who does can print them for you.
 - If needed, being careful not to damage fossil(s), carefully clear any dust/debris off the specimen into specimen box <u>using only the photo blower</u>. Unless told otherwise by Collection Manager or Curator.

15. Pick up specimen; re-check the Photo Checklist to ensure it has not already been photographed.

If both sides have been checked off in list, mark the box with sticky note <u>however</u>, if all other specimens in the <u>drawer are already photographed remove all sticky notes and mark outside drawer label as photographed</u>).

- Determine which side of specimen is the obverse side and which is the reverse (occasionally the Obverse side may not have been left facing up in the box).
 - → Obverse side that bears the principal fossil(s) or has the visible fossil(s).
 - → Reverse side that does not bear the principal fossil(s) or have the visible fossil(s)
 - Photograph both sides of the specimen, even if one looks "blank"/has no visible fossils or has very "fragmented looking" fossils.
 - If badly self-sampling (only a box of fragments), take photograph of fragments in box only and annotate in Notes Column of Photo Log & Photo Checklist.
- Orient specimen as described in SNOMNH Paleobotany Orientation of Specimens Chart but basically:
 - → Portion of the fossil positioned at top of frame is upper part of the plant, as it would have appeared in life.
 - Chart of general form groupings illustrates "preferred" orientations and shows example(s) from our collection. (An in-collection copy with storage location is available if an actual specimen comparison would be useful).
 - → Reference books are available and image searches on the web are helpful; if the collection manager is busy.
 - → If in doubt, ask the collection manager or take multiple orientations, so that retakes are not needed.
- Place the specimen onto background on the copy stand.
- Align specimen parallel to lens of camera. This allows as much of the fossil as possible to be in focus at once.
- Insure that specimen is level.
- Determine if any additional support is needed above the fabric (often needed if the specimens surface uneven). As needed, add extra support above the background but under the specimen.
 - → Poly-Pellets[®] (be sure that they are in sealed zip bag(s) before handling).
 - Several sizes are available.
 - *Choosing the wrong size bag is only an inconvenience as readjustments will be required.*
 - > You may change volume of pellets in the bags; however:
 - ! Do not spill pellets. (They disappear on white floor and are a tripping hazard!)
 - ! Minimize air in resealed bag. (Makes leveling easier.)

- → Ethafoam
 - > Several sizes and shapes are available.
 - Choosing the wrong size piece of Ethafoam is only an inconvenience as readjustments will be required.
- ➔ Dental Wax
 - Use smallest amount possible to support the specimen (make sure all of it comes off of specimen and fabric when done).
- Make sure to keep the background smooth and the specimen supported.
 - → Keep fabric clean and wrinkle free.
 - ➔ Do not drag the specimen on top of supports, pick up the specimen, adjust the support, and replace the specimen.
 - → All specimen supports <u>must not be visible in the pictures</u>. (If you have difficulties, consult the collection manager or make note of the specimen including side of difficulty and skip the specimen until you can consult the collection manager.)
- Make sure specimen has little visible dust (do not damage specimen to eliminate dust/debris).

- 16. Set up the Cardstock Specimen Number and Laminated Metric Scale.
 - Use Collection's standardized metric scale bar on laminated cardstock and standardized specimen number on un-laminated cardstock.
 - → Start with the 5 cm cardstock and 5 cm scale bar, unless specimen is considered a 2 cm only or Oversize specimen.
 - → Continue with 2 cm Cardstock Specimen Number and 2 cm scale bar for appropriate close-ups, unless specimen is considered a 2 cm only or Oversize specimen.
 - → If specimen is only considered a 2 cm sample, use only the 2 cm Cardstock Specimen Number and 2 cm scale bar. <u>Rip up the 5 cm cardstock, or mark it as 2 cm only if not yet cut</u>.
 - ➔ If specimen is Oversize, use the 5 cm or 2 cm cardstock specimen numbers and corresponding scale bar for close-ups. These can be done even if the oversize photography will be done on another day as oversized specimen photos takes a different set up. <u>Make sure the specimen is included on the Oversize Specimens Photography list!</u>
 - Place scale bar to right of Cardstock Specimen Number.
 - Cardstock Specimen Number is placed to the left of the scale bar along bottom of frame. It helps if you temporarily secure the scale bar to the cardstock using a small roll of tape between the scale bar and the cardstock, making sure that the tape is not visible.
 - → Cardstock Specimen Number should match the unique OPC Specimen Number of the specimen being photographed.
 - → Be very careful and organized when placing the cardstock specimen number.
 - → Digital images without specimen number or an incorrect specimen number require retaking.
 - → If you discover a mismatch inform the collection manager immediately!
 - Cardstock Specimen Number and Metric Scale should always be placed in the lower right hand corner of every photo frame, just so that the scale bar is visible in full. (Image taken by the camera is slightly larger than that seen through the viewfinder; it is more noticeable the farther the camera is from the specimen.)
 - → Unless doing a close-up, **do not block any part of the specimen**.
 - → Make sure to landscape-orient the photo.
 - → Alignment of the scale with the specimen is critical; make sure to keep the scale level in the plane of focus and at right angle.
 - → Make sure frame is filled as completely as possible with the specimen.



(Example of a properly aligned/setup specimen, 5 cm cardstock and 5-centimeter metric scale bar)

17. Focus the camera and the side view/extension tube.

Remember that multiple users adjust the camera and that the extension tube has a separate focus from the camera. Make sure camera is in focus and not just the extension tube. Once you focus the extension tube, unless bumped, it will be in focus for that photographing session.

• Press the shutter button down halfway (all the way takes the picture).



(Illustration of button push on camera needed for focusing)

- Look through the extension tube and adjust the focus wheel.
- 18. Frame and focus the specimen.
 - Make sure lock on copy stand (on the left of the column) is unlocked. Then, move the camera (up or down) using the height adjustment knob on the right of the column.
 - Check focus by pressing the shutter button down halfway.
 - While looking through the viewfinder, the depth-of-field preview button may be pressed to see the range of focus in the viewfinder. (The boxes that light up indicate where it is in focus.)



(Illustration of button push for depth-of-field preview)

Moving the camera will change both the image size and the focus; you will need to refocus each time you move the camera especially if you use the crank on the copy stand.

• Make sure specimen, scale, and specimen number are in focus.

- 19. Take a test shot to check placement at this point, especially since the image taken by the camera is slightly larger than that seen through the viewfinder (if possible, with lights off even if it is dark).
 - Click "Test Shot" button in computer interface.

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(Section of screenshot of Remote Capture program indicating Test Shot Button on SNOMNH computer)

- → Use test shots with caution, what you see in thumbnail-sized test shot is just a reasonable approximation, not what the final picture looks like.
 - > Test shots are not large enough to see details.
 - ➤ Gray fabric often looks like wavy lines, even when it has no wrinkles.
 - > Will generally show if scale bar and specimen number are positioned correctly.

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(Section of screenshot of Remote Capture program showing Test Shot preview on SNOMNH computer)

20. Arrange/Adjust the lighting using the lights attached to the copy stand.

Only adjust/move lights when they are turned off. Use care when adjusting the lights, as <mark>lights heat up quickly and reach 3200° K or 5300° F!!!</mark> In addition, moving a lit photoflood light bulb increases filament breakage/bulb replacement.

Lighting direction and obliquity should be determined and adjusted for every photograph of every specimen though if you have grouped the specimens by size and type *adjustments MAY be minor*. Ideally, lighting should show as much detail as possible, have a well-illuminated fossil, but look natural, and true to what you see without the camera. Check that illumination is even, details are maximized, deep shadows are filled, and there is no glare from the lights. **Using all 4 sides of the "light box" setup will tremendously aid one in obtaining correct lighting of the specimens.**

Use the following standards to set up the lights and then adjust as needed for the best results, which takes practice:

- Main/primary light set to the upper left at a high angle creating a "harsh shadow."
 - → Note that light falling on a specimen from near the camera lens makes a specimen appear flat and "cooks" the camera.
- One or more fill lights illuminates the shadows of main without creating a second harsh shadow.
 - → Usually fill light is on right side at a low angle, although it can come from any and all other directions.
 - → Usually more <u>diffuse</u> and less intense, causing shadows to appear more soft than sharp.
 - → Used to bring out the details in the fossil and bring out subtleties in definition of specimen.
- Goal to achieve correct balance is to keep it subtle, as less severe lighting shows more detail while still preserving an acceptable impression of depth. Therefore, watch out for reflections that are so intense as to appear a featureless white in the final image or portions of the specimen unnecessarily placed in total darkness.
- Make sure to tighten screws on lights and copy stand arms when done; you do not want a hot light to shift and you, without thinking, reach out to catch it.

21. If necessary, adjust Exposure Compensation

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(Section of screenshot of Remote Capture program indicating Exposure Compensation on SNOMNH computer, left set to 0 & right set to -2)

- 22. Turn on photo lights.
 - To see where problem spots are coming from:
 - → Turn each spotlight off and back on or partially block each spotlight with your hand. (Make sure you do not touch lit bulb or lamp!)
 - To fix problem spots:
 - → Spread out the lighting angle.
 - → Diffuse glare or light by placing additional diffusing material between the light source(s) and specimen. Diffusing material should never touch the bulb or reflector due to flammability and melting concerns. Additionally, diffusing material must remain well outside the field of view. That is why the PVC support structure exists.
- 23. Make a test shot (from the computer screen "Test Shot" button) to see if shutter speed/lighting needs to be adjusted.
 - While test shots should be used with caution, lighting is accurate
- 24. Turn off lights, and recompose or adjust copy stand height. (While an extra step and more wear on the filament, turning off lights avoids burns and keeps temperature down as you do not want to cook yourself, camera, or specimen.)
- 25. Turn on lights again.

- 26. Take another test shot.
 - Check one last time to make sure that:
 - ✓ Specimen number is correct
 - ✓ Entire specimen is showing (unless it is intended to be a close-up)
 - ✓ Edge of the gray fabric background not showing
 - ✓ Specimen, Cardstock Specimen Number, and Scale Bar take up most of frame
 - ✓ Frame is landscape-oriented
 - ✓ Illumination is even
 - ✓ Fossil(s) are in focus
 - ✓ Scale is in focus
 - ✓ Specimen number is in focus
 - ✓ All cords, diffusing material, hands, etc. are not in frame or touching the lights
 - ✓ Lights are not too close to the table

Even tiny adjustments can have profound effects on the visibility of individual fossils, surface features, and <mark>reflections.</mark>

- 27. Step away from the camera and copy stand, and make sure no part of your body is touching the copy stand or its support.
- 28. Click the "Release" button (on the computer screen) or press the space bar to take a photograph.



(Section of screenshot of Remote Capture program indicating Release Button on SNOMNH computer)

29. As the "transferring" message appears turn off lights. (While an extra step and more wear on the filament, turning off lights avoids burns and keeps temperature down – as you do not want to cook yourself, camera, specimen, or table.)



(Section of screenshot of Remote Capture program indicating transferring occurring on SNOMNH computer)

30. Check the photograph that was taken and that the entire image transferred.

Once the picture is displayed check the full image to see that image turned out as you expected before you move on to the next picture. At this point if the photo taken was not what you expected, you can delete the image and retake the same photo with the appropriate alignment of cardstock specimen number, scale bar, specimen orientation, no wrinkles, fingers, etc. Using the delete button in the Remote Capture screen should allow a retake of the same file name (the photo number should not skip). However, if the file numbers show a skip in numbers, talk to the collection manager immediately.

Check to make sure that the next file number is the next one in sequence from the previous photo number by comparing it with the previous entry in the Photo Log to make sure you know what next number should be.



(Section of screenshot of Remote Capture program indicating transferring complete on SNOMNH computer)

- 31. Add the appropriate abbreviation (with appropriate capitalization) to the comments field of the photograph just taken. Here are the most common (or check the Comments Table):
 - "Obv" should be entered for the photograph of the obverse side of the specimen
 - "Rev" should be entered for the photograph of the reverse side of the specimen
 - "Close-up" should be entered for the photograph of a close-up of the specimen
 - "Sp Box" should be used for photographs of badly self-sampling specimens in the box
 - Retakes of specimens get additional comments <see collection manager, if needed>



(Section of screenshot of Remote Capture program showing comment entered on SNOMNH computer)

32. After adding the comments to the saved image, enter the required information in the Photo Log (see example on next page).

In order for the digital images or photographs to be of value, an official Photo Log will be filled out legibly & completely with careful annotations.

- In the "Digital Image Filename" column, is where the filename for each individual slide is recorded. Record the complete digital image filename. Pbot_00000001.jpg, Pbot_00000002.jpg, etc.
- In the "OPC Specimen Number" column, is where the specimen number for each specimen is recorded. Record the specimen number without commas, not the 8 digit number from Cardstock Specimen Number (*e.g.* 1...10...100...1000...). Ignore the leading zeros (*i.e.* 00000352 becomes "352").
- In the "Specimen Side" column, circle the appropriate term (obverse, reverse, other-specified in notes) for the side of the specimen the photograph represents (if other-specified in notes circled, add the appropriate comments to Notes column).
- In the Identification column, record any identification (taxonomic classification/name as reported on specimen label -genus, species, etc.). If none, then record "No ID" which is also used for non-fossil containing sides of specimens.

Do not remove labels from plastic zip bag unless you need to read it. If labels are removed from the zip bag, return the label(s) in the same order that they were found.

- In the storage location column, record the correct (case/shelving) & (drawer/shelf) in the appropriate boxes (*please always use pencil for this column*).
- In the "Photographer(s) Initials" column, enter your initials. Please include first, middle, and last (*e.g.* MLL, RAL, BAR) in caps.
- In the special settings column, record any special settings that differed from normal (only pre-approved & accepted).

The Special Settings Chart in front of the Photo Log lists the pre-approved and accepted special settings and their photo log abbreviations. <u>Any setting not in these lists is not to be used without consulting the collection</u> <u>manager (or curator) and receiving approval and accepted abbreviation</u>. (It is recommended that first use by initialized by approver as well).

- Under "Additional Notes" column, enter any notable issues, concerns, or other information about the image (examples: self-sampling, sub-sampled, part, counterpart, appropriate comment for "other-specified in notes," retake <include prior photo number>).
- Make sure date image taken is filled in on top of page.
- Make sure the appropriate page number is entered.

Photo Log — SNOMNH Paleobotany & Micropaleontology										
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Pbot_0000	0010	.jpg	3456	Obverse Reverse Other - specified in Notes	NO ID	16	2	MLL		only rock
										Page:

(Example of a filled out SNOMNH Photo Log Page)

Note examples do not reflect actual specimens and storage locations but instead illustrate some possibilities on how Photo Log would need to be filled out. [Additional pages can be printed on legal paper from SNOMNH_Photo_Log.pdf or SNOMNH_Photo_Slides_MF_Slides_Log.xls]

33. Record the information about the photograph that was just taken in the Photo Checklist. (See Example on next page)

As an aid in determining if a specimen has been photographed (or if there is a separated subsample), a numerical order list of assigned specimen numbers is maintained. If the checklist indicates that the specimen has already been photographed, then check the Photo Log for location and name of the digital photograph and look at image to make sure it is really the same specimen and both obverse & reverse sides were taken. If it is not the same specimen notify the collection manger immediately!

- Find the appropriate page for the OPC Specimen number that was photographed. If one does not exist create one from the blank checklist pages.
- Record any subsample letter A, B, C, etc. If no subsample exists put a dash "-".
- In the Specimen Photographed column place a checkmark in the appropriate column.
 - → "Obv" for the photograph of the obverse side of the specimen.
 - → "Rev" for the photograph of the reverse side of the specimen.
 - → Record side photographed in other-specify column for any other side(s) photographed; write, "Close-Up" if any close-ups taken; or write, "Sp Box" if badly self-sampling specimens in its box.
- In the date photographed column, record date photograph taken as mm/dd/yyyy.
- In the "Notes" column, if it is a photograph taken with a 2cm Cardstock Specimen Number record "2 cm". Record any other useful observations or problems (Examples: self-sampling, possible subsample, possible part, possible counterpart, part, counterpart, etc.).

OPC	Subsample	G ,	acimon	Photographed	Date	Notes
	Letter	5	Jecimen	Thotographeu	Photographed	Inotes
Specimen	(1 letter/line)	(checkmark if yes)			(mm/dd/vvvv)	Useful Observations or Problems
Number	(no lottor = doch)	Obvorso	Povorco	Other energify	(1 data/line)	(No Abbroviations)
	(no letter - dash)	Obverse	Reverse	Other - specify		(NO ADDIEVIATIONS)
		V	V		08/26/2006	
	A	~	~		08/26/2006	
1230	В	✓	✓		08/26/2006	
	· · · · ·					
1001						
1231						
	_	✓	✓		12/14/2012	part to 2345
1737						
Lava						
1233						
	_	\checkmark	1		10/14/2012	2 (1)
					IR/I//RUIR	a. 0110
1001						
1234						
	-			✓ radíal 1 § 2	11/02/2010	
1235						
2000						
10-11						
1236						
	—	✓	✓		12/14/2012	Oversízed
	-			✓ close-up	12/15/2012	2cm
1727				30000 ttp		
1au/						
1238						
10-0						
1239						
_						

Photo Checklist - SNOMNH Paleobotany & Micropaleontology

(Example of a filled out "SNOMNH Photo Checklist Page")

Note examples do not reflect actual specimens photographed but instead illustrate some possibilities on how list would need to be filled out. [Additional pages can be printed on legal paper from SNOMNH_Photo_Checklist.pdf or SNOMNH_Checklist.xls]

- 34. After the first side of the specimen has been photographed and recorded in the Photo Log & Photo Checklist, either set up a close-up repeating steps 15-33 or turn over the specimen and repeat steps 15-33, *using the same Cardstock Specimen Number*.
- 35. After both sides of the specimen has been photographed and any close-ups have been taken, recorded in the Photo Log & Photo Checklist return the specimen (and label) into its box, add the cardstocks used to photograph the specimen (always keep 2 cm cardstock even if you did not take any close-ups that need it this at this time) and mark with sticky note until entire drawer has been photographed. Once the entire drawer has been photographed the sticky notes are removed and the outside of the drawer is marked as photographed. Do not remove sticky notes unless the drawer it is being returned to for storage has all been photographed.
- 36. Return the macrofossils you were photographing to storage.

[See "Storage & Retrieval of Macrofossils Procedures" for details.]