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

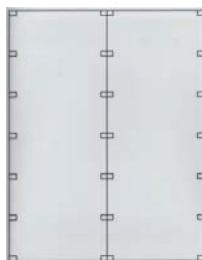## *Scanning an Overall Microscope Slide or Thin Section Procedures*

The following procedures are to help assist with making scans of the overall microscope slides and thin sections (to document labels and overall condition, <u>not</u> to show details of the slide or thin section contents); however if you have any doubts, questions, or need further clarifications at any step, please consult the Collection Manager <u>before</u> proceeding.

1. Carefully gather the slide box of microscope slides or thin section slides you are scanning.
    [See "Storage & Retrieval of Microscope Slide or Thin Section Slide Boxes Procedures" for details.]

2. Log onto computer using assigned account on the computer with the scanner attached.

3. Open Adobe Photoshop using the desktop shortcut (double click the icon).

(Section of screenshot of Photoshop Icon on desktop @ SNOMNH)

4. While program is loading, place the SNOMNH Slide Template Transparency on the Epson Perfection 1650 scanner, placing the corner of the transparency in the upper right corner of the scanner's glass area. (The lines need to be parallel to the sides of the glass area, not the sides of the transparency itself, because the transparency may have been pulled through printer at a slight angle during printing.)

    • Each area of the SNOMNH Slide Template Transparency represents a slot in a slide box (see step 7 below for which area corresponds to which slot).

(Image of SNOMNH Slide Template Transparency)
<Printed on overhead transparency from file: SNOMNH_Slide_Scan_Temp.pdf>

(Image of Slide Template Transparency on Epson Perfection 1650 scanner @ SNOMNH)

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5.　Begin preparing a SNOMNH Slide Location & Scanning Form for the slide box you will be scanning, filling it out with a pencil (see example on next page).

- In the blank for "OPC" enter the assigned overall slide box OPC Locality Number for the slide box (usually the lowest OPC Locality of a related set of OPC Locality Numbers—if they all came from the same core or outcrop). If there is more than 1 box of this locality number, indicate the box number & quantity of boxes in square brackets after the number (*e.g.* OPC 1234 [Box 1 of 2], OPC 1234 [Box 2 of 2]). Note: If you are doing a special project cross out OPC and write the verbatim data from the outside of the slide box on this line.

- In the blank for "Slide Case #" enter the assigned Slide Case Number for the storage location of the slide box (*e.g.* For Slide Case 8 record an "8").

- In the blank for "Shelf #" enter the assigned Slide Case Shelf Number for the storage location of the slide box (*e.g.* For Slide Case 8 Shelf 1 record a "1").

- In the blank for "Slide Box #" enter the assigned Slide Box Number of the slide box (*e.g.* For Slide Box 7 record a "7", For Slide Box LI-1 record as "LI-1").

6.　**As you are removing the slides from the slide box** you will fill out the slide portion of the SNOMNH Slide Location & Scanning Form with a pencil (see example on next page).

- The Form has 9 box charts of each box chart represents 12 slots in a slide box and the slot numbers are pre-printed on the form.

- Within each box chart are 12 box lines with a pre- and post- box squares.

- Use the pre-box square for the pre-numbered box line to put a slash "/" to indicate which slots contain slides.

- Use the box line with pre-numbered slot number to indicate the identity of the slide preferably by specimen number, or other distinguishing feature (*e. g.* OPC 821A, OPC 821B, …; 3969 A(6) spores).

- If the slide is drying out, if the slide is in a left hand side of slot lines put an asterisk (∗) and if the slide is in a right hand side of slot lines put an exclamation mark (!), just outside of the box chart next to the corresponding slot. This helps identify which box chart the mark applies to when only 1 of 2 neighboring box charts is marked due to the form's space constraints (see example on next page).

- Indicate in the page's upper left hand corner the number of slides that need attention.

- Indicate in the page's lower left hand corner the total number of localities represented in the slide box (*e.g.* for OPC 1, 1 locality; for OPC 821A, OPC 821B, 2 localities). Depending on box size and number of slides in the box, you may need to come back to add after all slides have been scanned.

- Indicate in the page's lower right hand corner the total number of slides in the slide box. Depending on box size and number of slides in the box, you may need to come back to add after all slides have been scanned.

- Indicate in the page's upper right hand corner the initials in caps (First, Middle, & Last without periods) of the person scanning the slides and the date(s) (mm/dd/yyyy) they were scanned.

- Indicate in the center of the bottom of the page how many slides contain types.

MLL & JWP
08/07/2013
09/04/2013

OPC : 1234 (WH 999) [1 of 2]

5 need attention

Slide Case # : 1   Shelf # : 1   Slide Box # : 1000

/ 1	OPC 1234 A ★	/ 7	OPC 1234 F
/ 2	OPC 1234 B ★	8	OPC 1234 G
/ 3	OPC 1234 B	9	OPC 1234 K
/ 4	OPC 1234 C	/ 10	OPC 1234 J
✳ 5	OPC 1234 D	/ 11	OPC 1234 K
6		/ 12	OPC 1234 L

✳ 13	OPC 1234M-98765	19	
14	OPC 1234M-98764	/ 20	OPC 1234 Q
15		21	
/ 16	OPC 1234 N	/ 22	OPC 1234 R 1
17		23	OPC 1234 R 2
✳ 18	OPC 1234 P	24	

! !✳

/ 25	OPC 1234 T	/ 31	OPC 1234 T
26	OPC 1234 T	32	OPC 1234 T
27	OPC 1234 T	/ 33	OPC 1234 T
/ 28	OPC 1234 T	34	OPC 1234 T
/ 29	OPC 1234 T	/ 35	OPC 1234 T
/ 30	OPC 1234 T	/ 36	OPC 1234 T

37		/ 43	OPC 1234
38		/ 44	OPC 1234
39		45	OPC 1234
40		/ 46	OPC 1234
41		/ 47	OPC 1234
42		48	

49		55	
50		/ 56	OPC 1234 6
/ 51	OPC 1234 1	/ 57	OPC 1234 7
52	OPC 1234 2	58	OPC 1234 8
53	OPC 1234 3	/ 59	OPC 1234 9
54		60	

61		/ 67	OPC 1234a (WH999)
62		68	OPC 1234b (WH999)
63		/ 69	OPC 1234c (WH999)
64		/ 70	OPC 1234d (WH999)
65		71	
66		72	

/ 73	OPC 1234-87654	79	
/ 74	OPC 1234-87653	80	
/ 75	OPC 1234-87652	81	
76		82	
77		83	
78		84	

/ 85	OPC 1234 AA	91	
/ 86	OPC 1234 BB	92	
/ 87	OPC 1234 CC	/ 93	OPC 1234 FF
/ 88	OPC 1234 DD	94	
/ 89	OPC 1234 EE	95	
90		96	

97			
98			
99			
/ 100	OPC 1234 AZ		

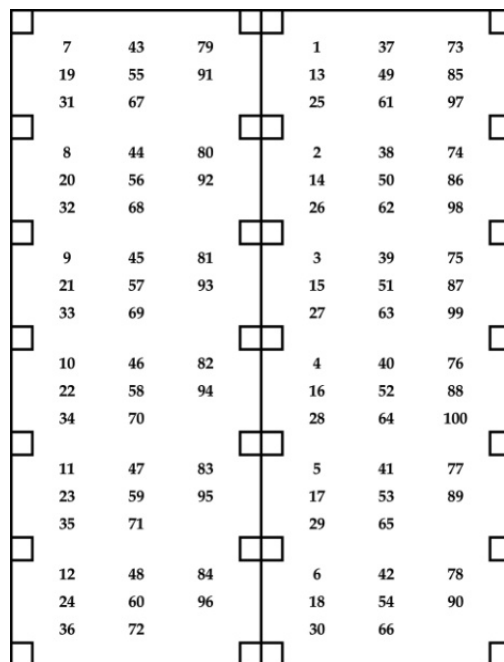30 Localites   ★ 2 types   54 slides

(Example of a filled out SNOMNH Slide Location & Scanning Form)
[Additional pages can be printed on letter paper from SNOMNH_Slide_Check_Form.pdf or Slide_Check_Form.xlsx]

7.   With care, begin removing slides or thin sections from slide box. ***If a slide is damaged in some way (e. g. cracked, loose cover slip) bring it to the attention of the collection manager immediately!*** If the slide is drying out there is a proper way to record it the SNOMNH Slide Location & Scanning Form (see previous step).

8.   Place the slides to be scanned into the appropriate area on the SNOMNH Slide Template Transparency on the Epson Perfection 1650 scanner, with the label side facing down being sure to center the slide in the area corresponding to the appropriate slide box slot number it came from.

- Slides are scanned in accordance to with the slot they occupied in the slide box.

- A Slide Template Transparency is used for positioning them, allowing for 12 slide slots to be scanned at a time (*e.g.* 1-12, 13-24, 25-36, 37-48, 49-60, 61-72, 73-84, 85-96, & 97-100).

The order for the slots is:

| 7	43	79	1	37	73
19	55	91	13	49	85
31	67		25	61	97
8	44	80	2	38	74
20	56	92	14	50	86
32	68		26	62	98
9	45	81	3	39	75
21	57	93	15	51	87
33	69		27	63	99
10	46	82	4	40	76
22	58	94	16	52	88
34	70		28	64	100
11	47	83	5	41	77
23	59	95	17	53	89
35	71		29	65	
12	48	84	6	42	78
24	60	96	18	54	90
36	72		30	66	

(Image of the SNOMNH Slide Template Transparency with numbered locations)
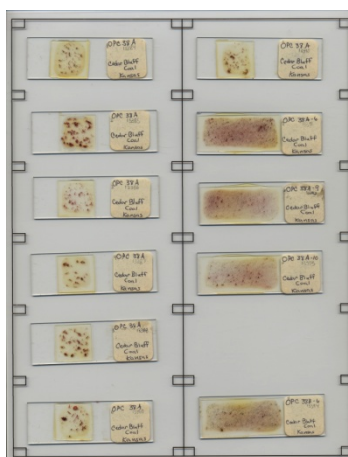[Easier to read/reference copies in can be printed from file: Slide_Scan_Cheat_Sheet.pdf or Slide_Scan_Cheat_Sheet-card.pdf]

- *If a slot is empty, the corresponding area of the Slide Template Transparency is left without a slide in the scan.*
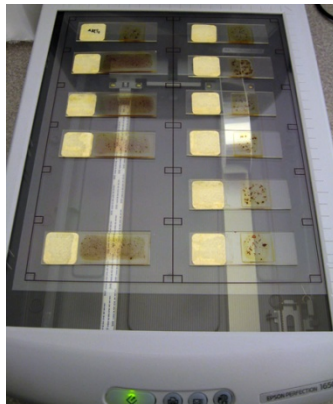

(Photo of the SNOMNH Slide Template Transparency with some slides ready to be scanned with 1 empty slot/area)

(scan of the SNOMNH Slide Template Transparency with slides positioned on scanner Slides were in slots)

9. Close the scanner lid.

10. Within Photoshop, single click the "File" menu, then choose "Import", and select "EPSON TWAIN 5…". This will open the EPSON TWAIN 5 scanning software. The scanner will begin warming up and pre-scan the slides.
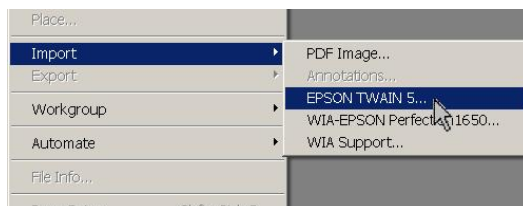
(Section of screenshot of selecting "Import" and "EPSON TWAIN 5…" within Adobe File Menu on SNOMNH computer)

Last Updated: 09/20/2013

11. Once the scanner is ready (it has automatically pre-scanned the slides), double check pre-scanned image to ensure that the template and slides are square with the scanning area of the flat bed. If necessary, open the scanner lid and adjust or slightly rotate the template and/or slides to better center and align the slides and template on the glass plate of the scanner. If you need to conduct another pre-scan, click the "Preview Full Page" button.
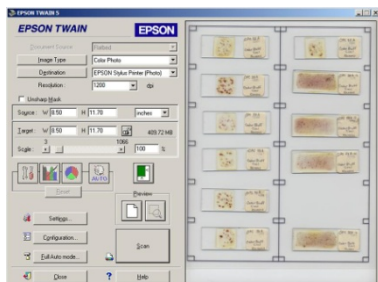
(Screenshot of scanner software once opened on SNOMNH computer)

(Section of screenshot of scanner software with circled "Preview Full Page" button on SNOMNH computer)

12. Once satisfied with the pre-scan, draw a box around the area to be scanned while in the Preview Window. Do this either by:
    - Clicking and holding while dragging to create a box in the Preview Window to draw a box around the area to be scanned.

    - Single clicking the Edge Detect Button to produce the box and then use the cursor with double arrows to click and hold on a side of the box and drag it as needed in the Preview Window to adjust the box around the area to be scanned.

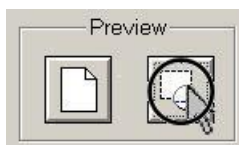(Section of screenshot of scanner software showing Edge Detect Button on SNOMNH computer)

    - It should be outside black lines of the boxes on the SNOMNH Slide Template Transparency.
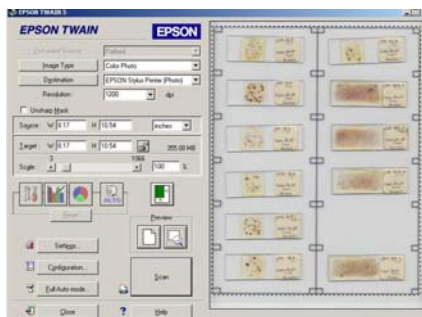
(Section of screenshot showing SNOMNH Slide Template Transparency with box drawn on SNOMNH computer)

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13.   Once area of interest is selected, single click the "Zoom the Selected Area" button to preview the selection and ensure proper area is selected.

(Section of screenshot of scanner software with circled "Zoom the Selected Area" button on SNOMNH computer)

14.   Repeat steps 7 through 13 as necessary, until an acceptable pre-scan is obtained.

15.   Once satisfied with the preview, verify the scanner settings:

- Make certain that the Image Type is "Color Photo", the Destination is "EPSON Stylus Printer (Photo)", and the Resolution is"1200.
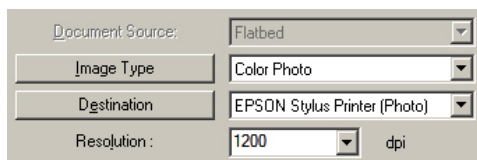
(Section of screenshot of scanner software resolution correctly set on SNOMNH computer)

- Make sure the "Unsharp Mask" box does NOT have a check mark in it.

(Section of screenshot of scanner software showing "Unsharp Mask" box unchecked on SNOMNH computer)

- Ensure that the "Scale" setting is at 100%.

(Section of screenshot of scanner software with scale correctly set on SNOMNH computer)

- Before proceeding, if needed, single click the "Reset" button to default exposure settings. Once set to the default, the "Reset" button should be grayed out and un-clickable.
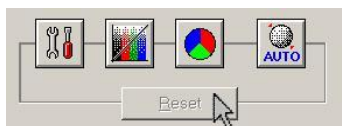
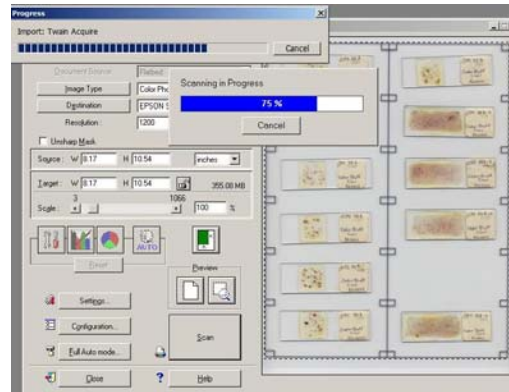(Section of screenshot of scanner software with "Reset" button selected on SNOMNH computer)

16.   After verifying that all of the settings are correct, single click the "Scan" button to acquire the image. A progress bar will appear, showing the status.

(Section of screenshot of scanner software showing "Scan" button on SNOMNH computer)

17. The scan in progress dialog box should appear, as we are scanning at 1200 dpi this will take a little while to complete (it is suggested that you work on completing any forms, logs, or checklists while this is occurring or looking ahead to the next slides).

(Section of screenshot of scanner software showing scan in progress on SNOMNH computer)

18. Once the image has been scanned, single click on the "Close" button ☒ in the top right of the EPSON TWAIN 5 window **NOT the image that appeared after scanning** (usually labeled as Untiled1.jpg). This will close the scanning software and return to Photoshop with the newly scanned image open in a window. At this point the image appears in Adobe Photoshop and is ready to be saved.
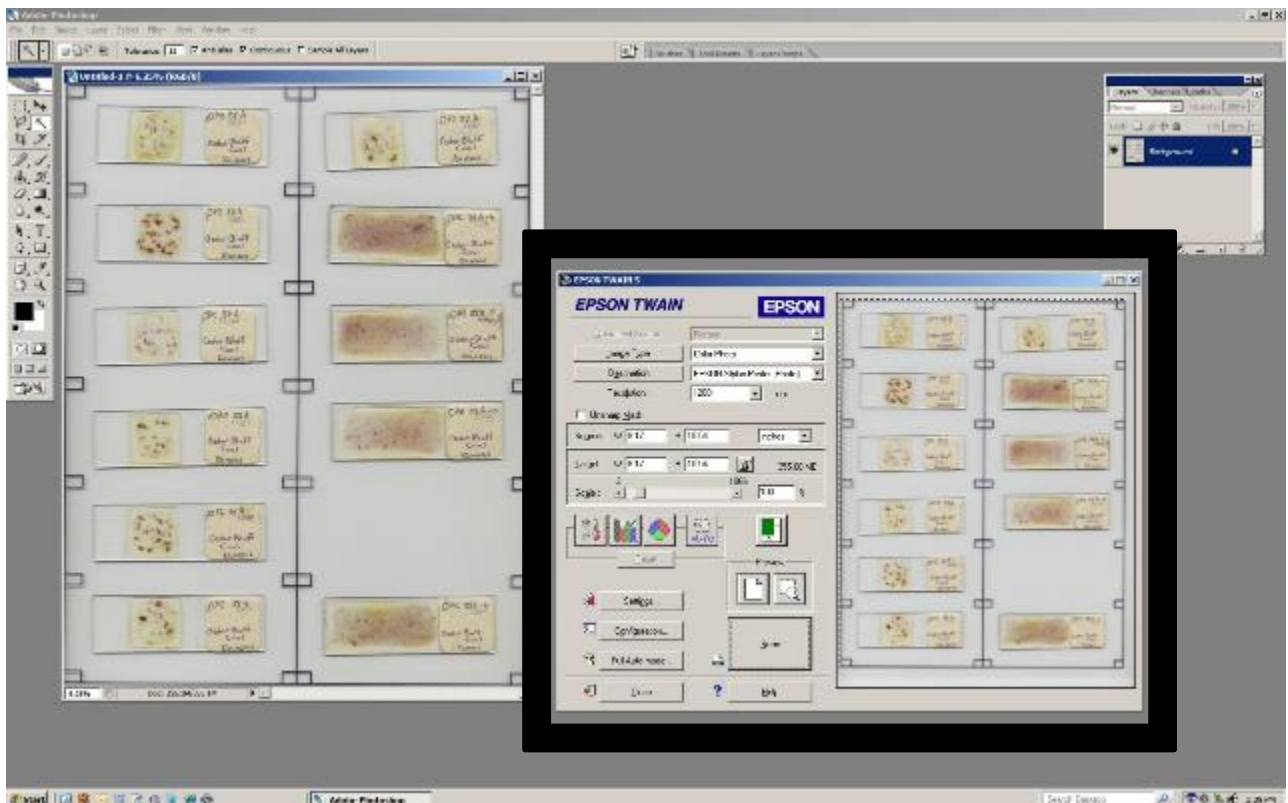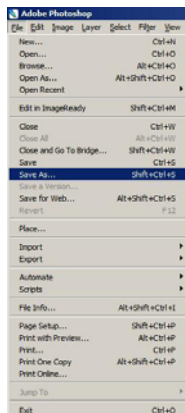

(Section of screenshots of showing 2 windows with window needing closed circled/boxed)

19.   To save the File:

- In the Photoshop "File" menu, select "Save As" to open the Save As Dialog Box.

(Section of screenshots of selecting "Save As" within Adobe File Menu on SNOMNH computer)

- Select the appropriate folder in which to save the file. ***If in doubt check with the collection manager.*** Some rules for determining the correct folder:
  - ➔ Always in "… Images\Coll_Sp_Images\Slide_Images\Slide_Scans\"
  - ➔ Always in a sub-folder with the current date in mm_dd_yyyy format (*e.g.* 02_09_2010, 11_12_2012)
  - ➔ Some special projects have a project folder (*e.g.* Leisman) that will then contain the sub-folders (*e.g.* …Images\Coll_Sp_Images\Slide_Images\Slide_Scans\Leisman)

  Usually there will be a shortcut on the desktop that you can double click to get to the main folder "Slide Scans"; if not, ask the collection manager to help create one. This location may already be opened in the "Save As" dialog box depending on what the last thing done in Photoshop was.

  If a Sub-folder with the current date does not already exist, create a folder with the current date. Single right-click anywhere in the white area of the window and select "New…Folder" from the popped up choices, then type the name for the newly created folder. For example, on February 9, 2010, the new folder would be titled "02_09_2010."

- Filenames are should be formatted as OPC_########-SB#####_#_#.jpg, where:
  - ➔ OPC_######## is the first or primary OPC Locality number of the slides in the slide box. For special projects this is left out of the initial filename. ***If in doubt check with the collection manager or leave it out.***
  - ➔ SB#### indicates the assigned paleobotany slide box number.
  - ➔ The 1st _# is the scan number from the box chart that the slides are part of (*e.g.* 1-9).
  - ➔ The 2nd _# is only added if a 2nd scan is needed for the slides represented by that box chart.

(*e.g.* OPC_00000002-SB00001_1.jpg, OPC_00000002-SB00005_1_1.jpg, OPC_00000002-SB00005_1_2.jpg, LI-00001-1.jpg)

- Make sure the "Format" is JPEG (*.JPG, .JPEG, *.JPE) and use lowercase filename.
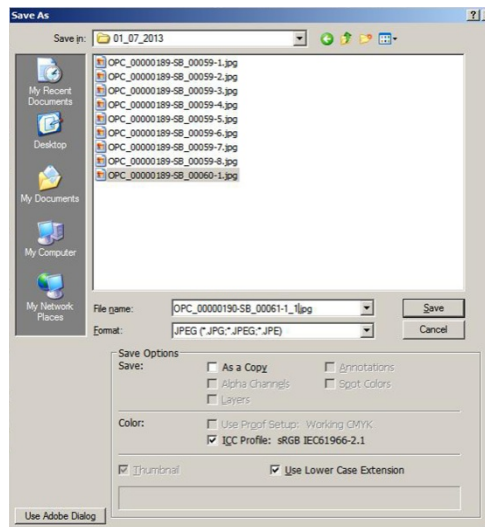
(Section of screenshot of selecting "Save As" within Adobe Widow on SNOMNH computer)

20. Click the "Save" button, which will open the "JPEG Options" box.

21. Verify that image quality is "12" and "Maximum", format is "Baseline ("Standard")", Size is "56.6Kbps", and the Preview box is checked, and then click "OK" to save the image.
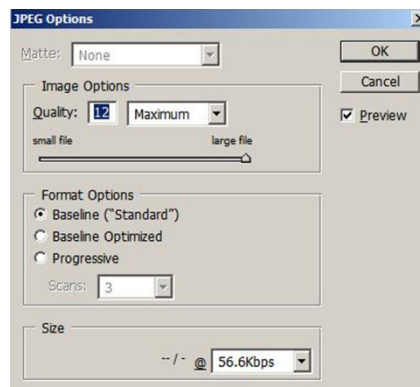
(Section of screenshot of showing JPEG Options within Adobe window on SNOMNH computer)

22. Close the image file you just saved in Photoshop by single clicking on the "Close" button [X] in the top right of the image window.

23. After saving the scanned image, enter the required information in the Slide Scan Logbook. (See Example on next page).

- <mark>Only enter lines for filled sections on the Slide Template (skipped sections will not get their own image as it was "blank").</mark>
- The "Digital Image Filename" column is where the filename for each individual slide is recorded. As 12 slots/slides were scanned, leave this blank *unless otherwise instructed by collection manager*.
- In the "OPC Specimen Number" column, is where the specimen number for each specimen is recorded. Record the specimen number without commas and only digits used (*e.g.* 1…10…100…1000…10000…).
- In the "Photo of" column, circle the appropriate term (usually specimen) for what was scanned/imaged.
- In Orientation Number record the number of the orientation taken (usually a "1").
- In the Identification column, record any identification (taxonomic classification/name as reported on specimen label -genus, species, etc.). If none or not obvious, then record "No ID" in pencil.
- In the storage location column, record the correct Case Number, Shelf Number, and Slide Box Number in the appropriate boxes (*please always use pencil for this column*).
- In the "Photographer(s) Initials" column, enter your initials even though you scanned the slides. 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. *Any setting not in these lists is not to be used without consulting the collection manager (or curator) and receiving approval and accepted abbreviation.* (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 slide scan (examples: drying out, cracked glass, retake <include prior photo number>).
- Make sure date scan was made is filled in on top of page.
- Make sure the appropriate page number is entered.

Scanning Overall Microscope Slides or Thin Sections Procedures

Photo Log — SNOMNH Paleobotany & Micropaleontology - Slides

Date: 09/17/2013
(mm/dd/yyyy)

Digital Image Filename	OPC Specimen Number (numbers following dash)	Photo of (Circle one)	Orientation Number	Identification (whatever specified or No ID) (prefer genus species, but any taxonomical)	Storage Location			Photographer(s) Initials	Special Settings (approved abbreviations)	Additional Notes
					Case Number	Shelf Number	Slide Box Number			
OPC_00123456 .jpg	123456	(Specimen) Closeup Label	1	No ID	1	1	3	JLA		
OPC_00123456 .jpg	123456	(Specimen) Closeup Label	1	Taxodiaceaepollenites hiatus	2	10	50	JLA		cracked glass
OPC_00234567 .jpg	234567	(Specimen) Closeup Label	1	Tsugaepollenites nexosus Hedlund	10	8	100	MLL		marked type
OPC_00234567-label .jpg	234567	Specimen Closeup (Label)	2	No ID	10	8	100	MLL		marked type
OPC_00345678 .jpg	345678	(Specimen) Closeup Label	1	No ID	4	5	87	MLL & JWP		
OPC_00456789 .jpg	456789	(Specimen) Closeup Label	1	No ID	4	5	87	MLL & JWP		
OPC_00567891 .jpg	567891	(Specimen) Closeup Label	1	Liquidambarpollenites sp.	7	4	667	JWP		
OPC_00678912 .jpg	678912	(Specimen) Closeup Label	1	Palmaepollenites cf. tranquillus	7	4	667	JWP		has 2 numbered circles
OPC_00789123 .jpg	789123	(Specimen) Closeup Label	1	Tricolporopollenites aliquantulus	7	4	667	JWP		
.jpg		Specimen Closeup Label								

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(Example of a filled out "SNOMNH Slide Scan Logbook Page")
[Additional pages can be printed on legal paper from SNOMNH_Slides_Log.pdf or Photo_Slides_MF_Slides_Log.xls]

Last Updated: 09/19/2013

24. Record the information about the scan that was just taken in the Photo Checklist (as it is more of imaging checklist and it helps avoid duplicate specimen numbers being used in imaging). (See Example on next page)

> **As an aid in determining if a specimen has been photographed, 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. ==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.
- No subsample exists, so put a dash "-".
- In the Specimen Photographed column place a checkmark in the appropriate column.

  ➔ "Slide" in other-specify column.
- In the date photographed column, record date scan made as mm/dd/yyyy.
- In the "Notes" column, record any other useful observations or problems (Examples: drying out, cracked glass, retake, etc.).

Photo Checklist — SNOMNH Paleobotany & Micropaleontology

| OPC Specimen Number	Subsample Letter (1 letter/line) (no letter = dash)	Specimen Photographed (checkmark if yes)			Date Photographed (mm/dd/yyyy) (1 date/line)	Notes Useful Observations or Problems (No Abbreviations)
		Obverse	Reverse	Other - specify		
1230	—	✓	✓		08/26/2006	
	A	✓	✓		08/26/2006	
	B	✓	✓		08/26/2006	
1231						
1232	—	✓	✓		12/14/2012	part to 2345
1233						
1234	—	✓	✓		12/14/2012	2 cm
1235	—			✓ MF Slide	11/02/2010	
1236	—			✓ Slide	09/20/2013	
1237	—			✓ Slide	09/20/2013	
1238	—			✓ Slide	09/20/2013	
1239	—			✓ Slide	09/20/2013	

(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]

25. Some slides may have writing on them that you can only read from viewing the slide from the back due to a label on the front. If any of the slides just scanned (in steps 2 through 1) have this type of writing (see examples below), **flip over 180 degrees only those slides with this writing** so that the label you just had facing down is now facing up, readable, and it is centered in the appropriate area corresponding to the appropriate slide box slot it came from (leaving any that do not as they are) and repeat steps 10-21.
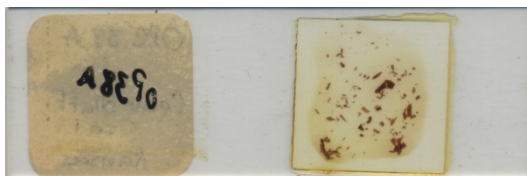
(Image of writing underneath other labels @ SNOMNH)
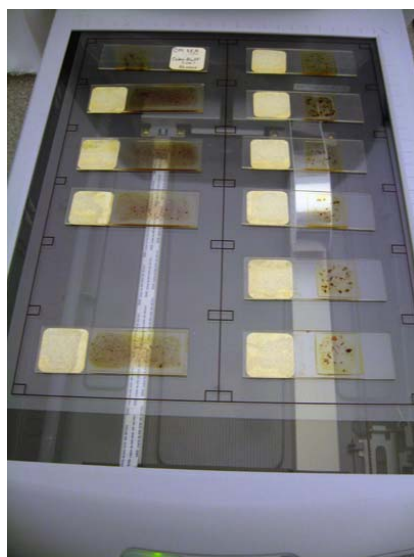
(Photo of the SNOMNH Slide Template Transparency with some slides flipped for 2nd scan)
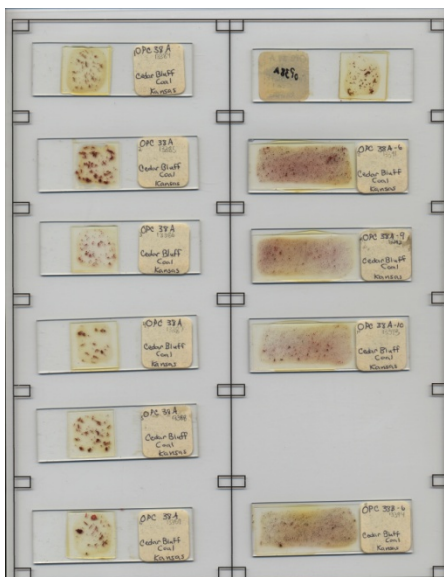
(Scan of the SNOMNH Slide Template Transparency with some slides flipped for 2nd scan)

26.   After saving the scanned image of flipped over slides, enter the required information in the Slide Scan Logbook for only the flipped over slides similar to what you did in step 1.

27.   Carefully return slides to slide box, using care to return slides to the slots you found them in. *Please use the SNOMNH Slide Location & Scanning Form you created in step 6 to ensure that you return them to the correct slots.*

28.   Repeat steps **Error! Reference source not found.** through 27 as necessary until all the slides in the slide box have been scanned.

29.   Record the information about the scans that were just made in the Slide Checklist. (See Example on next page)

> As an aid in determining if a slide box has been imaged, a numerical order list of assigned slide box numbers is maintained. If the checklist indicates that the slide box has already been photographed, then check the Slide Photo Log for location and name of the digital photographs and look at image(s) to make sure it really has been imaged and the entire box has been imaged. **<mark>If it is not the same slide box and slides notify the collection manger immediately!</mark>**

- Find the appropriate page for the OPC Slide Box number that was scanned. If one does not exist create one from the blank checklist pages.
- Enter the total number of slides in the "Total Number of Slides in Box" column.
- In the Slots Scanned column record the range of slots scanned in #-# format (*e.g.* 1-10, 56-100).
- Record any appropriate reverse or other images made in #-# format (*e.g.* 17-40, 74) of just those that were flipped or otherwise imaged differently than the front of slides.
- In the date scanned column, record date scan made as mm/dd/yyyy.
- In the "Notes" column, record any other useful observations or problems (Examples: drying out, cracked glass, retake, etc.).

Slide Checklist — SNOMNH Paleobotany & Micropaleontology

Slide Box Number	Total Number of Slides in Box	Slots Scanned (Start to Finish/line)	Reverse/Other Scanned? (If Yes, indicate slot(s) specified as Start to Finish) Reverse	Other - specify	Date Scanned (mm/dd/yyyy) (1 date/line)	Notes Useful Observations or Problems (No Abbreviations)
121	10	1-10			12/14/2012	OPC 1234
122	24	1-28			12/14/2012	OPC 5668
123	1	2			12/14/2012	OPC 25 (WH 16)
124						
125	100	1-100	19-26		11/12/2012	OPC 19A-OPC 19Z
126	78				01/07/2013	OPC 8, Slot 8 - tape over paper label
127						
128	19	1-24			09/28/2012	OPC 9876, 2 holotype slides
129	75	1-100	74		11/12/2012	OPC 31 (1 of 2), slot 10- cracked
130	100	1-55 / 56-100	17-40 / 75-100		11/12/2012 / 12/14/2012	OPC 31 (2 of 2) / OPC 31 (2 of 2)

(Example of a filled out "SNOMNH Slide 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_Slide_Checklist.pdf or SNOMNH_Slide_Checklist.xlsx]

30. Carefully return the slide box of microscope slides or thin section slides you were scanning to storage.

    [See "Storage & Retrieval of Microscope Slide or Thin Section Slide Boxes Procedures" for details.]