

NMNH Paleo Guidelines for Specimen Images

These guidelines are for creating and preserving the best specimen digital image possible. Following the guidelines will ensure you have an image that can be used for analysis, documentation, visual reference, and the web. Lower quality images can be created with less time and care but may result in re-photographing specimens if originals are lost or higher quality images are needed.

NMNH Paleo is moving toward standards that cover just documentation-type images and not attempting to take research quality photos for several reasons (logistically too difficult to whiten specimens etc, imagers are not always able to make a quick judgment call on how to image highly variable specimens, researchers are more likely to re-image specimens according to their own methods).

Image Capture

Set your camera to take photos in RAW or TIF format. Photos that are originally taken in JPEG format undergo processing by your camera that lessens the image quality. RAW images are unprocessed.

Use the highest resolution or largest file size available on your camera.

Your camera's RAW file format is proprietary to your camera brand (e.g. Panasonic RAW, Cannon RAW, Olympus RAW). You will need to convert your proprietary RAW images to a standard RAW format called a Digital Negative (DNG) or TIF.

Specimen images must include a scale. Specimens should be oriented based on taxon orientation conventions. The specimen label or tag with the USNM number and color reference should be included where possible.

If a visitor or volunteer will be taking the images, have them sign the "Scanning and Photographing specimens in the Department of Paleobiology, NMNH" agreement found here: R:\HollisK\ Scanning and Photographic specimens agreement.doc

Image Processing and Preparation

Name your files according to the file naming conventions (see Appendix).

Image originals should be saved in TIF format to prevent data loss. DNG format is acceptable, too, but it is less flexible for viewing. Only TIF format should be uploaded to EMu. (You can upload DNG images to EMu, but at present EMu doesn't know they are images, so you won't be able to actually view them within EMu). To convert proprietary RAW images to DNG or TIF, you can use the software that came with your camera or image processing software that supports proprietary RAW files like Adobe Lightroom.

Best practices recommend not permanently modifying image originals (e.g. color correction or cropping). However, this is not always logical. Just remember that any permanent changes you make to an original will be how the image will be digitally archived in perpetuity.

I recommend editing out the physical scale and adding line a scale bar using image processing software (see photo of USNM 870949 below). I also recommend adding a line of text to the image with the USNM number. That way, the image can be reassociated with the specimen if the file name or folder name is changed before it is uploaded to EMu. Here are good examples from Paleo and other NMNH collections:



Required Embedded Metadata

Digital images have two basic kinds of metadata embedded in their files: technical data (like resolution and bit depth) and descriptive data (like who created the image).

There are Institution-wide embedded metadata standards. These standards were developed to efficiently search and retrieve images for use in museum and Institution-wide informatics projects. They were also developed to keep SI digital images identifiable as they are reused and repurposed on the web.

For each image, you should fill in the following descriptive metadata using your image processing software. I prefer if you embed the metadata for each image, but I can fill out the embedded metadata for you if that works best for you. Use the “Image Metadata Template” Excel file (found here: R:\HollisK\ ImageMetadataTemplate.xls) and keep it in the folder with your images.

1. Document Title

IRNs of the catalog record are not longer an accepted Title format. This is because the Title and other embedded metadata should be relevant 100 years from now. IRNs are unique to EMu, which is likely to be replaced decades from now.

Accepted Document Title formats are:

- The complete USNM number that includes the catalog code:
(USNM + Catalog number ledger series code + 12354)
USNM PAL 444331
USNM MO 12334
- For type specimens, include the genus and species of the original taxonomic attribution
Elphidium formosum USNM CC 624226
Elphidium morenoi USNM CC 22399A
- For multiple images for one specimen add an underscore and then a number representing the image number. Single digits should be preceded by a zero so they can be sorted as number if needed:
USNM PAL633226_01
USNM PAL 625656_18
Elphidium formosum USNM PAL 624226_02
- The file name can also be used if the file name contains unique specimen catalog information (USNM number).
- For specimen lots or specimen elements that have multiple images, create a title that follows the Paleo file naming conventions (see Appendix).
- If your image is of a specimen that isn't cataloged, create a title that is a unique as possible.

2. Copyright Notice

Copyrighted images can be used for personal, educational, and other non-commercial use under copyright fair use law. Commercial use is not permitted and requires prior written permission.

The default copyright statement is "This image may be protected by copyright or have other legal restrictions on use. Permission to publish should be obtained from the National Museum of Natural History, Smithsonian Institution, Washington, D.C." Only put a different statement in this field if you know the accurate copyright information for the image.

In **most** instances, images of NMNH specimens created by NMNH employees are not eligible for copyright. The copyright notice for images with no copyright is "This image is in the public domain."

3. Source

Always use "Specimen from Department of Paleobiology, NMNH, Smithsonian Institution"

4. Creator

Accepted creators are

- The name of the original content creator
- The name of the photographer

- Department of Paleobiology (where an individual is unknown)

Other recommended descriptive metadata to be completed:

5. Date

The date the image was created, MM/DD/YYYY format.

6. Description

1Detailed information about the multimedia item; should include the following as applicable; (*always preface text with appropriate data tag*)

Magnification: magnification used when creating the image

Scale: scale applied to image; metric; show appropriate units

Details: detailed information about the body part, orientation, etc

7. Keywords

Keyword should be broad descriptive terms. Include the following in any order **separated by a semicolon**:

Body part/Element

Higher Taxon

Type status (if specimen is a type)

Exhibit (if specimen in on exhibit)

Cast (if specimen is a cast)

Archiving image originals

Images that are uploaded to EMu are intended to be the archived master image. You won't need to store or backup your images anywhere else once they are in EMu. Of course, you can maintain your own backups if you like, especially if you like your organization scheme. Remember, though, that the images in EMu are the "administrative" master.

Before images are uploaded to EMu, the best place to store them is in the Media Staging Area (MeSA). The MeSA is just another network drive you can access through your computer. It's intended to be a safe, temporary storage area with enough storage space for multimedia. Accessing and using the MeSA requires an access request form. More information is here:

<http://nhintranet.si.edu/Darwin/MuseumOffices/Informatics/multimediamanagement.html>

When your images are ready to be uploaded to EMu you can import them and attach them to the appropriate catalog record. The embedded metadata you already saved to your images should automatically import and populate the EMu Multimedia fields. Add the IRN of the specimen catalog record in the Notes tab of the Multimedia record. The embedded metadata can be viewed in the EXIF, IPTC, and XMP tabs of the EMu Multimedia record. The other tabs and fields in the Multimedia record fields do not change the embedded metadata. When images are saved from EMu, the only data (e.g. creator, description, source, rights, etc.)

connected with the image file is the embedded metadata. The metadata from the EMu Multimedia record is not included in the image file. Therefore, **you must embed descriptive metadata before you import images to EMu.**

If you opt not to import your images to EMu, you can prepare your images, put them in a folder in the MeSA, and I can batch upload them. This method is recommended if (1) you're not sure how to upload and attach images in EMu, (2) you have many images, or (3) your upload speed is too slow on your computer. Again, I prefer if you embed the metadata for each image, but I can do it if all of the necessary data is complete in the "Image Metadata Template" Excel file included with your images. Send me an email when the images are ready for upload to EMu.

Appendix: Paleobiology File Naming Conventions

EMu Multimedia Module - File Naming Conventions

1) Single Specimen Lot, without Catalog # Letter Suffix

USNM MO 234567, three images of same specimen

Paleo_MO_234567_01

Paleo_MO_234567_02

Paleo_MO_234567_03

2) Single Specimen Lot, Catalog # Letter Suffix

USNM MO 234567a, three images of same specimen.

Paleo_MO_234567a_01

Paleo_MO_234567a_02

Paleo_MO_234567a_03

3) Multiple Specimen Lot, without Catalog # Letter Suffix

USNM MO 234567, three specimens in the lot, at least one image of each specimen.

First number after the catalog number separates the specimens in the lot.

Second number separates multiple images of same specimen.

Paleo_MO_234567_01_01 Specimen 1, Image 1

Paleo_MO_234567_01_02 Specimen 1, Image 2

Paleo_MO_234567_02_01 Specimen 2, Image 1

Paleo_MO_234567_03_01 Specimen 3, Image 1

Paleo_MO_234567_03_02 Specimen 3, Image 2

Paleo_MO_234567_3_3 Specimen 3, Image 3

4) Multiple Specimen Lot, USNM Letter Suffix

USNM MO 234567a, three specimens in the lot, at least one image of each specimen.

Paleo_MO_234567a_01_01

Paleo_MO_234567a_01_02

Paleo_MO_234567a_02_01

Paleo_MO_234567a_03_01

Paleo_MO_234567a_03_02

Paleo_MO_234567a_03_03

Notes

Paleo = Paleobiology Department.

MO = example EMu Prefix = USNM Catalog # Series (CC, MO, P, PAL, PP, PR, RB, S, or V).

Do not use leading zeros in catalog number