S&E Media

How will the images primarily be used?

- Public -

- Research -

- Both -
Archiving S&E Imagery

- DPI - set to 300dpi
- ICC Color Profiles - AdobeRGB (& sRGB for Web)
- Dimensions - < 10,000 x 10,000
- Compression - None
# 16-bit vs 8-bit

<table>
<thead>
<tr>
<th>8-bit</th>
<th>16-bit</th>
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<tbody>
<tr>
<td>• Approximately 16 million tone variations</td>
<td>• Approximately 281 trillion tone variations</td>
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</table>
Archiving S&E Imagery

<table>
<thead>
<tr>
<th>Color (bit-depth)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-bit</td>
</tr>
<tr>
<td>16-bit</td>
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<table>
<thead>
<tr>
<th>Layers</th>
<th>x MB</th>
<th>4x MB</th>
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</thead>
<tbody>
<tr>
<td>-</td>
<td>x MB</td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>2x MB</td>
<td>8x MB</td>
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</tbody>
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x 2
DNGs vs TIFs

- TIFs -

Readily editable

Large file sizes

Variation is problematic

- DNGs -

Smaller file size

Lossless compression

IT, NHM, Lib of Congress all recommend this as archival standard
Suggested Workflow

**Camera**
10-bit to 16-bit

**Work Space**
16-bit (layers if needed)
...TIF

**Archives**
8-bit flattened ...
...DNG

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When you open an image in Photoshop, check:

- **Color Bit-depth:**
  1) Go to *Image → Mode*
  2) Choose *RGB* and *16-bit* before editing

- **Color Space:**
  1) Go to *Edit → Color Settings*
  2) Make sure Working Space RGB is either:
     - *Adobe RGB* (for general purpose)
     - *sRGB* (for web optimized)

Before saving final output, readjust Bit-Depth:

- **Color Bit-depth:**
  1) When done editing, return to *Image → Mode*
  2) Keep *RGB* selected, but switch to *8-bit*

  (Color Space: No need to readjust)
Workspace Setup for Photoshop:

1) Open your image file in Photoshop
2) Go to Edit → Color Settings
3) Choose Adobe RGB (or FMNH_GDI_ColorProfile)
4) Go to Image → Mode
5) Choose RGB, 16-bit before editing
6) Edit your image as needed
7) Choose 8-bit before saving final image
8) File → Save your final image

Download Photoshop GDI Color Preset here
In Photoshop, after editing, how to save/prep TIFs for conversion to archival DNG:

After going to Image → Mode → 8-bit (and Layer → Flatten Image),

Go to File → Save As… Choose TIFF:
Converting TIFs → DNGs using LightRoom (3)

In Lightroom,
- Select your TIFF images
- Go to File → Export
- Use the settings as shown:
  - pick “LR3_TIFtoDNG” in the preset menu
  - or manually pick:
    - “DNG” format
    - Latest/Highest Camera Raw
    - Medium JPEG
    - No “Embedded Raw”

(Preset and Instructions online here:)
intranet.fieldmuseum.org/emu/node/5970
Some Recap/Questions

...Lots of different workflows currently in practice across S&E

Questions

If some projects/workflows are not currently producing flat 8-bit TIFs, why not?
- “Soft Light” gray layers:
  Why do some of the insects images have this layer?
  If that layer gives the image the intended final appearance, can these TIFs be flattened?
- Scale-bar layers:
  Can these be flattened?
  Considering the option of moving them without need for layers, can they be flattened?
- Variation in color bit-depth & color-profile:
  When/Do collections images need 16-bit color depth?
  How measurable/valuable is that for research purposes, considering the storage cost + color profile variation?

Why don't DNG previews always look the same as the files they contain?
- Default settings for ImageMagick include some auto-adjustments when making preview pictures
  - we're working on turning these off. In the meantime:
    - For raw files to-be-archived, don't convert directly to DNG; **convert to TIF first, then to DNG**
    - Embed a JPEG preview (medium)
      (does not currently affect the EMu-generated previews, but might be able to fix that faster)
After images are archived:

How can people extract TIFFS (or other formats) from the archival DNG?
To extract DNGs → TIFs using Photoshop:
Open the DNG in Photoshop, and a “Camera Raw...TIFF” window appears:

Note: A third option Adobe DNG Converter (for win | for mac) might be available in upcoming years. However, currently, it only converts between DNG and camera-raw formats (not to/from TIFF).

...or LightRoom: (v3; trial version here)
Import DNGs into Lightroom, and then export them with these settings:

De-Archiving Images: