

Herbarium Specimen Digitization:

Image processing with

Adobe Photoshop Lightroom

Kimberly Watson & Michael Bevans

11 December 2013

Mobilizing Small Herbaria for Digitization Workshop



THE NEW YORK BOTANICAL GARDEN

NYBG Imaging Workflow

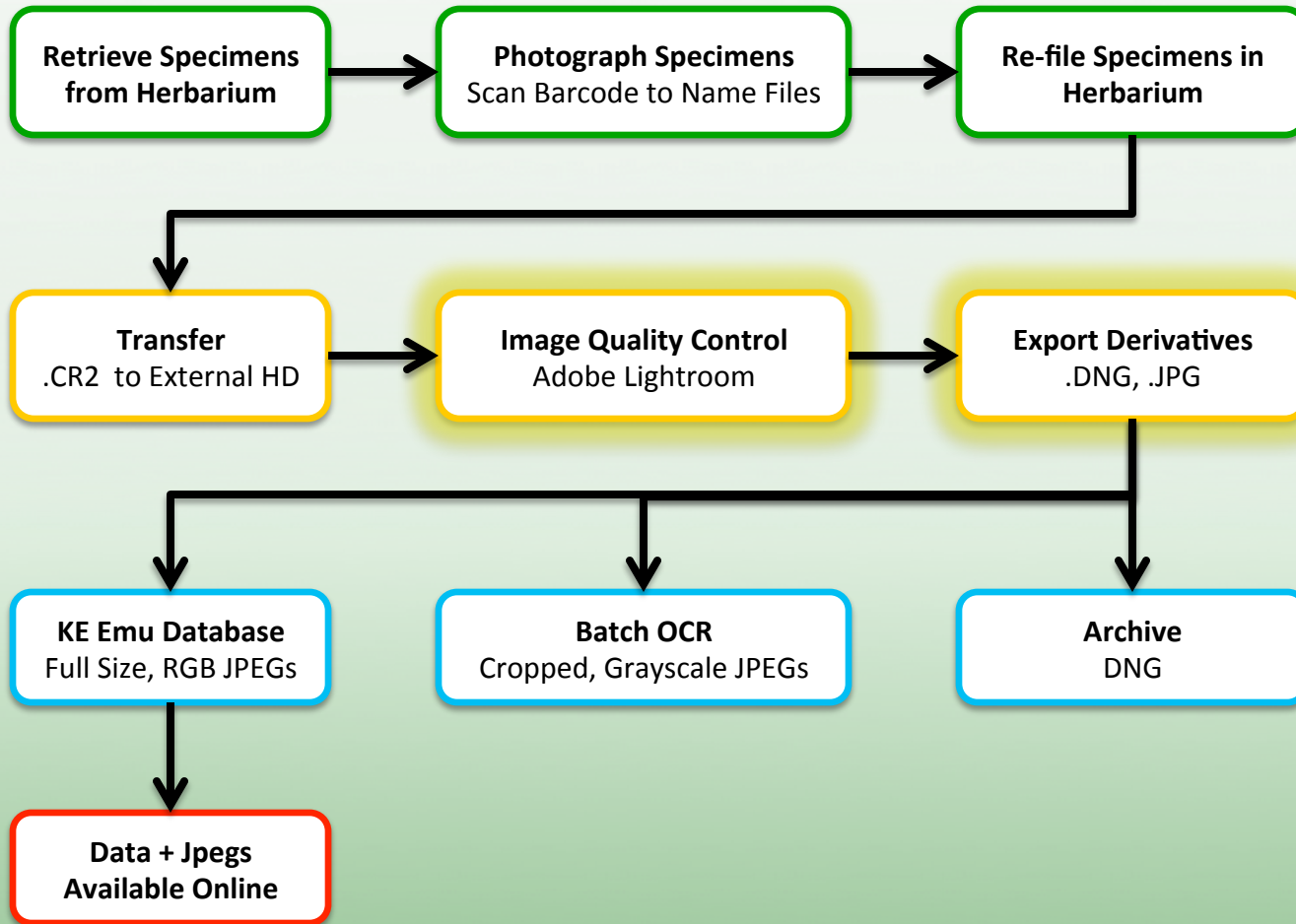
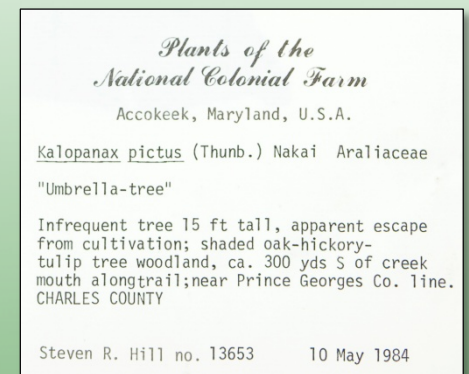
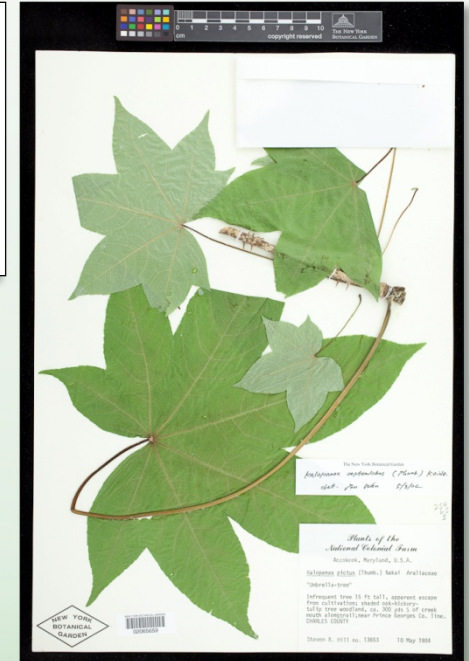
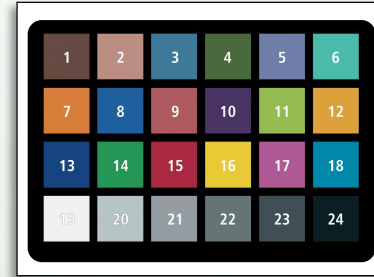


Image Quality Control

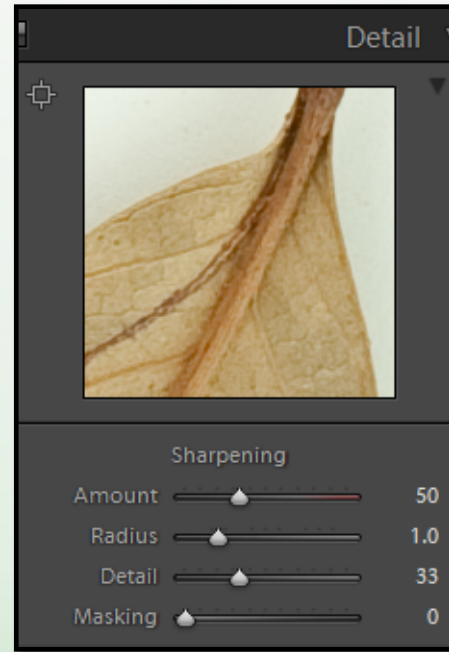
Browse and examine images for:

- Focus
- Exposure (target values)
- Color balance
- Content
 - All relevant aspects of specimen are visible
 - All labels are visible
 - Color checker and scale bar present
 - Specimens rotated right-side-up
 - Barcode matches file name



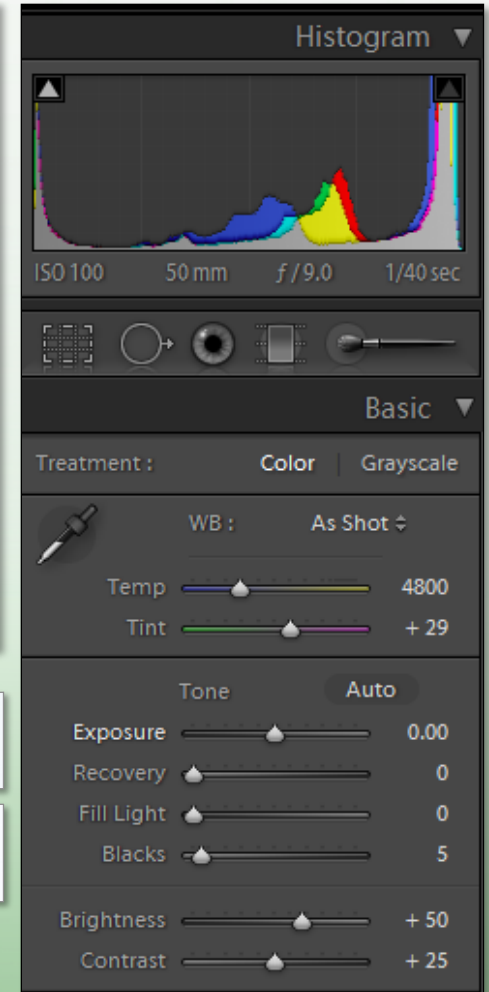
Post Capture Processing

- QC file names, focus
- Input Metadata
 - Creator
 - Copyright
- Image processing
 - Exposure
 - Contrast
 - Color Balance
 - Sharpen
 - Remove Chromatic Aberration



MELIACEAE

MELIACEAE



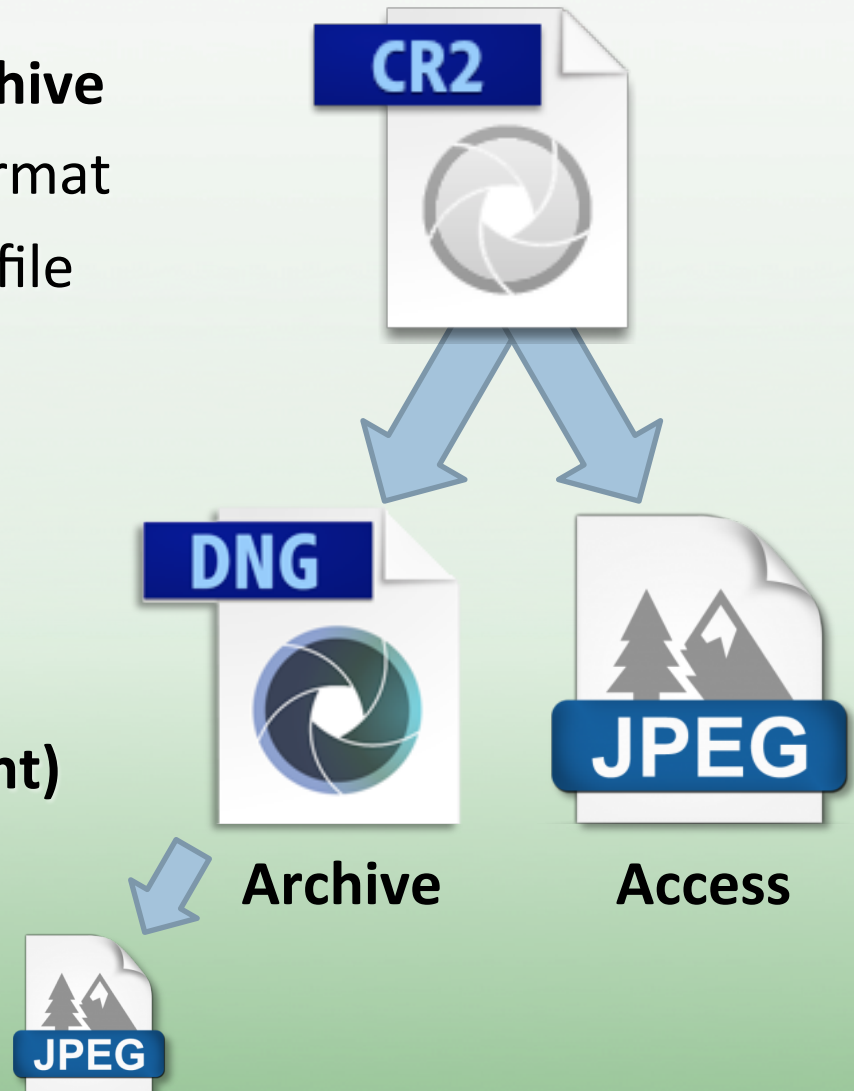
Export Derivatives

Convert RAW file to DNG for archive

- Open license raw image format
- Preserves metadata in the file
 - XML data in header
 - No sidecar file
- Small file size
- Full bit depth

Export JPEG for access (web, print)

- Full resolution
- sRGB color space



Overview

- Image import process
- Create and apply metadata preset
- Quality Control: file name and focus
- Image processing
- Create User Preset
- Image export process

Adobe Photoshop Lightroom

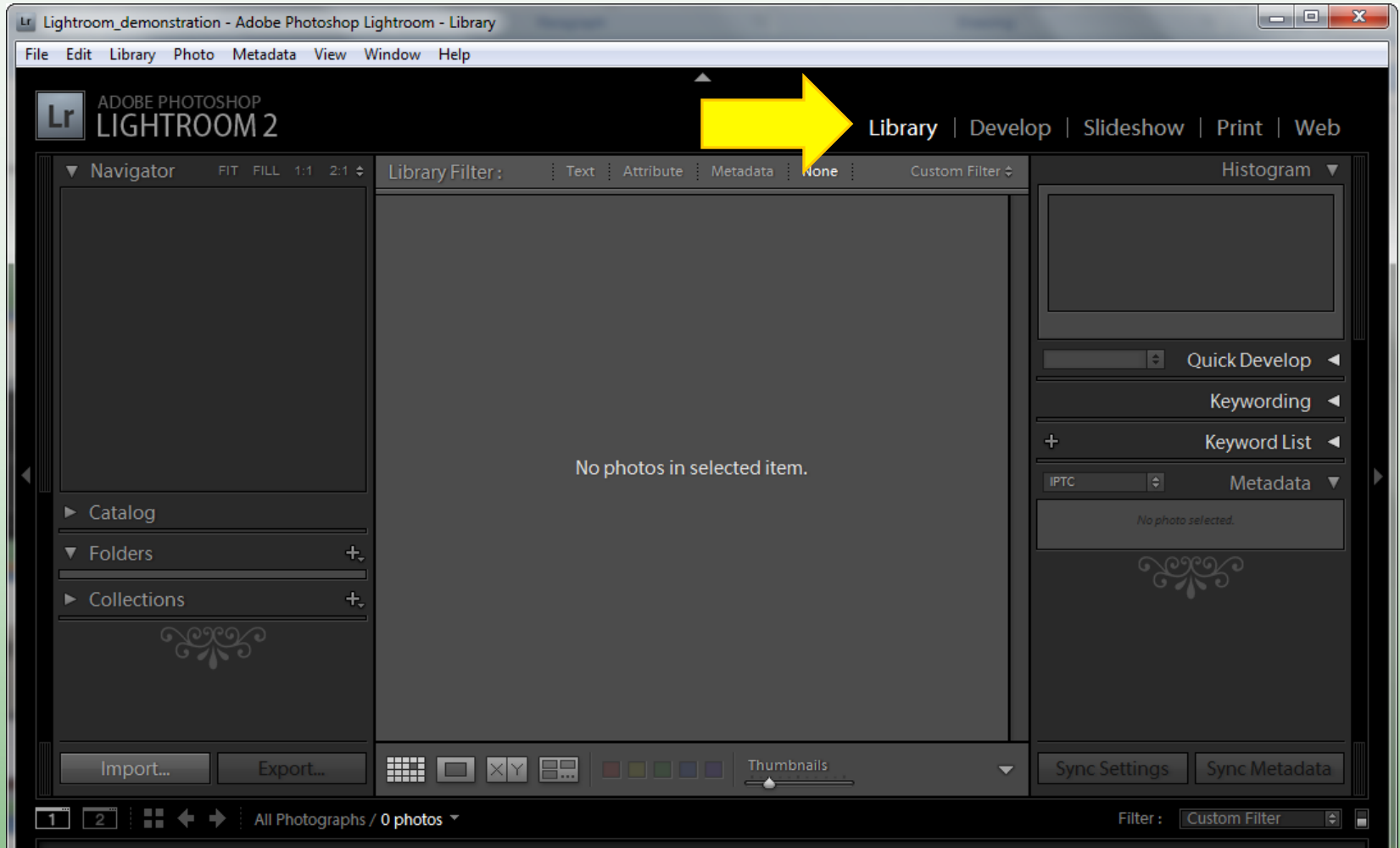
- Cataloging and image editing software
- Edits are NOT made directly to an image (unlike Photoshop)
- Edits saved as a set of instructions in a catalog file (.lrcat)
- Edits applied when images are exported from Lightroom



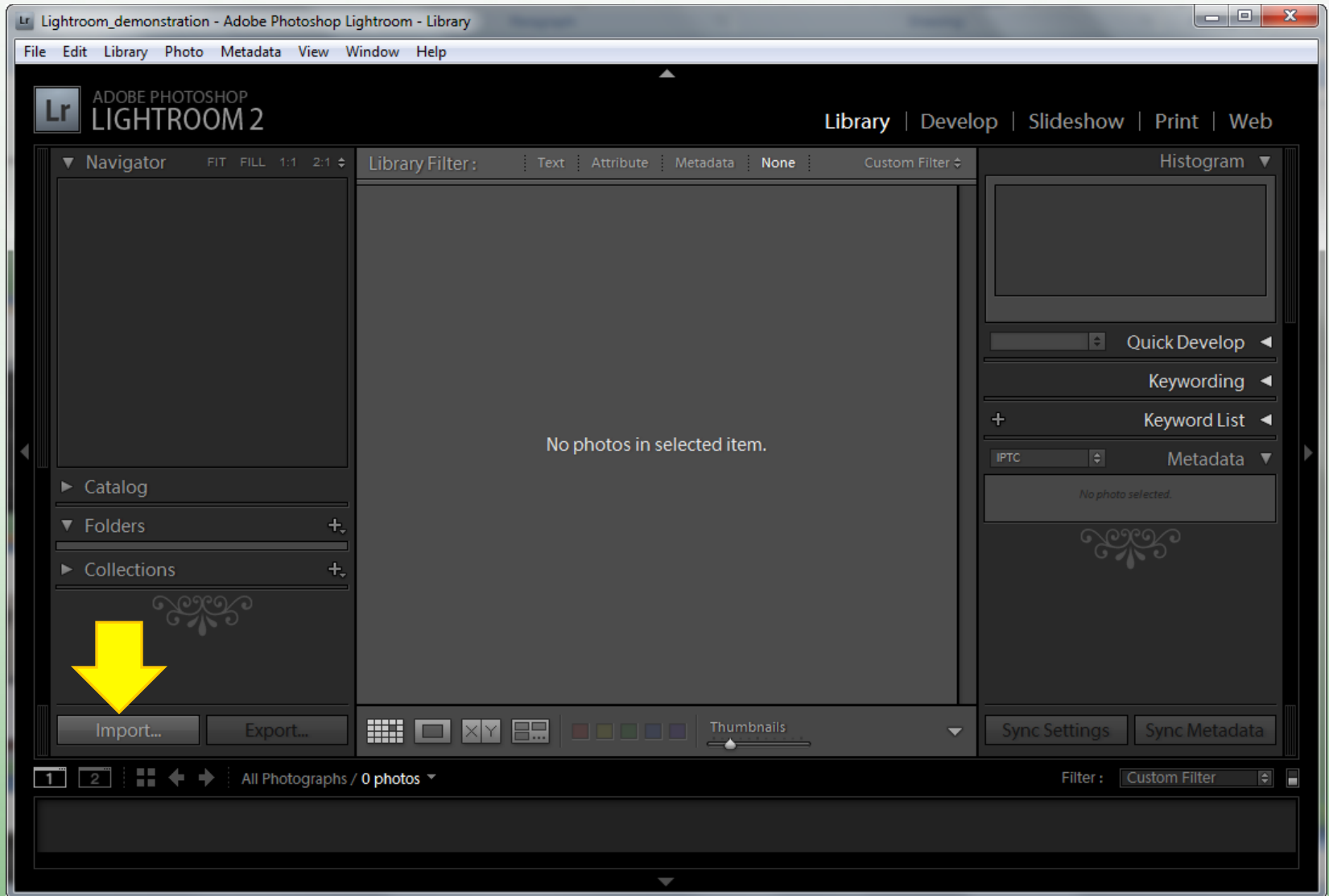
Version 2.7 shown. Other versions may vary in appearance.

Library Module

Import/Export. Browse folders of images. View many (Grid), view 1 image (Loupe). View/add/edit metadata. Flag/rate/color label. Filter and sort.

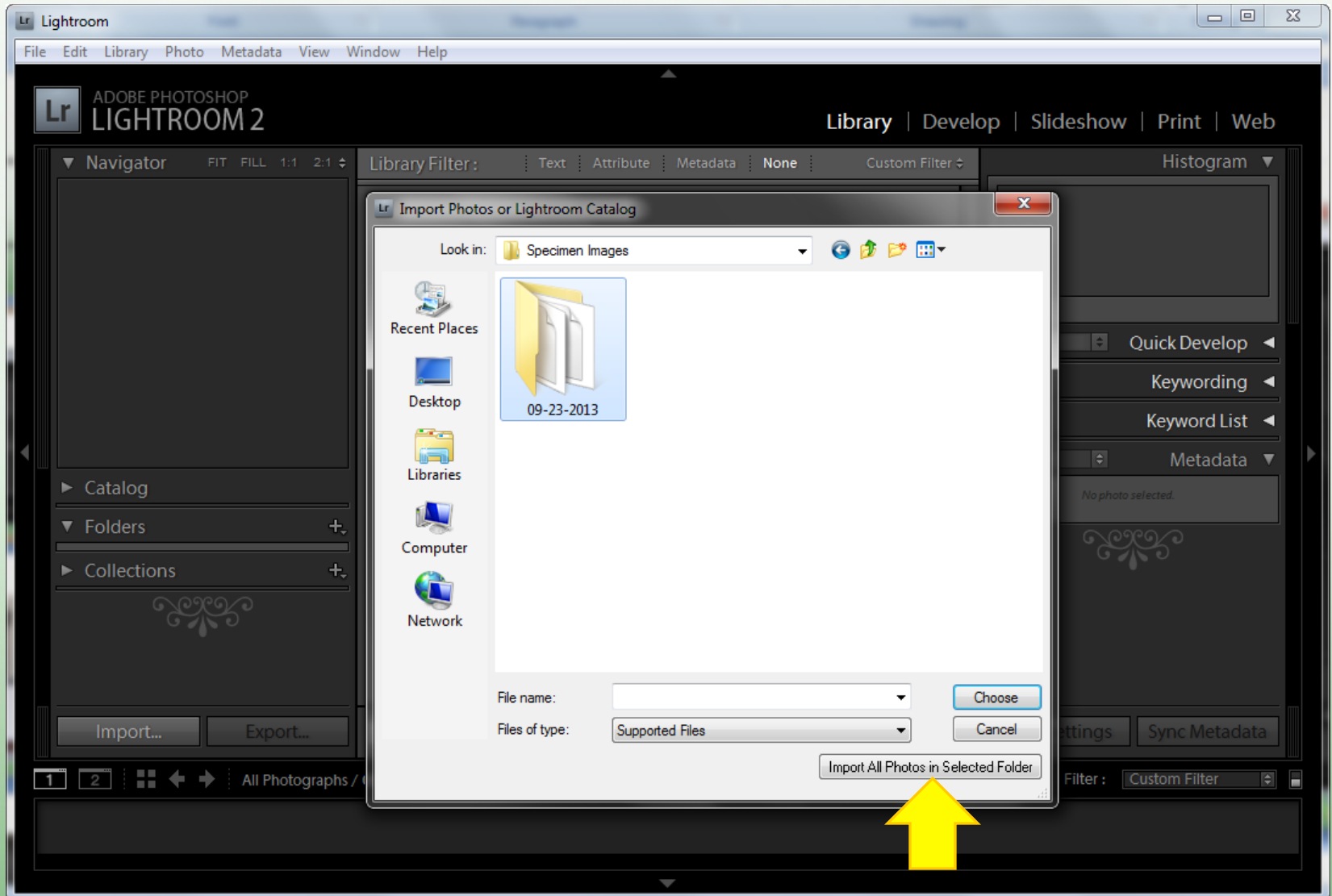


Import Images



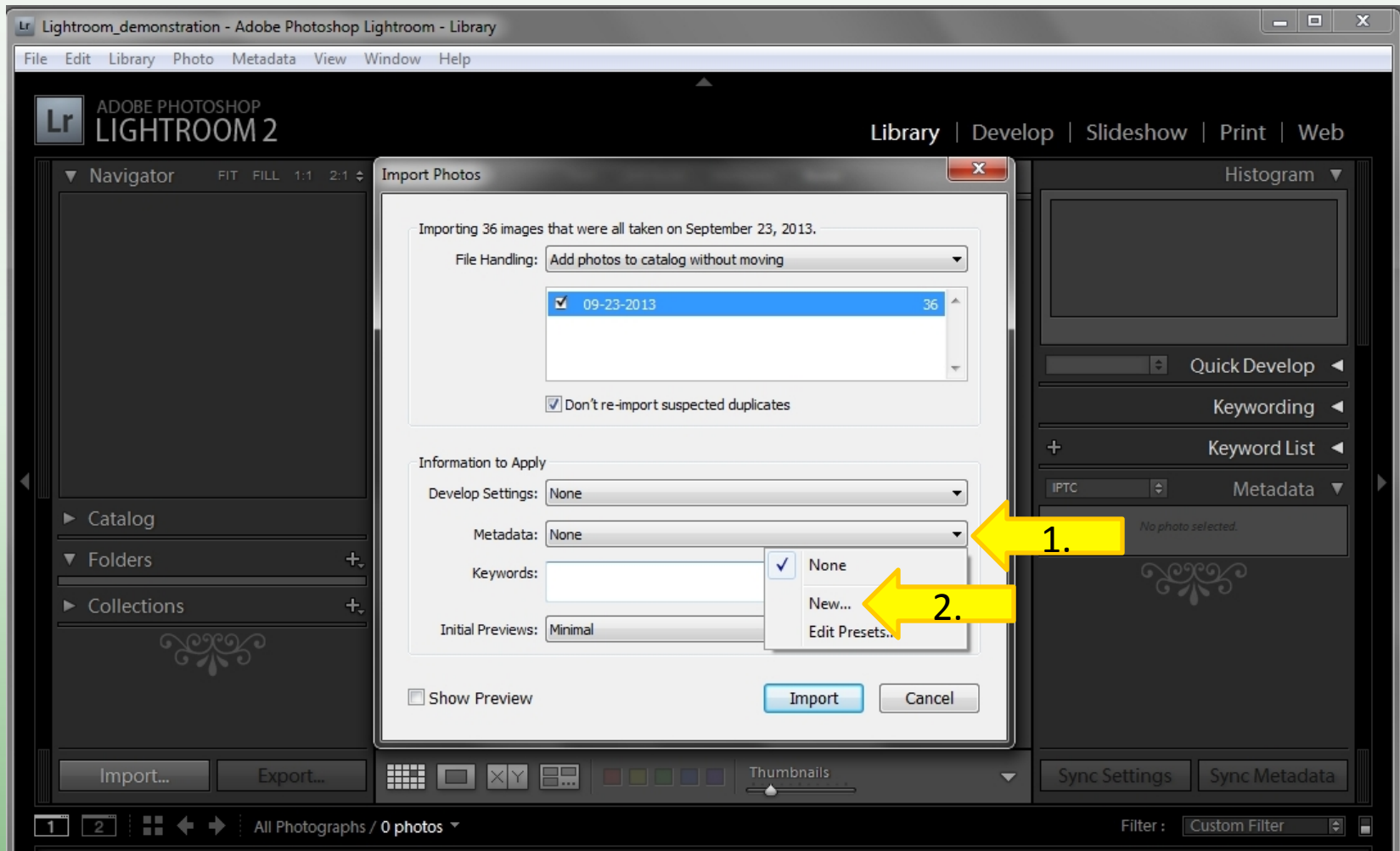
Import Images

Navigate to and select images to import.



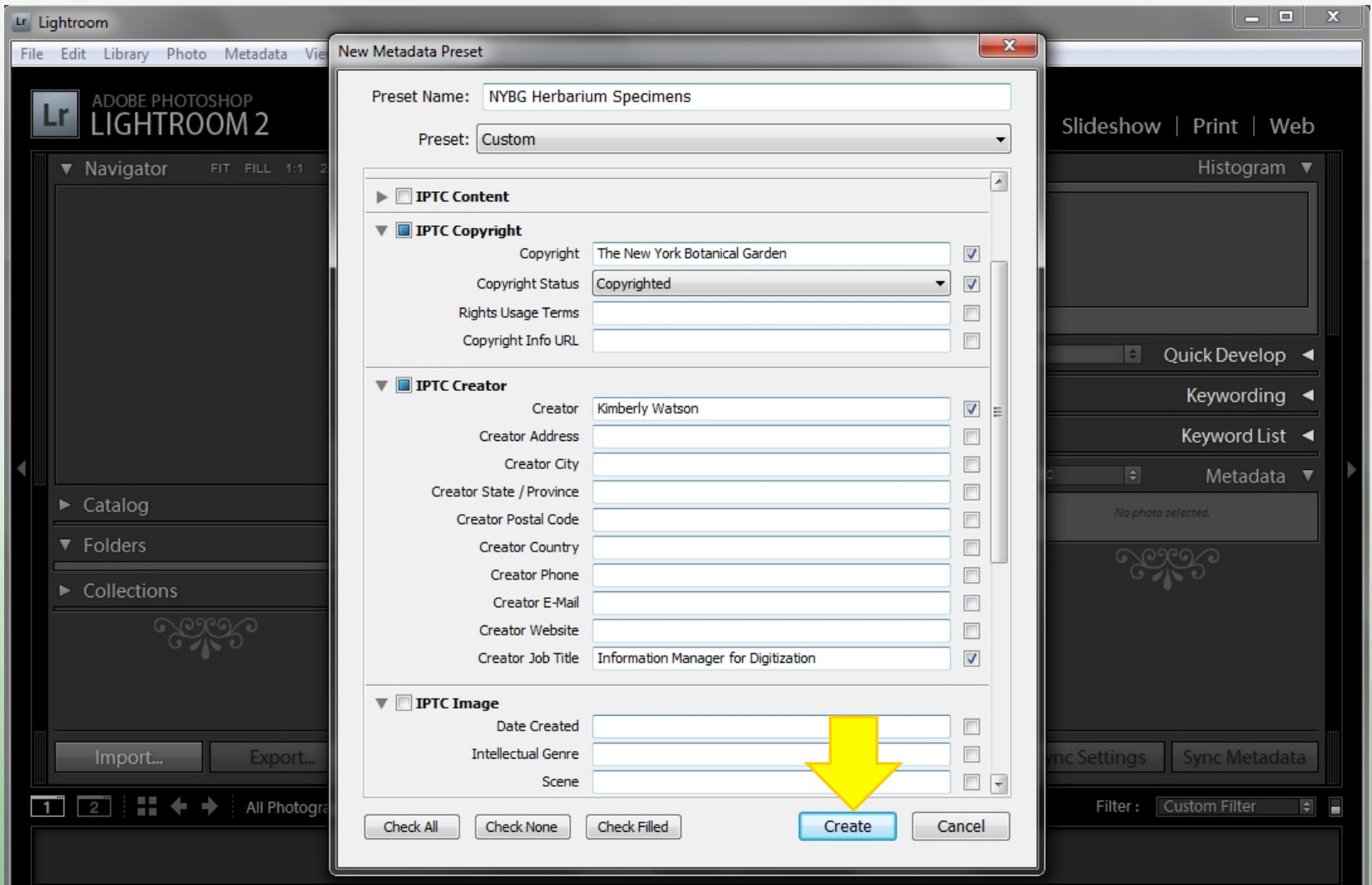
Metadata Preset

Make a preset of metadata to be embedded in every image: copyright, creator.
Apply preset to batches of images during import.



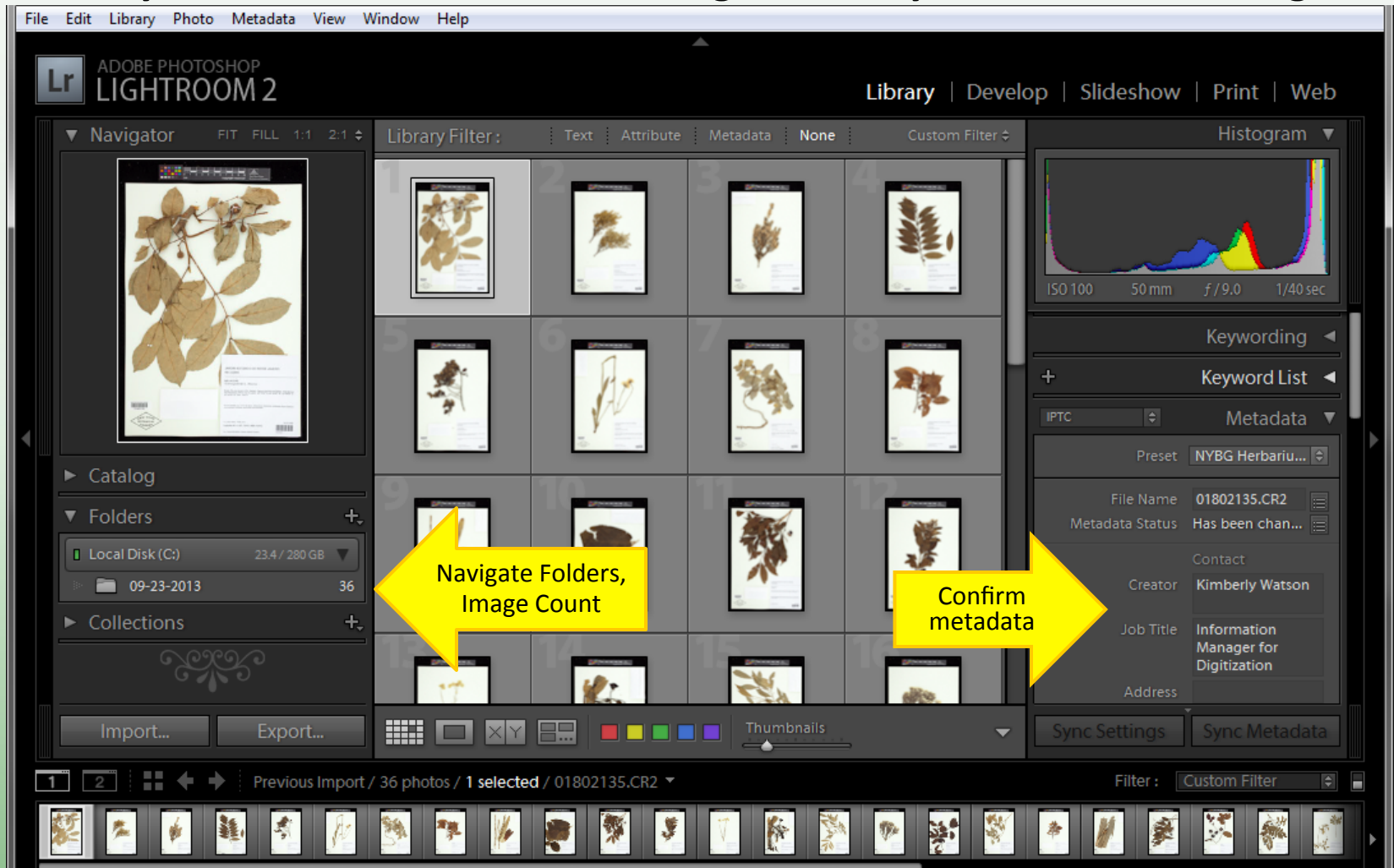
Metadata Preset

Name preset. Enter data in relevant fields. Select those fields. Create.



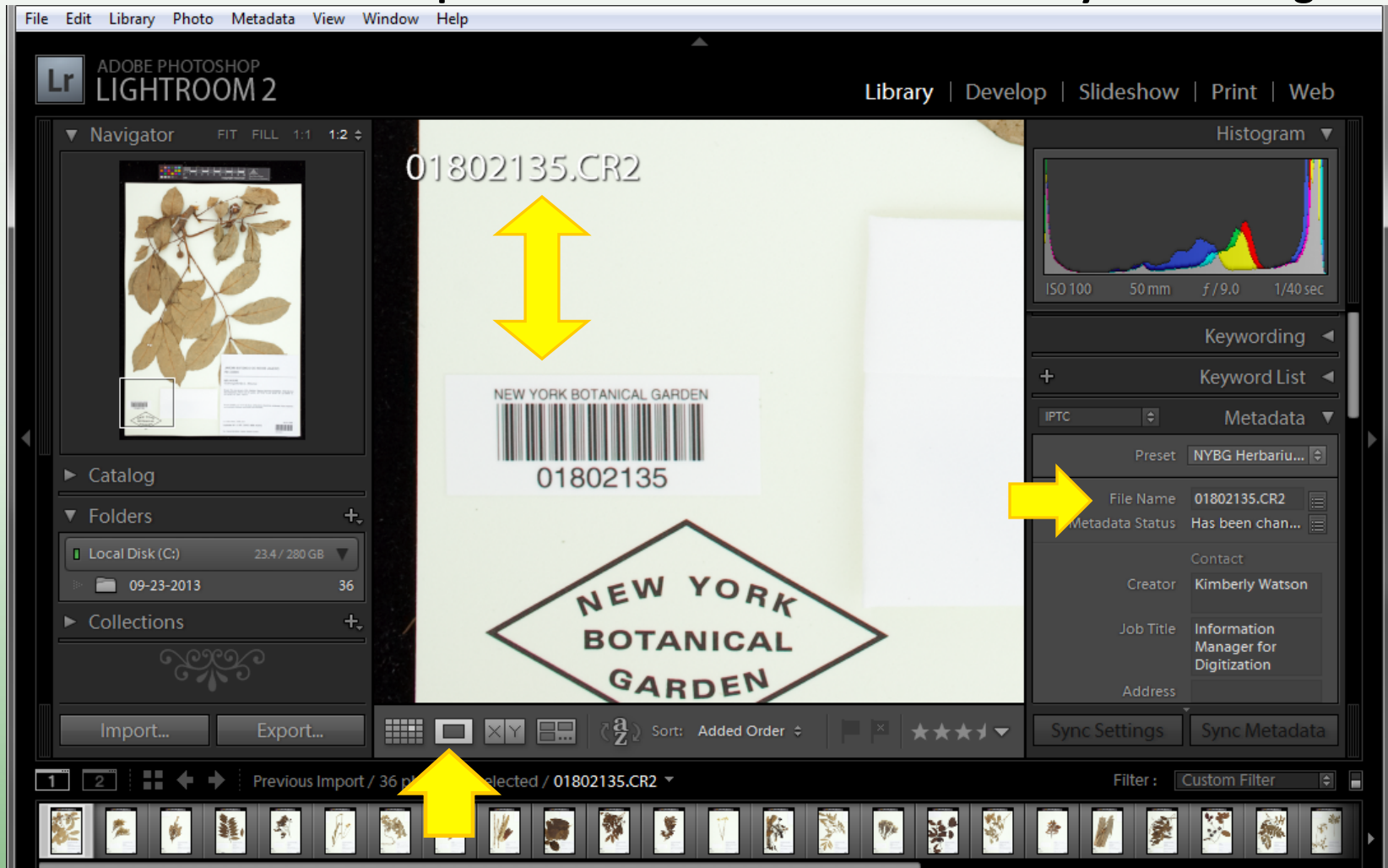
Metadata

Can also add/edit metadata after import. Keywords, title, caption, etc.
Can synchronize metadata for 1 image with any other selected images.



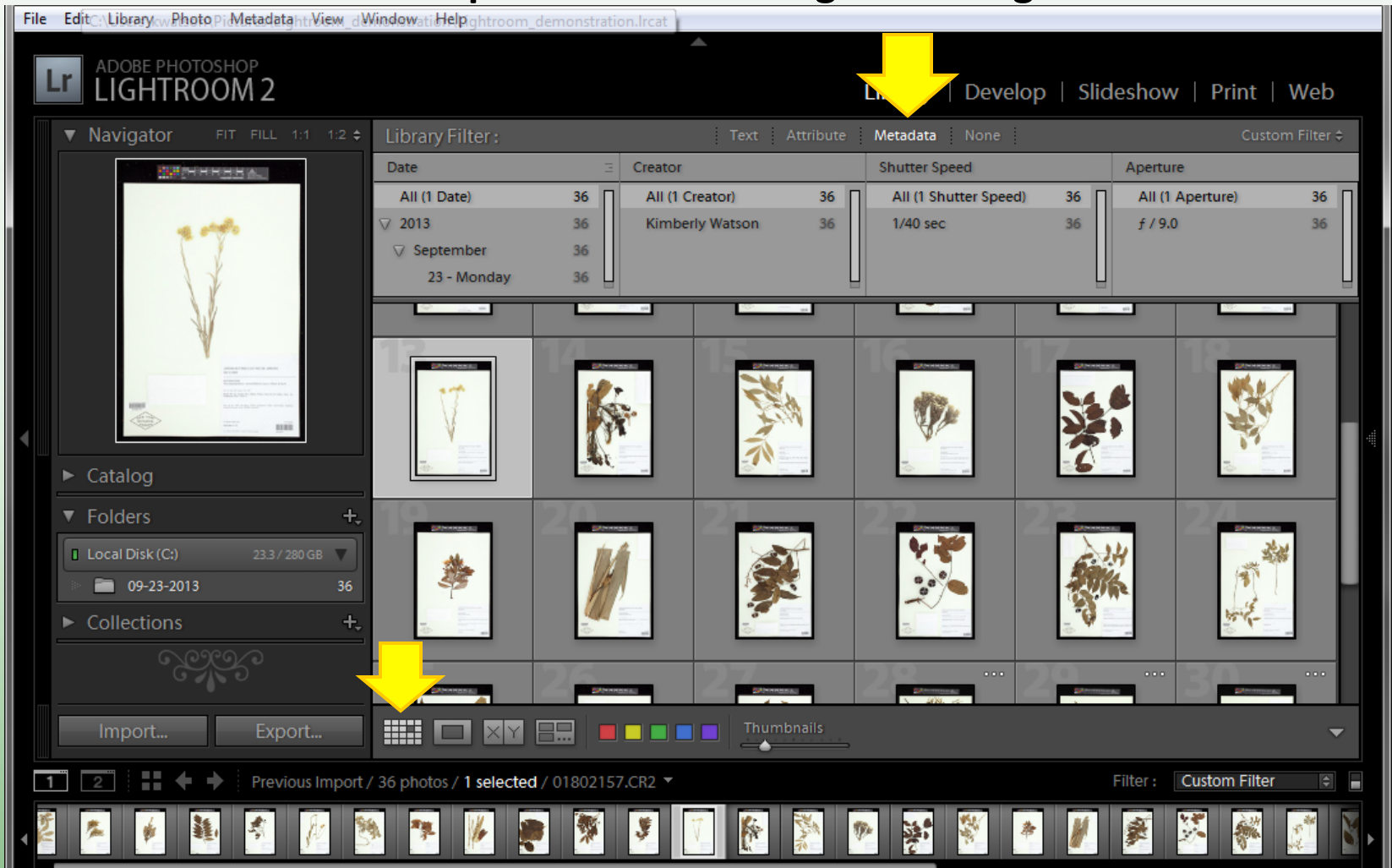
File Name & Image QC

In Loupe view, confirm image file name matches barcode. Edit, if needed.
Confirm labels and specimens are in focus. Check every 10-15 images.



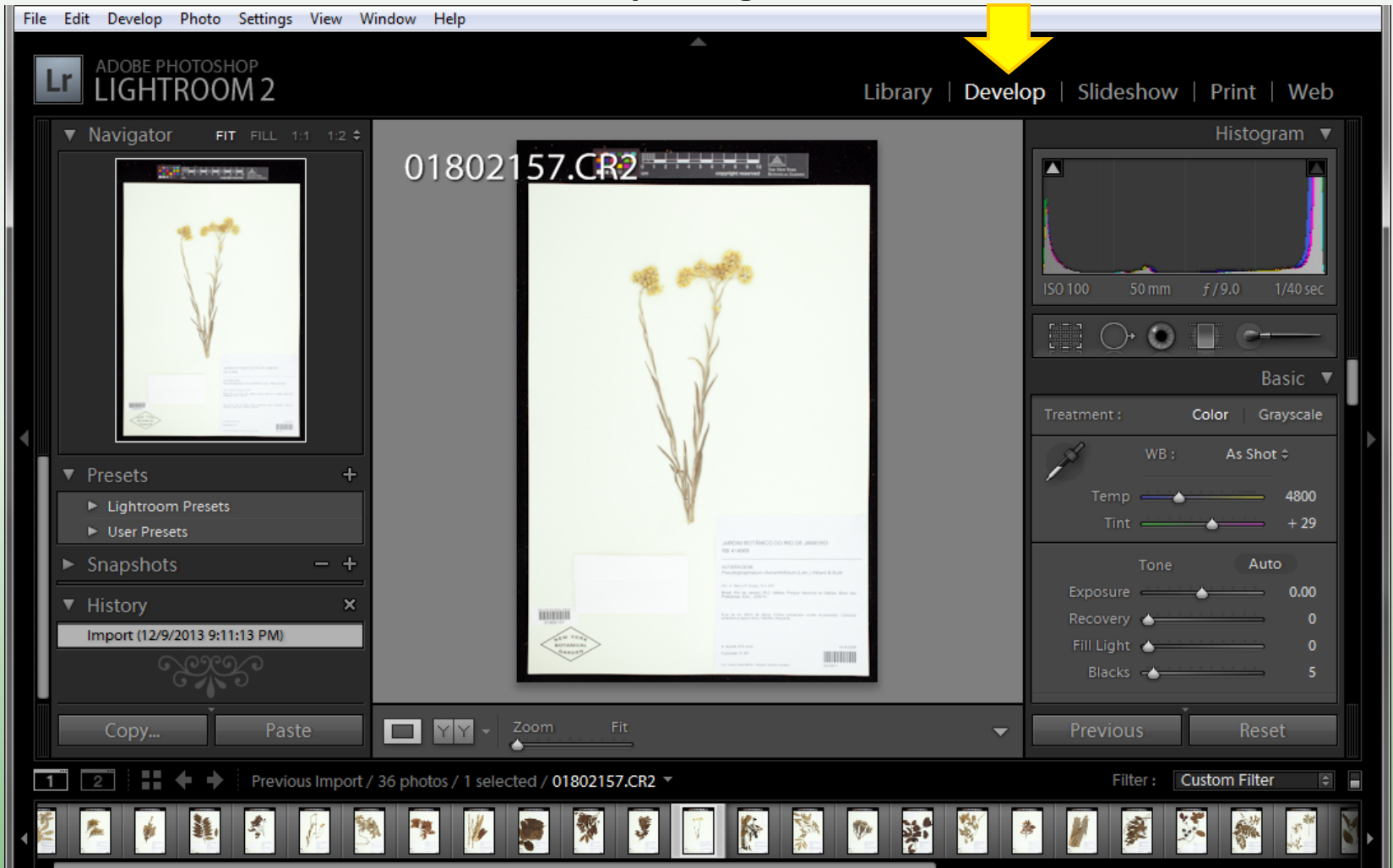
Batches for Processing

In Grid view, filter metadata and group images by date, shutter speed, and aperture. Select brightest image.



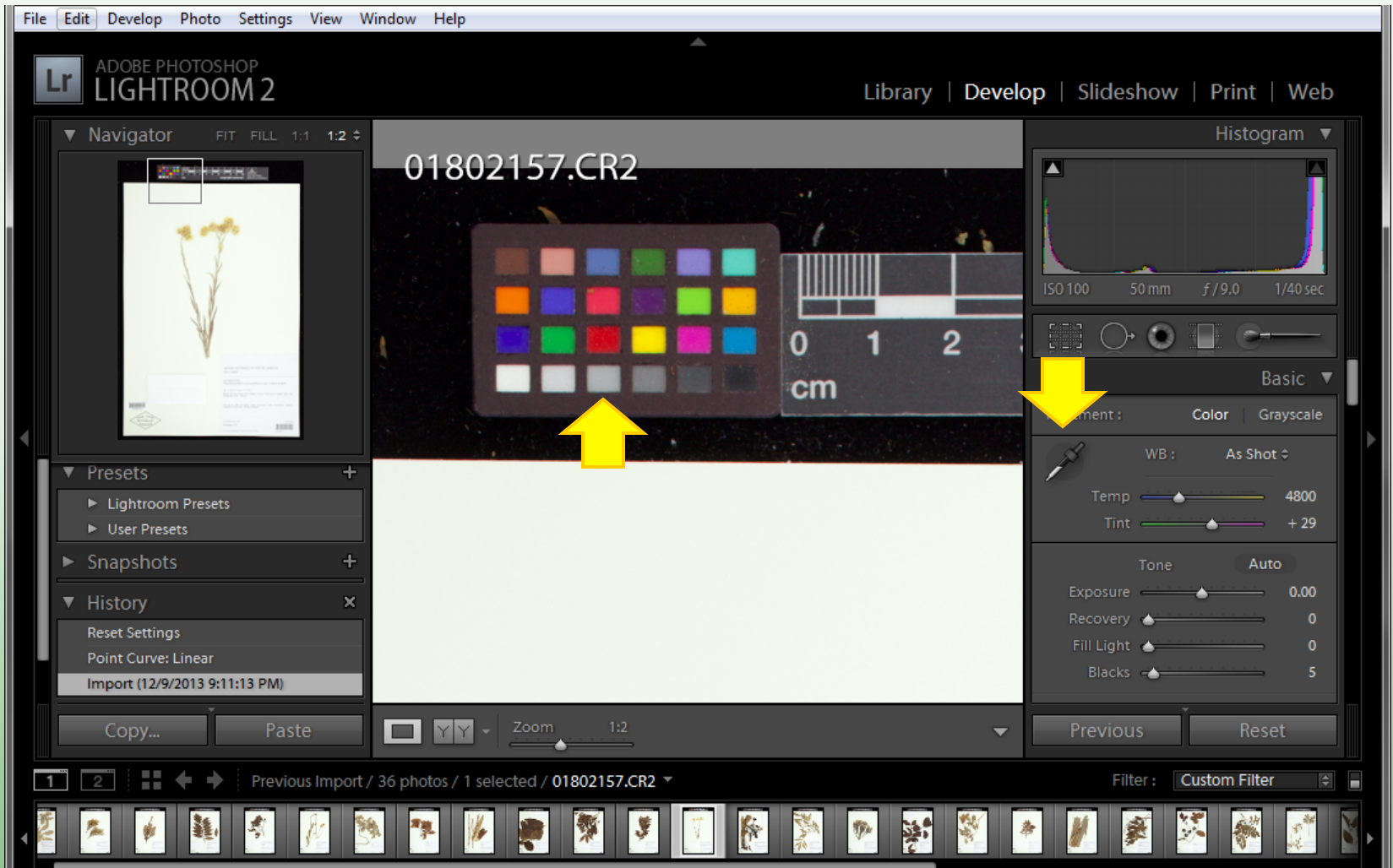
Develop Module

Image editing steps include: adjusting white balance, exposure, tone curve, sharpening, lens correction.



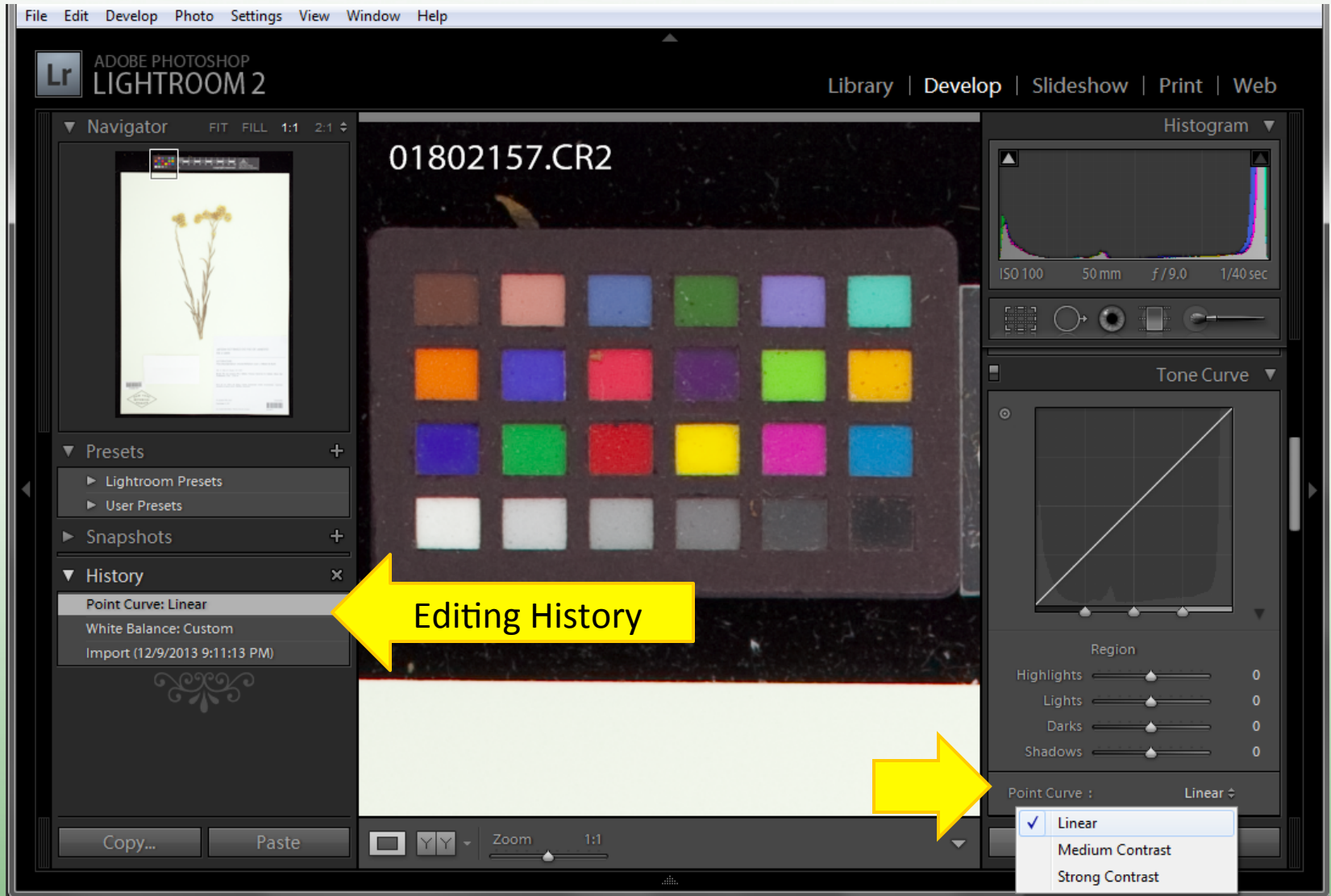
White Balance

Zoom-in on color checker. Select white balance eye dropper.
Move it to a neutral gray square and click.



Tone Curve: Linear

Scroll down to Tone Curve. Select Point Curve: Linear.



Exposure

Select Exposure. Move cursor to center of white target square. Read histogram. If color target is along perimeter of lightbox, RGB values of 93% preferable for white, otherwise 96%.*

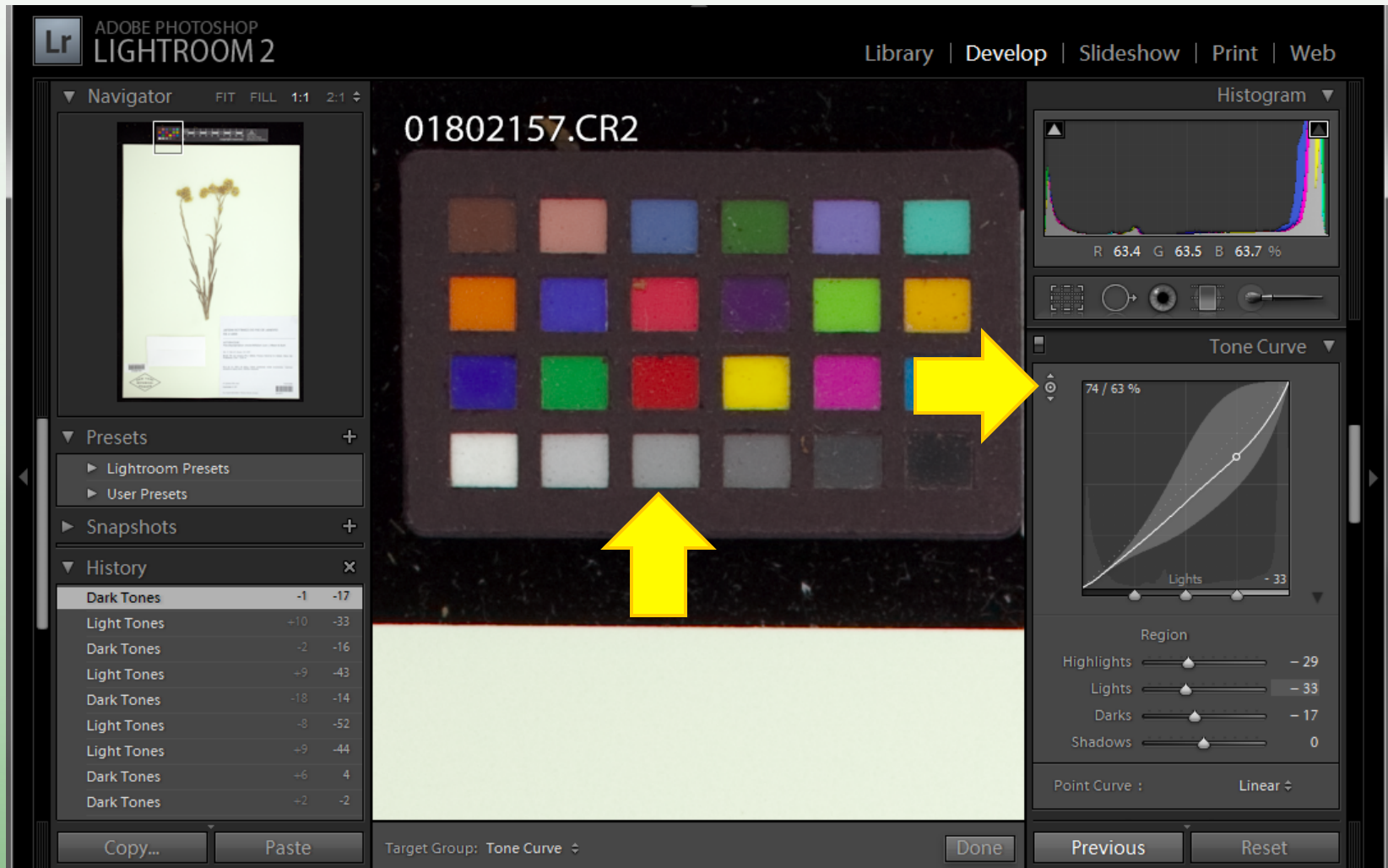
The screenshot shows the Adobe Photoshop Lightroom 2 interface. The main window displays a color calibration target (01802157.CR2) with a grid of color patches. A yellow arrow points to the white patch in the bottom-left corner of the grid. Another yellow arrow points to the histogram on the right side of the interface, which shows the distribution of colors. The histogram displays RGB values: R 92.8, G 92.5, B 91.9 %.

The interface also shows the Basic panel on the right, with the Exposure slider set to 0.00. The bottom of the interface displays a table of color data for the white patch.

	R	G	B
19. white (.05*)	243	243	242
	96.539		

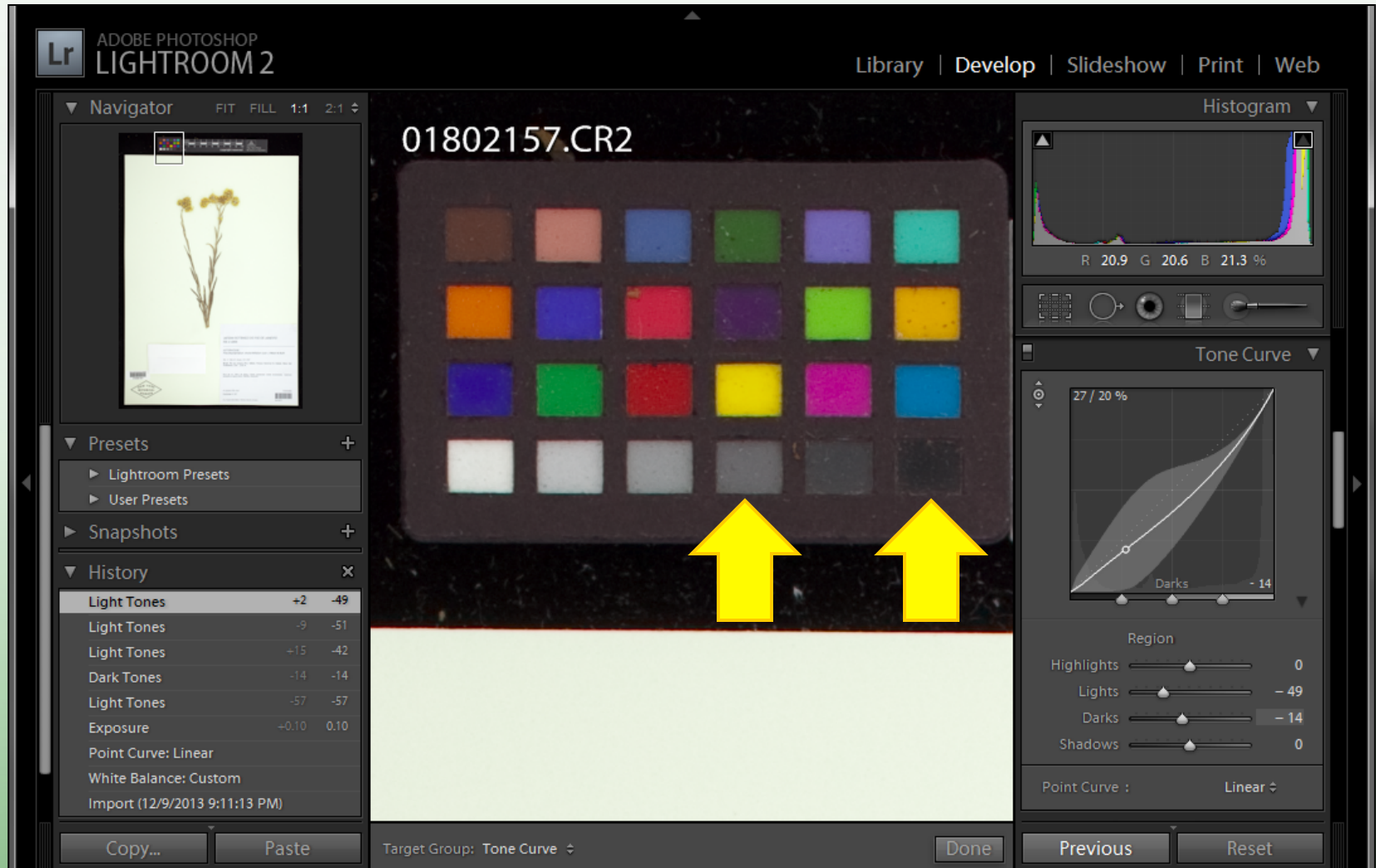
Adjust Tone Curve

Select Tonal Adjustment Tool. Position it over the light grey reference square, click and drag the cursor down until the value is 63%.* (X-Rite ColorChecker Mini)



Adjust Tone Curve

Repeat process for medium grey and black squares, until values are 48% and 20% respectively.* Press Done. Then change Point Curve: Medium



Sharpening

Sharpen to taste. Over sharpening causes visible artifacts.

Conservative Adjustment: Amount = 50, Radius = 1.0, Detail = 33



Remove Chromatic Aberration

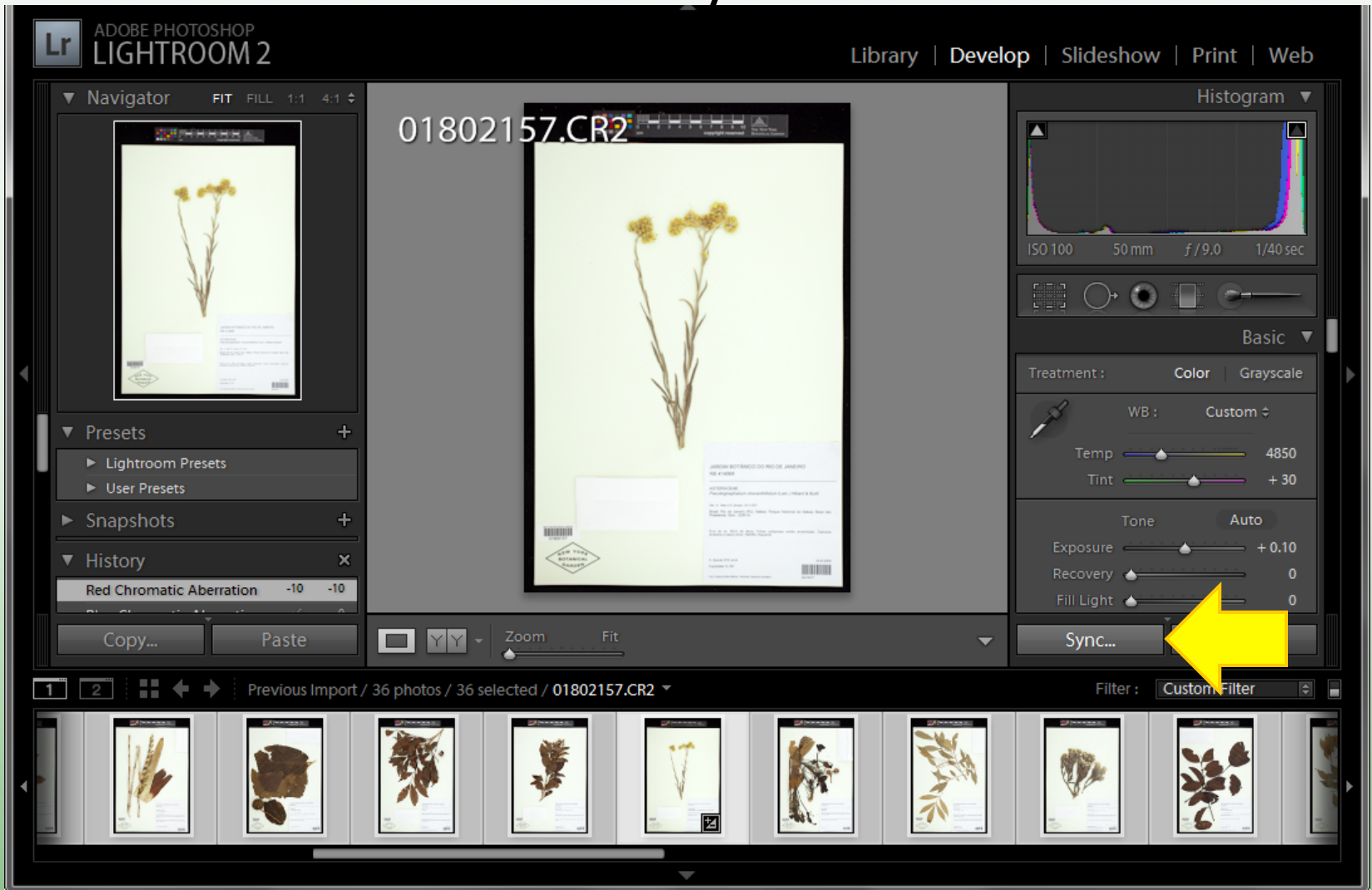
Newer versions of Lightroom have a box to check.
Older versions use sliders to minimize color fringing.



Apply Edits to Batch

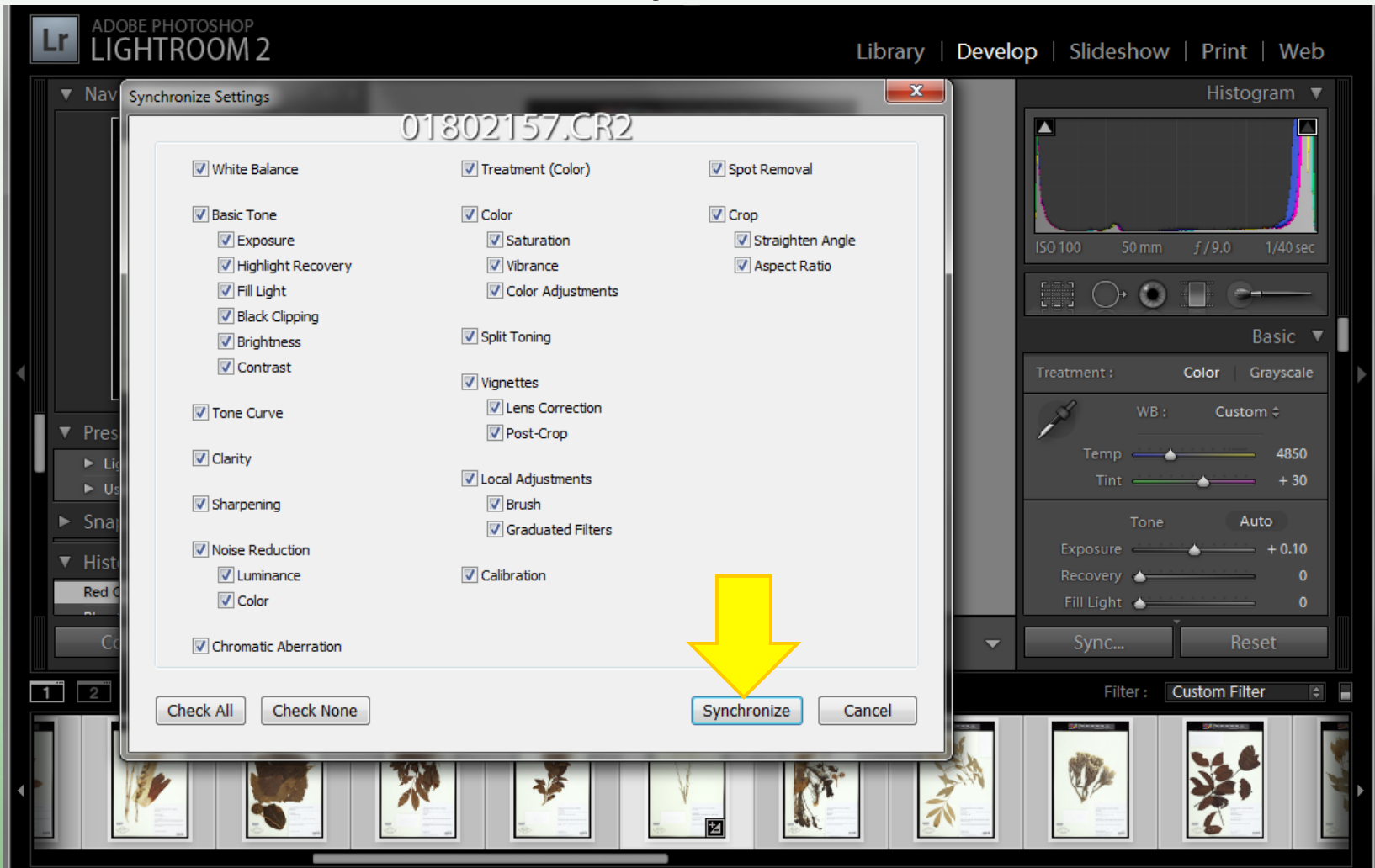
With the edited image selected, select all thumbnails (Ctrl+A).

Press Sync...



Apply Edits to Batch

Check boxes corresponding to edits made and to be applied to all.
Press Synchronize.



Develop User Preset

**Make a preset of edits to apply to every batch:
sharpening, linear tone curve, remove chromatic aberration.
Apply preset when importing images.**

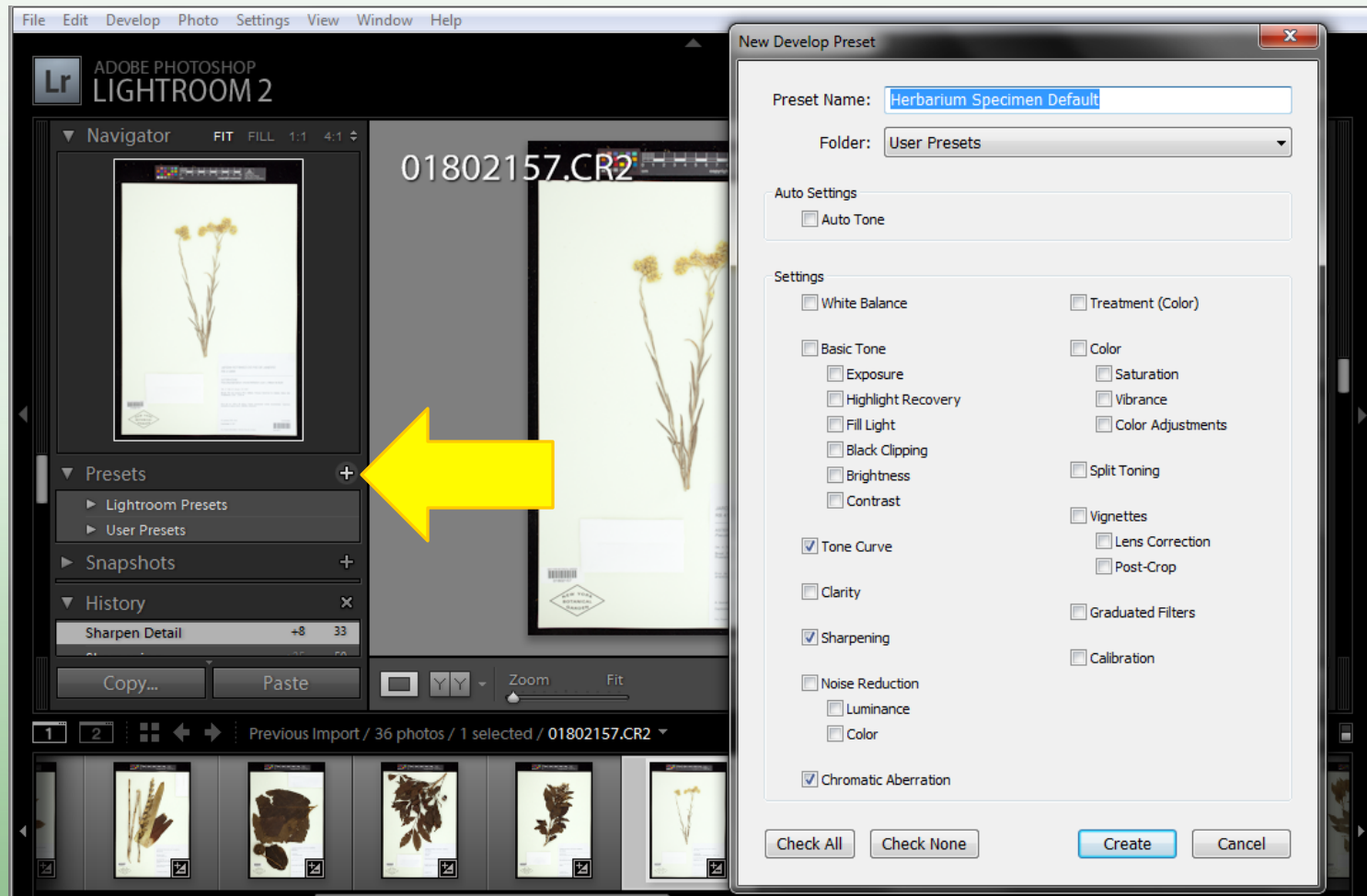
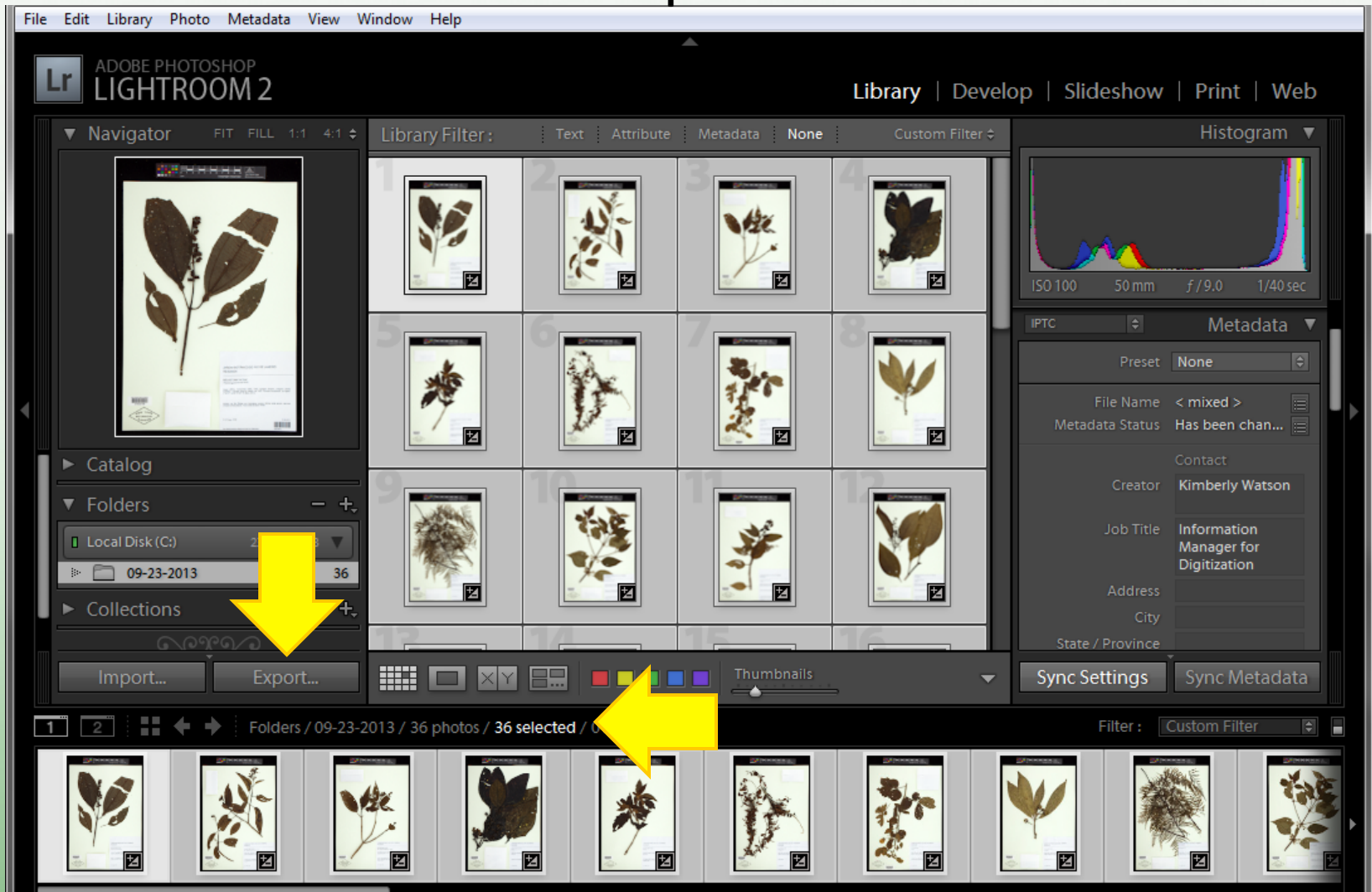


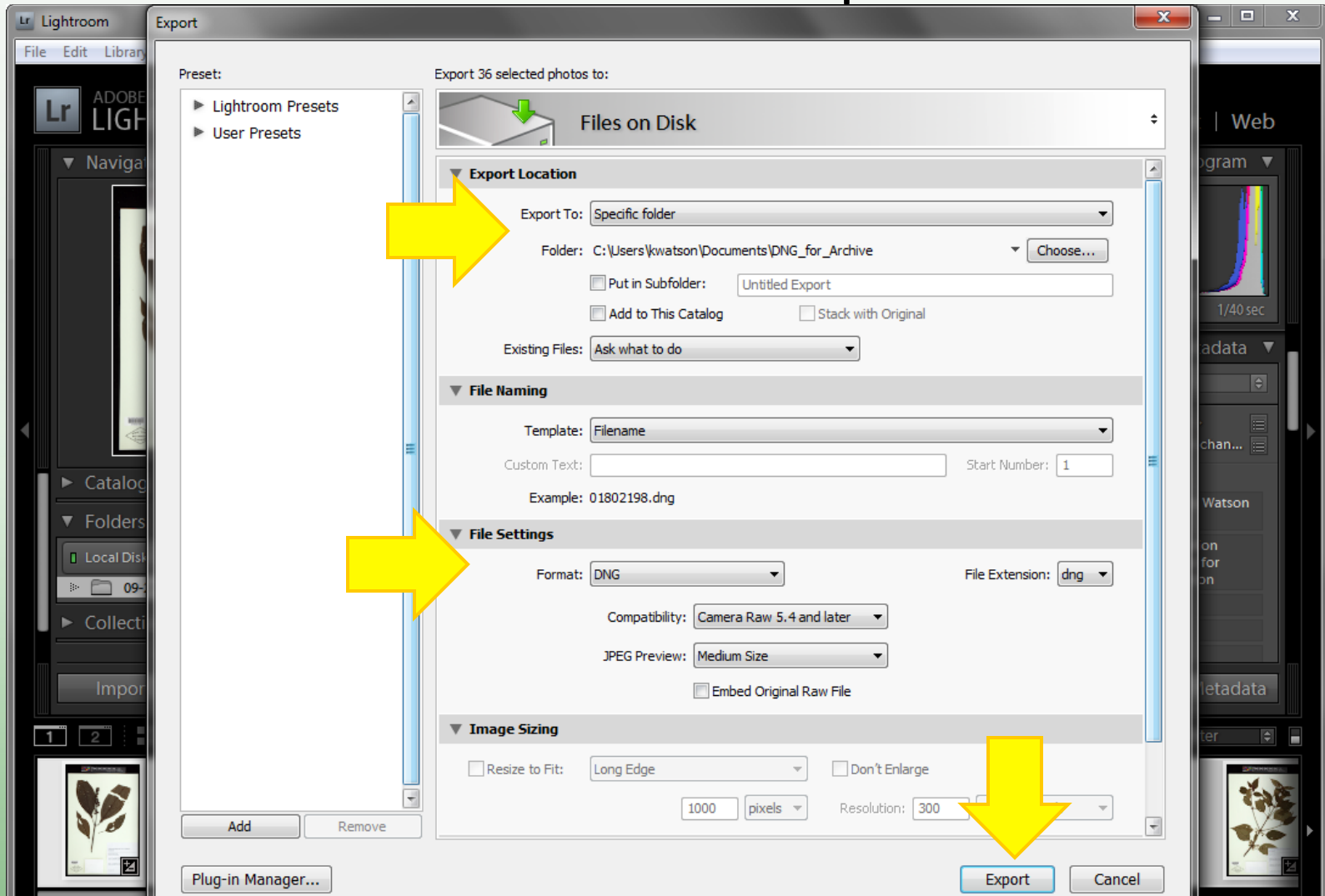
Image Export

Select folder/images for export. Check number of images selected.
Export.



Export DNG for Archive

Choose destination folder. Option to modify file name.
Select Format: DNG. Export.



Export JPEG for Access

Choose destination folder. Select Format: JPEG
Color Space: sRGB Quality: 100

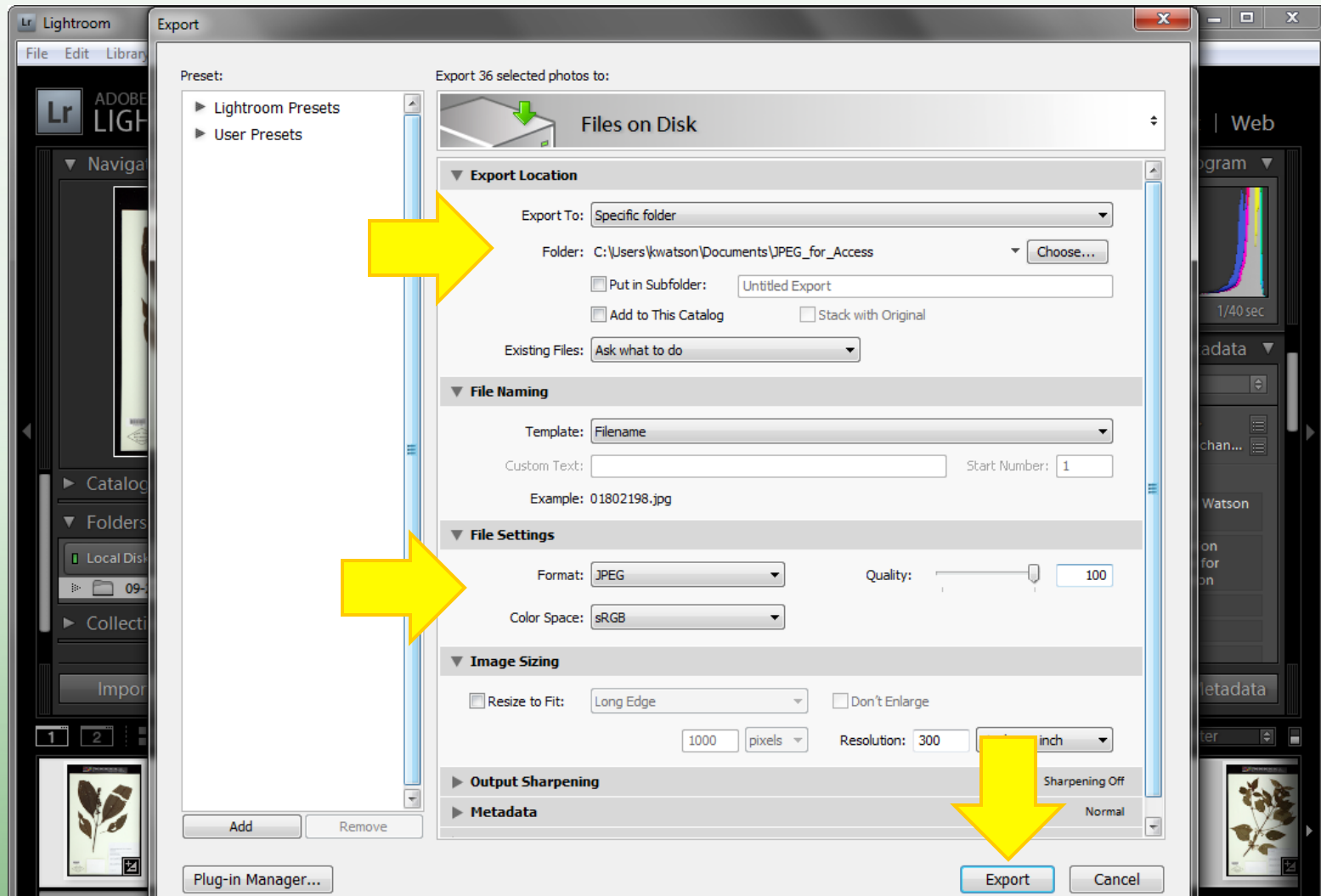
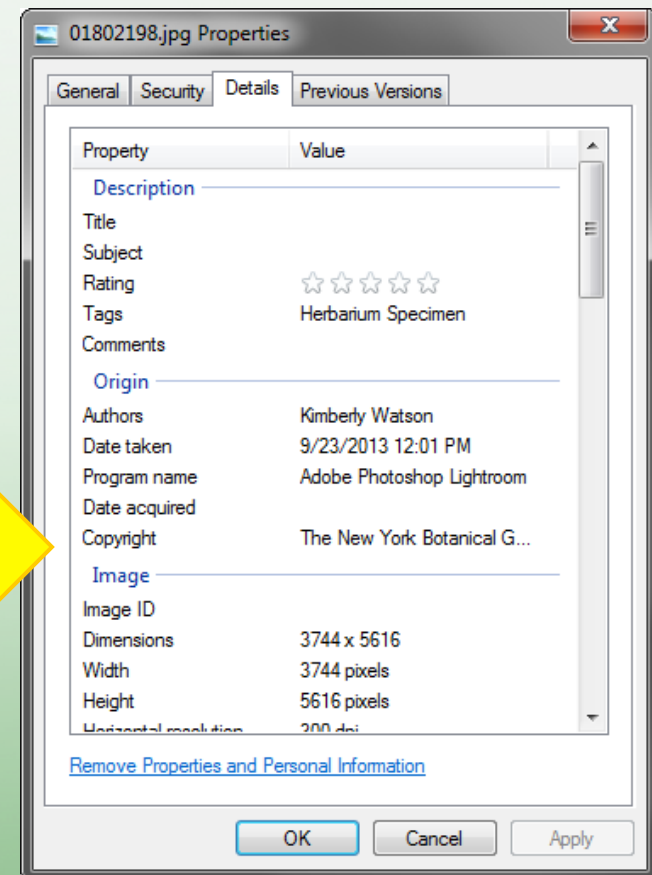
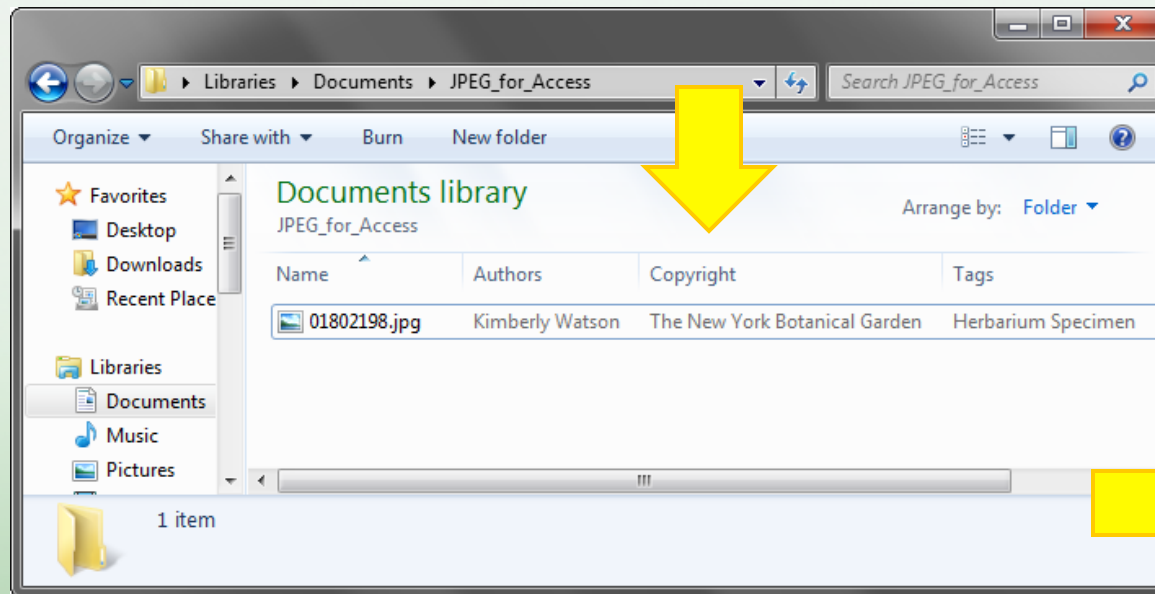


Image Metadata

Metadata embedded in image wherever it goes.

View image properties, or open file with software like Photoshop, Lightroom.



For more information...

- Tri-Trophic TCN, Project Documents:
<http://tcn.amnh.org/documents>
- Blog by Michael Bevans, former Information Manager for Digitization at NYBG:
<http://digitalphotorepro.blogspot.com>
- B&H Event Space:
<http://www.youtube.com/bandh>
- Adobe Photoshop Lightroom:
<http://www.youtube.com/user/AdobeLightroom>



THE NEW YORK BOTANICAL GARDEN

Thank you

