

# History Of Camera Raw

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## History

The Benjamin Franklin of Photoshop® is Thomas Knoll. He wrote the original Camera Raw File Converter plug-in during a summer vacation because he was frustrated with not being able to process his raw camera files. The converter became available for Photoshop® 7.0 as a plug-in for about \$100. It became a permanent and improved raw converter in Photoshop® CS or Photoshop® 8.0, and with CS2 or Photoshop® 9.0 it was even stronger, with new and effective tools for black and white conversion.

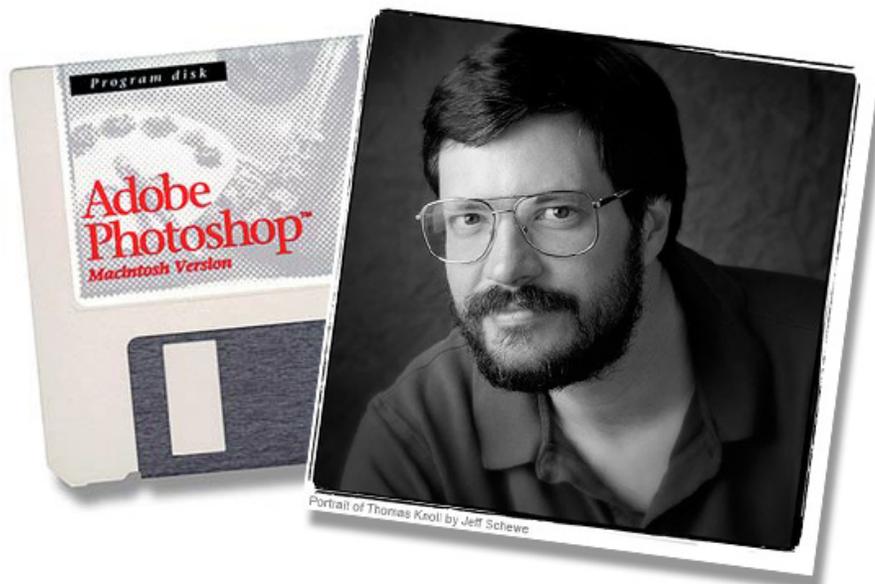
CC 2017.1.1 now brings on 9.10.1.750 Camera Raw, it has refinements which nearly make it an image editing program unto itself. I still prefer a layered editing scheme which allows me to return to my post-editing workflow in Photoshop proper to make refinements.

## What is Camera Raw?

A Raw file which most digital single-lens-reflex cameras can produce, represents the raw data of the image sensor stored in a file format which can only be processed (tone mapped) with a raw file converter. Most digital camera manufacturers produce proprietary raw file converters for their cameras.

Working with a raw file converter requires some knowledge of how a histogram displays the brightness of an image and how the converter controls color balance, blacks, whites, shadows, exposure, highlights, and other tone mapping controls. One consideration when working with digital capture is the output requirement which is directly tied to the resolution of the output device. Resolution has only one purpose: to decide the quality or usefulness of a digital camera file.

For event photographers, a JPEG file format is best for quick camera processing and storage of possibly thousands of images which are produced for a given event. For the commercial photographer whose post-production needs require more control over exposure, color balance, and higher resolution, a Camera Raw Format is necessary.



Thomas Knoll by Jeff Schewe©



## Converting Proprietary Raw Files To A Universal Digital Master

### Defining A Digital Master

The bane of raw camera formats is that they are proprietary. This means that a Nikon or Canon raw file format is owned by those companies. It can not be modified or used without the consent of manufacturer. This fact leads professional photographers into a conundrum. What if the Nikon or Canon goes out of business and they no longer support their raw file format? A professional photographer could be at risk of having tens of thousands of career raw files with no converter to process them.

### Adobe To The Rescue

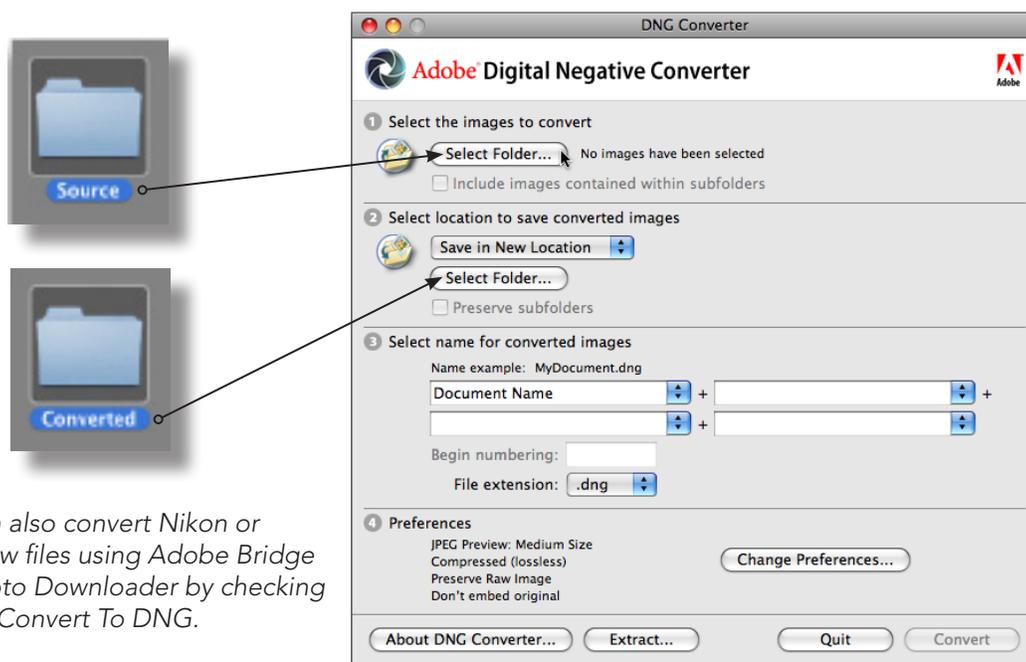
At Photoshop World in San Francisco in March of 2004, Adobe Senior Vice President Bryan Lamkin said, "We need to come together as an industry and define a digital master. And what I mean by digital master is a format that is permanent, that has permanence; that 100 years from now people will be able to go to a written record that says this is how that format is declared and interpreted."

### \*Digital Master

Adobe's digital negative converter is the answer to photographers' conundrum. With this piece of software you can safely convert your Nikon or Canon raw files to Adobe's DNG format. The software is free and can be downloaded at <http://www.adobe.com/products/dng/>. If you have a new camera model, there may sometimes be a lag for Adobe to update the DNG converter. One rather unique property of DNG is that the sidecar or XMP files are contained within the file format (as opposed to ACR which makes a separate file).

### Using The Adobe Digital Negative Converter

- Place all your raw files to be converted into a single folder, and name the folder **Source**.
- Make a folder to receive the converted files, and name the folder **Converted**.
- After downloading the Adobe Digital Negative Converter, assign the Source folder to:  
**Select images to be converted.**
- Assign the Converted folder to:  
**Select location to save converted images.**
- Document Name**  
Leave name of converted files to "Document Name," file extension *dng*.
- Click **Convert**.



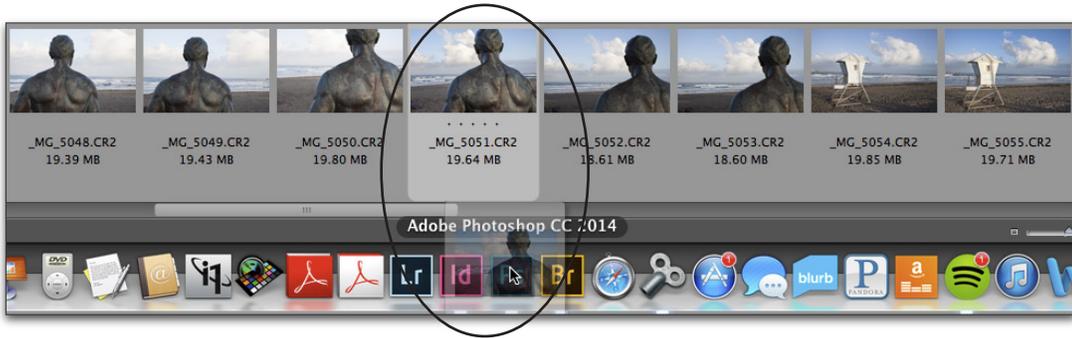
\* You can also convert Nikon or Canon raw files using Adobe Bridge CC – Photo Downloader by checking the Box: Convert To DNG.

# Camera Raw Starts With Bridge

## Launching Camera Raw And Setting Workflow Options

### Bridge - Launching Camera Raw

In Bridge, select one of your sorted **Yes** images, and with Bridge Preferences set correctly, you can open a camera raw file by hitting the <Return> key. Or, by grabbing the image area of the thumbnail with your cursor and dragging and dropping it onto the Photoshop icon in the Mac Dock.



### First Things First

The most logical order for working in Adobe Camera Raw (ACR) is a clockwise motion, starting with the top left and working around to the **Save Image** dialog box. But the real first piece of business in ACR is located at the bottom middle of the camera raw workspace and is highlighted in blue called **Workflow Options**.

### The Three Dynamics of Photography

1) Color (Color Model), 2) Dynamic Range (Pixel Depth), 3) Size (Resolution)

#### 1. Color Space or Color

One of the many advantages of shooting in raw format is the choice of assigning a color model or color space. Our class color model is Prophoto RGB, which encompasses all photographic materials.

#### 2. Pixel Depth or Dynamic Range

Bit depth assigns the amount of information the file carries forward for post processing in Photoshop. When calculated, 16-bits allows greater quality when using adjustment layers and additional tonal steps for smoother transition when editing color images.

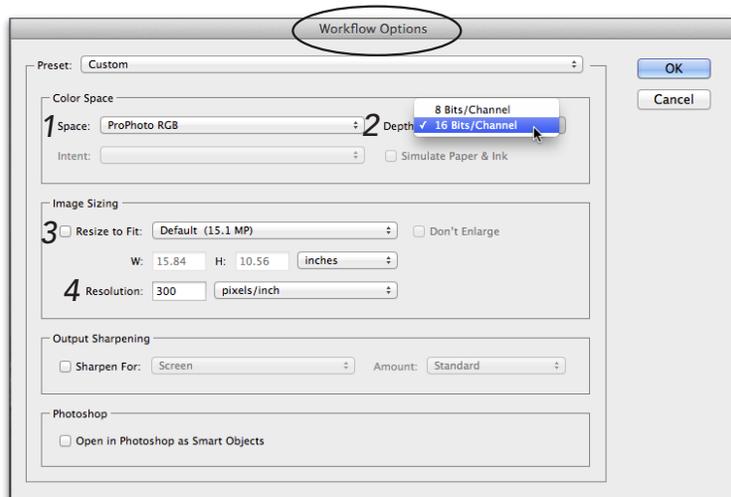
#### 3. Size or Resolution

Another great advantage to working in ACR is being able to set the size of the file (or dimensions in pixels). The default setting will be the native resolution of your camera. Setting larger dimensions requires the software to interpolate or copy pixels to produce a larger size file than was captured by the sensor when you clicked the shutter. If you need to make larger files, it's best done in Adobe Camera Raw as compared to **Image Size Command** in Photoshop.

#### 4. Resolution

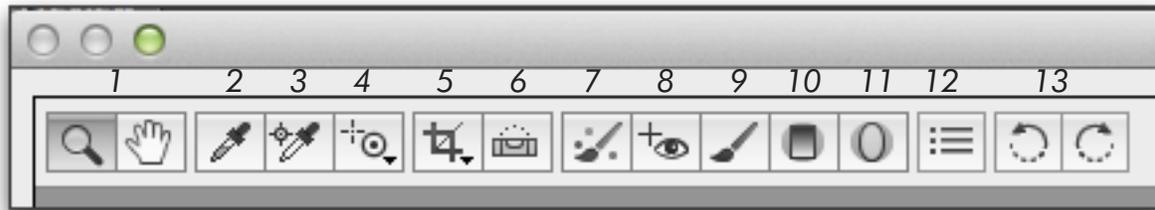
I set the resolution at 300 pixels per inch which generates an image size in inches divided by the camera's pixel dimensions.

Increasing this setting beyond 300 pixels does not increase file size. The extra pixels would reduce the size of the processed image in the same way Image Size works in Photoshop with the Resample box left unchecked.



Adobe Camera Raw 9.10.1

# CC 2017 ACR Tool Panel & Clipping Warnings



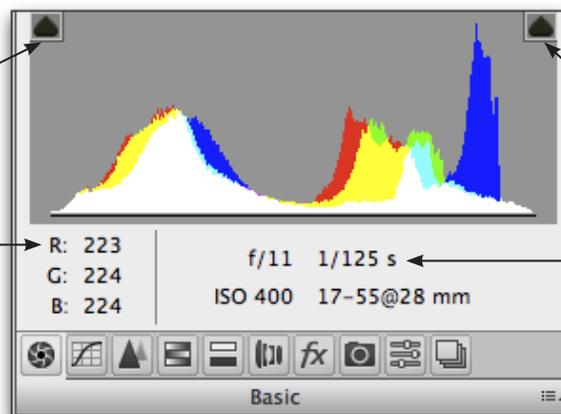
## From Left To Right

- 1. Zoom & Hand Tool:** These two tools can be used in tandem to navigate within the preview image area.
- 2. White Balance Tool:** Selecting this tool allows you to sample a neutral tone in the preview image and set the image color balance to neutral. In difficult lighting situations, photographing the gray card and then sampling this tone will provide close to perfect color balance.
- 3. Color Sampler Tool:** This tool allows you to make multiple samples in the preview image area, which are displayed under the tool display.
- 4. Targeted Adjustment Tool:** New in CS4, this tool allows to adjust tonal portions of image by sliding the cursor back and forth as if attached to tone mapping sliders in the Curves adjustment layers.
- 5. Crop Tool:** Allowing cropping of images in the preview image area, the default pull down menu crops to an aspect ratio. If you want to crop in inches, this must be done with the custom crop selection.
- 6. Straighten Tool:** Allows the image to be straightened as if you were using the Line tool in conjunction with the Rotate Canvas / Arbitrary command, or, new for CS6, the straightening option in the Crop tool.
- 7. Spot Removal Tool:** New in CS3 is the ability to use the Spot Healing Brush tool. It has a unique marquee area which allows you to control the source area and healing area.
- 8. Red Eye Removal:** Replaces red eye with a more natural retina color. Red eye should be eliminated with correct use of flash which is high enough on the camera to eliminate the occurrence of red eye.
- 9. Adjustment Brush:** Another masking tool which allows control over Basic tab sliders.
- 10. Graduated Filter:** This masking tool allows creating graduated transitions in sky or smooth tone areas where continuous tone surfaces are unnatural to the eye.
- 11. Radial Filter:** An oval selection tool which allows access to all of the tone mapping sliders and performs more like a vignetting tool.
- 12. Open Preferences Dialog:** Selecting this icon displays the Preferences Dialog and allows you to set the Adobe Camera Raw to open JPEG and TIFF files in Camera Raw.
- 13. Rotate Image Left or Right:** Rotates the image in preview image area Left (L) and Right (R)

## Shadow Clipping Warning

The small pin stripe around the box indicates that the Shadow Clipping warning is enabled.

Info Palette:   
Displaying 8 Bit   
Direct Digital Values



## Highlight Clipping Warning

The small pin stripe around the box indicates that the Highlight Clipping warning is enabled.

Camera Metadata

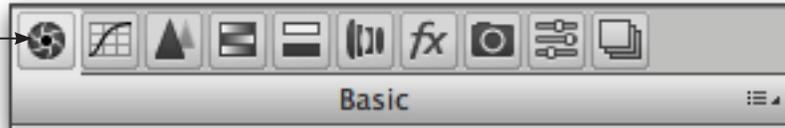
Adobe Camera Raw (ACR) has toggle switches in the upper left and right hand corners for Shadow and Highlight Clipping Warning. Metadata displaying camera exposure, ISO, and focal length are also provided.

# Camera Raw Tone Mapping

## Seven Sliders Which Control The Processing Of Raw Files

### Basic Tab

The basic tab is the default setting when opening a raw file in the Adobe Camera Raw (ACR). The Basic tab is on the far left of the tab settings on the header of the Tone Mapping Panel. It is the starting place for processing raw files and represents the most creative possibilities for interpreting camera raw files.



### 9.10.1.750 Camera Raw Tone Mapping Sliders

#### Step 1) Blacks

Set the Blacks slider by using the option key to display a threshold image to gage the amount of blacks in the file. It is identified as Black Clip.

#### Step 2) Whites

Whites, a new slider for CS6, controls the clipping of the right side of the histogram when using the option key.

#### Step 3) Shadows

The shadow slider controls dark values, set to +35.

#### Step 4) Exposure

Exposure controls the middle part of the histogram and this setting controls the middle and overall tones.

#### Step 5) Highlights

Highlights will separate the brightest areas of the image and would help bring tone to something stark white such as a white wedding gown.

#### (X) Do Not Adjust - Contrast slider

Controls the relationship between the dark values and the light values in file. We control contrast either overall or local with a Curves Adjustments Layer utilizing a layer mask.

#### Step 6) Clarity Slider

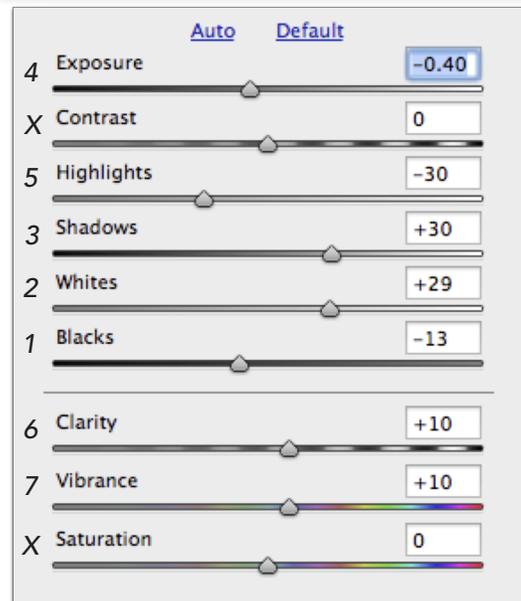
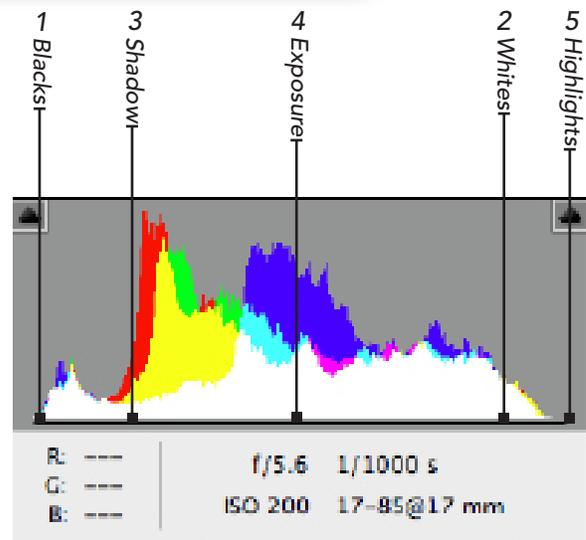
This slider's real name should be **Mid-Tone Punch**. It punches up local contrast around the edges of the middle tones. This version is much improved and reduces the halting effect that the previous Clarity slider created.

#### Step 7) Vibrance Slider

This slider increases the saturation of any under-saturated areas in your image without overly affecting colors that are already well-saturated.

#### (X) Do Not Adjust - Saturation

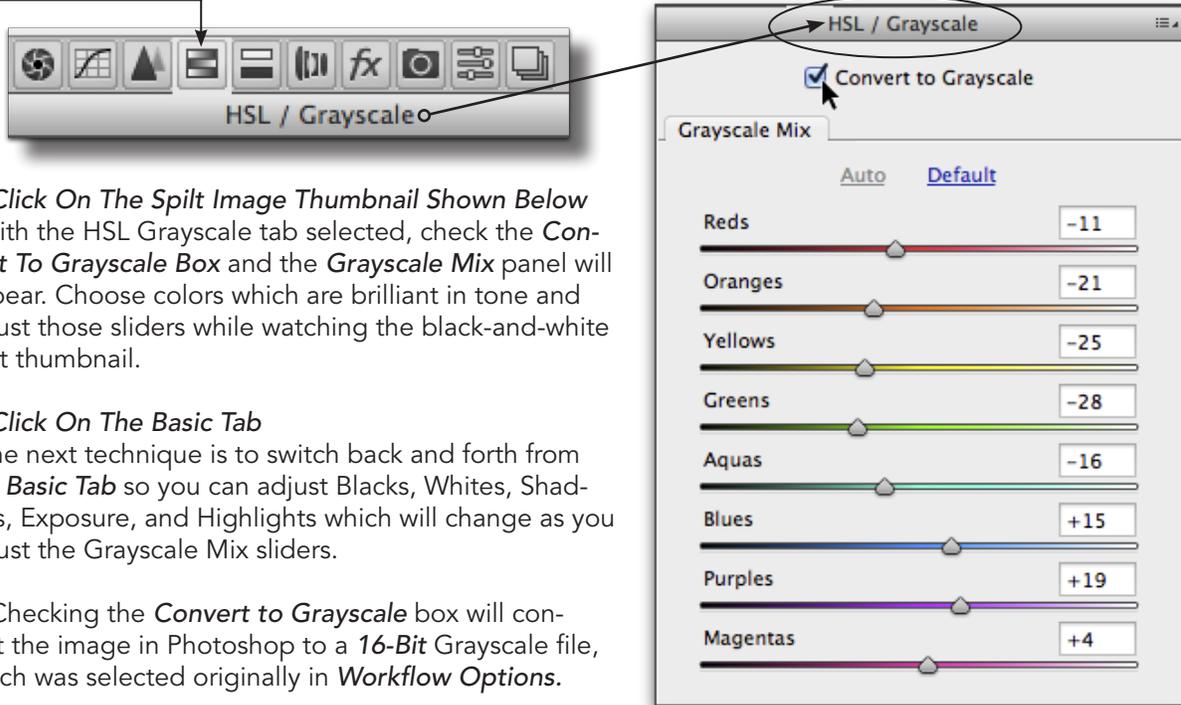
This was a part of earlier versions of ACR which intensified colors. Moving the slider to the right makes the world look like Hawaii. Moving the slider to the left desaturates the image and takes you to a black-and-white rendering. My view is that this color issue should be handled with a color Adjustments layer downstream in Photoshop proper.



# Grayscale Conversion In Camera Raw

## HSL Grayscale Tab

With an image open in ACR, click on the HSL (Hue Saturation & Luminance) Grayscale Tab.



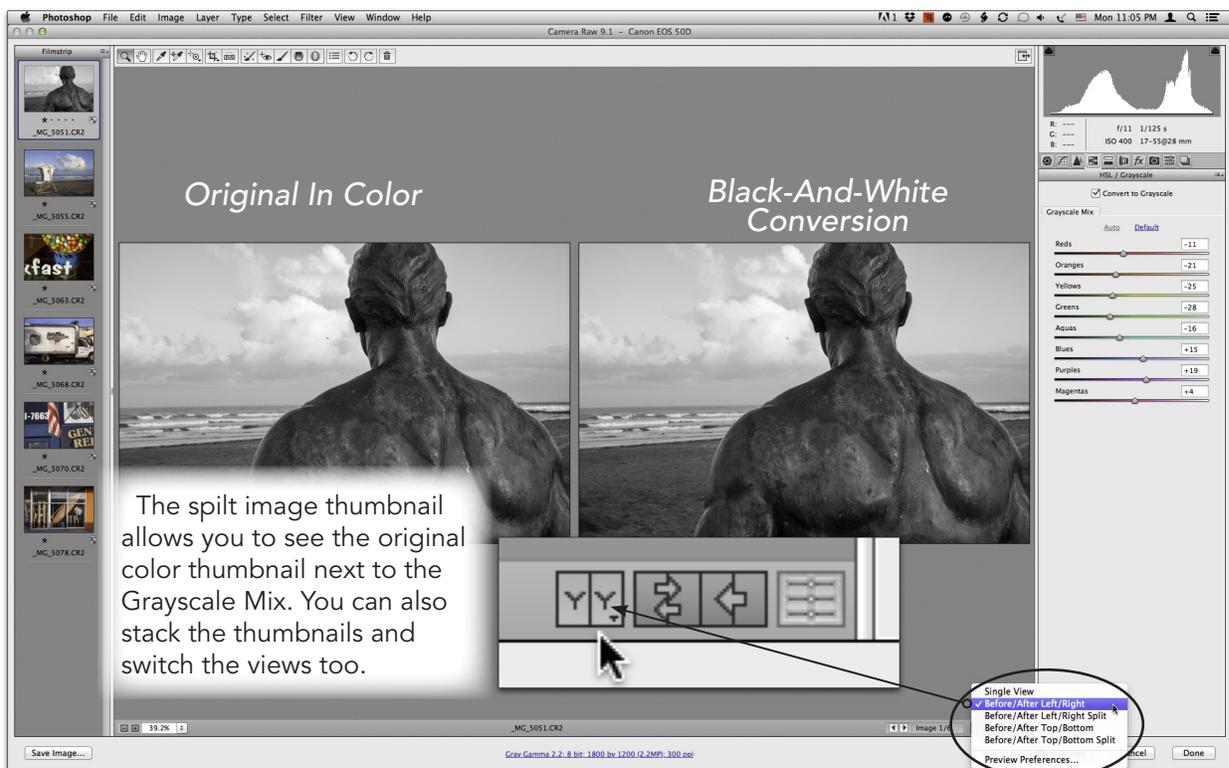
### 1) Click On The Spilt Image Thumbnail Shown Below

With the HSL Grayscale tab selected, check the **Convert To Grayscale** Box and the **Grayscale Mix** panel will appear. Choose colors which are brilliant in tone and adjust those sliders while watching the black-and-white split thumbnail.

### 2) Click On The Basic Tab

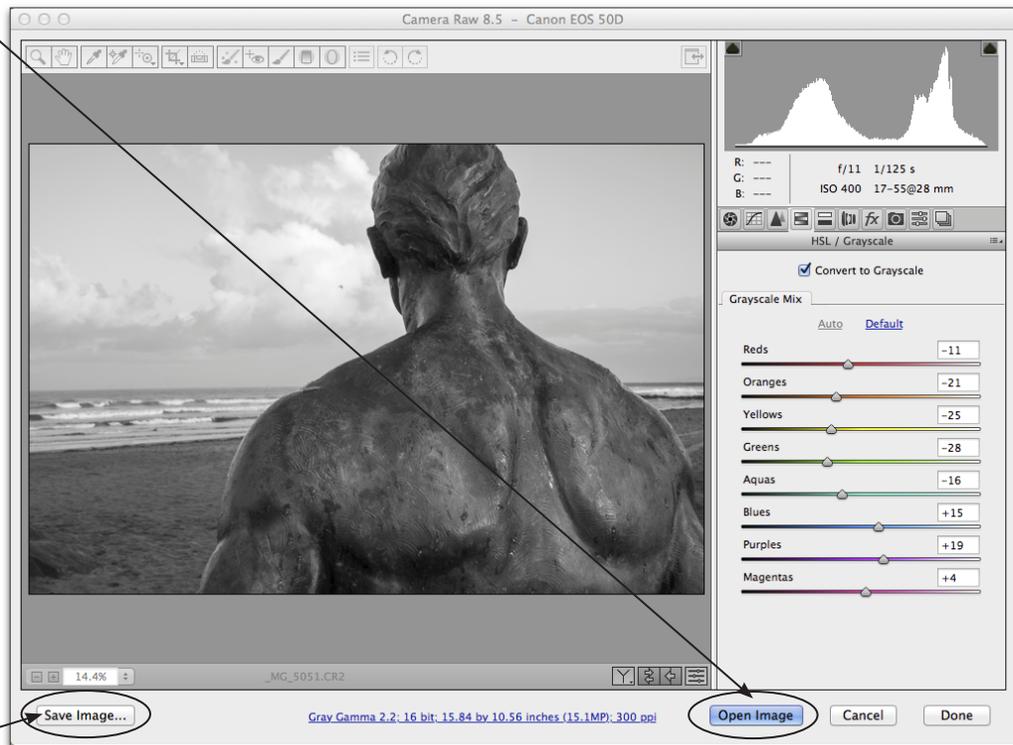
The next technique is to switch back and forth from the **Basic Tab** so you can adjust Blacks, Whites, Shadows, Exposure, and Highlights which will change as you adjust the Grayscale Mix sliders.

3) Checking the **Convert to Grayscale** box will convert the image in Photoshop to a **16-Bit** Grayscale file, which was selected originally in **Workflow Options**.

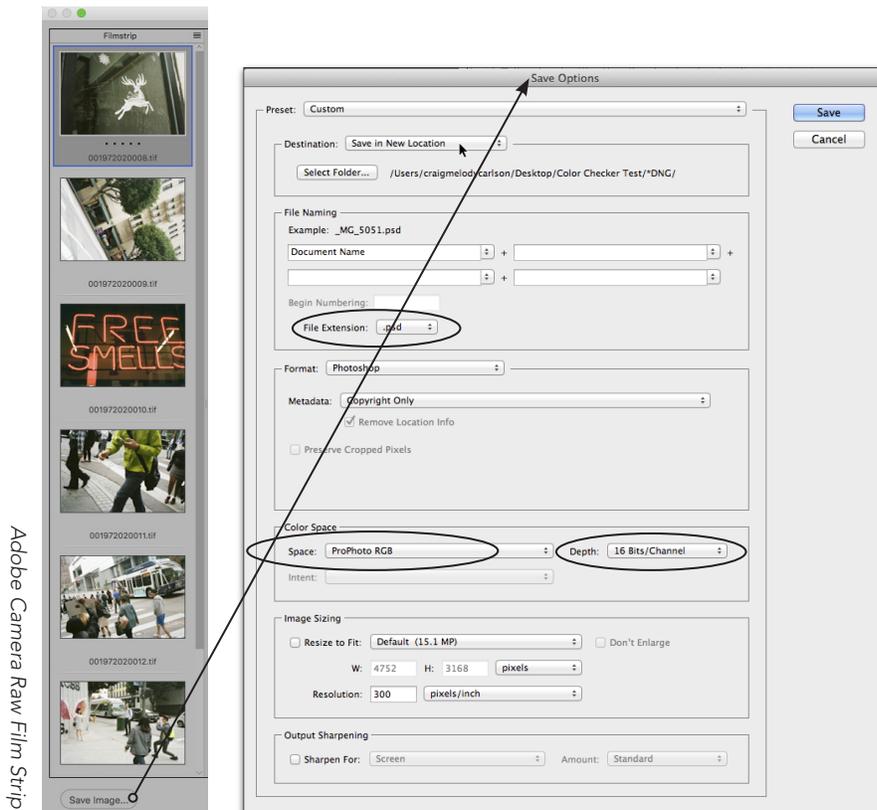


# Saving Files With Open Image & Save Image

**Opening Single Images :** At the bottom right of the ACR dialog box is the Open Image button. If you have a single image open in ACR, you can choose this button to open it in Photoshop.



**Opening multiple files** in the ACR film strip, you can use the **Save Image** button which will direct you to the Save Options dialog box shown below. This allows you to save multiple files to a given location. You can hold down the option key before selecting the Save Image button and the Save Options dialog box will be skipped.



Adobe Camera Raw Film Strip

## Selecting File Extension

In the Save Options dialog box you must choose a file extension. Our class workflow file extension for a master digital file is the .psd extension and the Save Options dialog allows you also to create a naming convention as well (we name our files with the Save-As command).

The .DNG extension is the Adobe Digital Negative file format which allows you to convert Nikon, Canon, and other proprietary raw formats to the Adobe Universal Raw File format file extension .DNG.

New in CS6 was the metadata selection used for Copyright information.

The other two Save Options to be checked and selected are Color Space and (pixel)Depth.