

Understanding Adobe® Photoshop® Camera Raw® 4

Adobe® Photoshop® Camera Raw 4 introduces important changes from Camera Raw 3 and earlier versions. This paper primarily explains these changes, but it also discusses some nuances of features carried over from the previous Camera Raw versions that are often misunderstood.

The main suggestion is for readers to become comfortable using the new features of Camera Raw 4 to adjust their images as they want them to appear. This paper can't offer specific recommendations for settings because everybody's work and workflow will differ; the subject of Camera Raw could easily be a whole book.

For information on following a Camera Raw workflow, see [“Digital Photography Workflow with Adobe® Camera Raw® 4 and Adobe Photoshop® Lightroom®”](#) at www.adobe.com/designcenter/.

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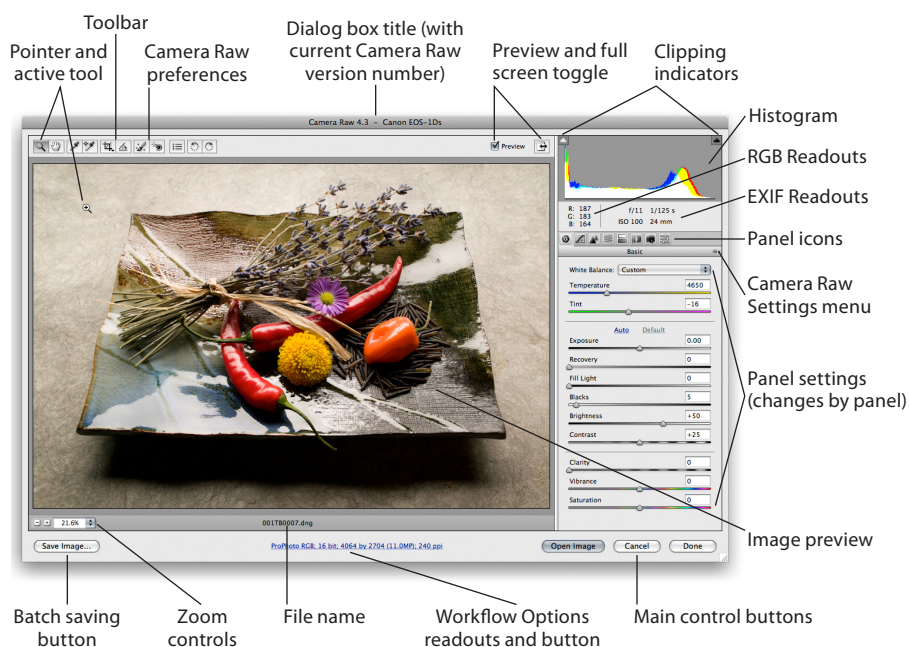


Figure 1: The Camera Raw 4 dialog box in single image mode (as hosted by Photoshop)

The role of Camera Raw 4

Camera Raw 4 is more than just an Adobe Photoshop plug-in, it's an entire image-processing pipeline. Shared by Adobe Bridge and Photoshop, Camera Raw plays a vital role before you even start it. Camera Raw builds all the high-quality thumbnails and previews you see in Bridge when you first point Bridge at a folder of images. Bridge, Photoshop, or both, can host Camera Raw (Figure 2). Thus, you can work on raw images in Camera Raw hosted by Bridge while Photoshop is batch processing, or work on raw images in Camera Raw hosted by Photoshop while Bridge is caching new folders.

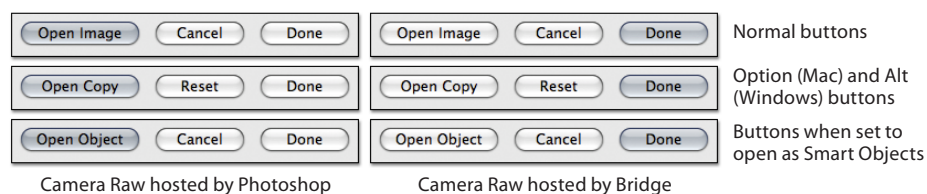


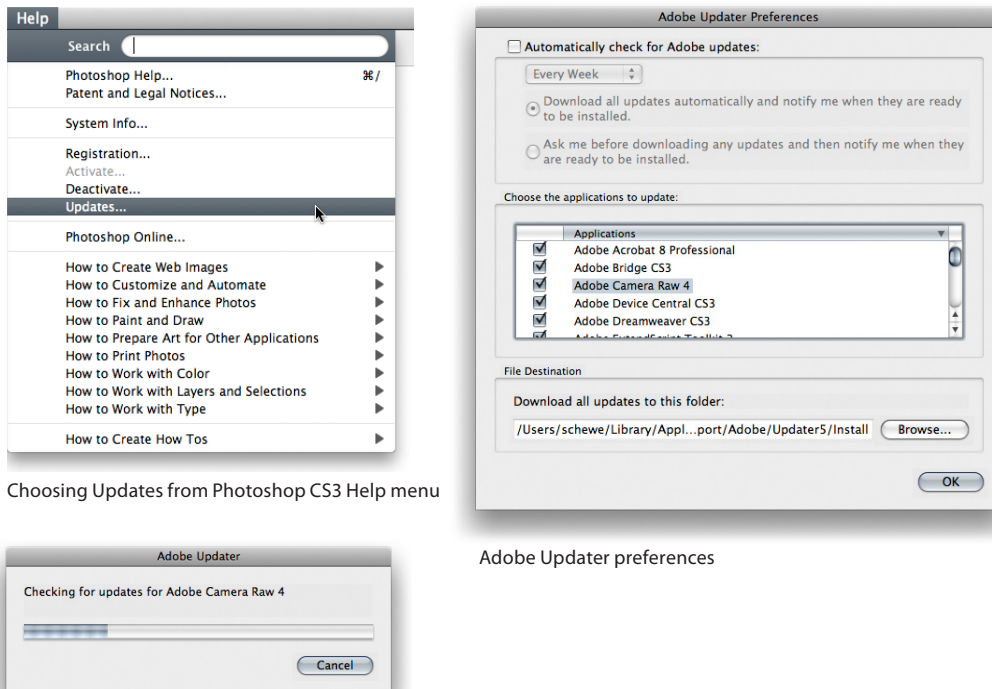
Figure 2: Camera Raw buttons designating hosting

New to Camera Raw 4 is the ability to process not only raw files, but also a camera's JPEG and TIFF files. Why? For digital photographers who may not be shooting raw files, this capability extends the Bridge and Photoshop workflow that streamlined batch-processing of raw files to processing of JPEG and TIFF in both Bridge CS3 and Photoshop CS3.

Can JPEG files replace raw files in terms of possible image adjustments? Not really. While Camera Raw 4 can now work on non-raw files, those images whose initial processing has already been done in-camera, won't have the same range of adjustment options because these images have already had certain aspects "baked" into the file. The ability to recover highlight information and fully adjust white balance will not be as extensive or flexible when processing JPEG or TIFF files in Camera Raw 4. However, its ability to apply adjustments to masses of images still makes Camera Raw 4 attractive from a workflow perspective.

Camera Raw 4 installation

Camera Raw is updated frequently (on average, between three and four times per year). You must install the updates to receive the benefits of new camera compatibilities and bug fixes. The easiest method of updating Camera Raw is to use the Adobe Updater (Figure 3).



Choosing Updates from Photoshop CS3 Help menu

Adobe Updater preferences

Adobe Updater checking for updates

Figure 3: Using Adobe Updater to check for Camera Raw updates

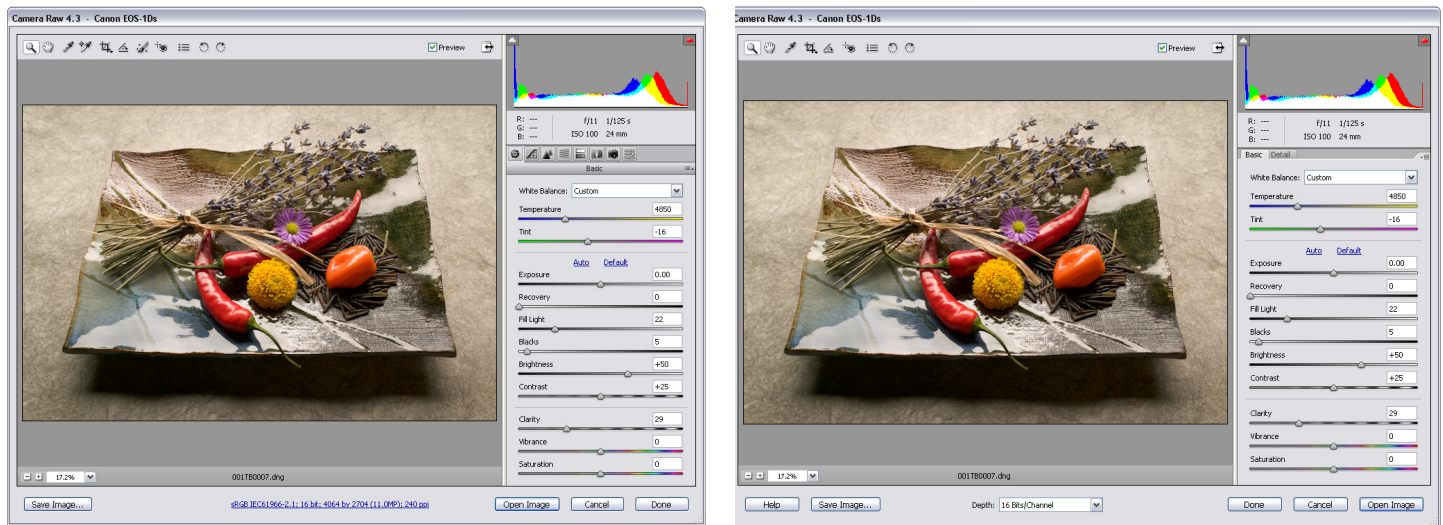
You can also download the current Camera Raw update manually from the Camera Raw product page (<http://www.adobe.com/products/photoshop/cameraraw.html>). However, if you don't install the updates in the correct location, Camera Raw may work in Bridge but not in Photoshop, or vice versa; or it may not work at all. The correct location for installing Camera Raw is:

- In Mac OS®, /Library/Application Support/Adobe/Plug-ins/CS3/File Formats.
- In Microsoft® Windows®, \Program Files\Common Files\Adobe\Plug-ins\CS3\File Formats.

If you are using Camera Raw in Adobe Photoshop Elements (Figure 4), you'll need to manually download and install Camera Raw in the correct location required by Elements.

- For the Mac OS version of Elements 4, you'll need to update to Elements 4.01 and install the Camera Raw update in Library/Application Support/Adobe/Plug-Ins/CS2/File Formats
- For the Windows version of Elements 5, the correct installation location is: Program Files\Adobe\Photoshop Elements 5.0\Plug-Ins\File Formats.
- For the Windows version of Elements 6, the correct location is: Program Files\Adobe\Photoshop Elements 6.0\Plug-Ins\File Formats.

Note: Camera Raw 4.x is compatible only with Adobe Photoshop CS3 and the Mac OS version of Elements 4.01 and later, and the Windows version of Elements 5 and later. Users of previous versions can download the free Adobe DNG Converter to convert raw files to DNG files for backward compatibility.



Camera Raw 4 in Photoshop CS3

Camera Raw 4 in Elements 6.0

Figure 4: Camera Raw hosted by Photoshop CS3 and Camera Raw hosted by Adobe Photoshop Elements 6.0 running under Windows XP

Camera Raw 4 defaults

Camera Raw starts working every time Bridge encounters a new folder of raw images. Camera Raw first builds thumbnails, and then high-resolution previews that use its default settings. This behavior gives rise to various common misunderstandings.

For example, users often want to see their raw images *as shot*, with no adjustments. In fact, there's really no such thing as an as-shot representation of a raw image—unless you want to see an almost black grayscale file. For more information, read two of Bruce Fraser's articles, "[Raw Capture, Linear Gamma, and Exposure](#)" and "[Understanding Digital Raw Capture](#)".

A raw image is much more like a color negative than a transparency—it requires interpretation. Some photographers consider the very first thumbnail they see in Bridge as the as-shot interpretation. In fact, it's the EXEF JPEG thumbnail produced by the camera's own raw conversion, the same image that's displayed on the camera's LCD, and simply one of many possible interpretations of the raw image.

One characteristic of Camera Raw that some people find disturbing, at least initially, is that it shows you everything the camera has captured. Most proprietary raw converters apply a fairly steep contrast curve and saturation boost. Camera Raw's default settings historically appear somewhat flat and unsaturated by comparison.

Regardless of the current Camera Raw defaults, the user has complete control over changing them to whatever settings suit them (Figure 5). Camera Raw defaults can be set not only for your camera type, but specific to both a particular camera's serial number and the ISO at which an image was shot. The Save New Camera Raw Defaults option lets you change the defaults for your particular camera. You can also choose Reset Camera Raw Defaults to return to the shipping defaults, which can be camera serial number- and ISO-specific, depending on your preference settings.

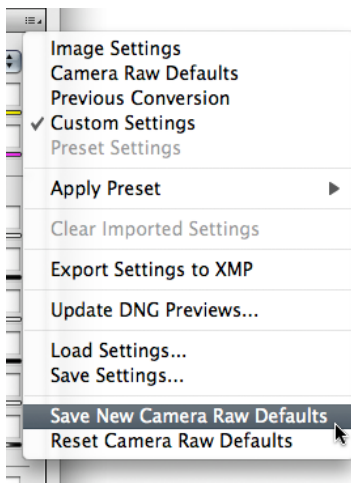


Figure 5: The Camera Raw Settings menu

By default, Camera Raw 4 applies zeroed settings when opening JPEG and TIFF files.

Camera Raw preferences

It's critical that you understand the implications of each and every preference setting inside of Camera Raw. Otherwise you may get some unpleasant surprises. What follows is an explanation of options in the Camera Raw Preferences dialog box (Figure 6).

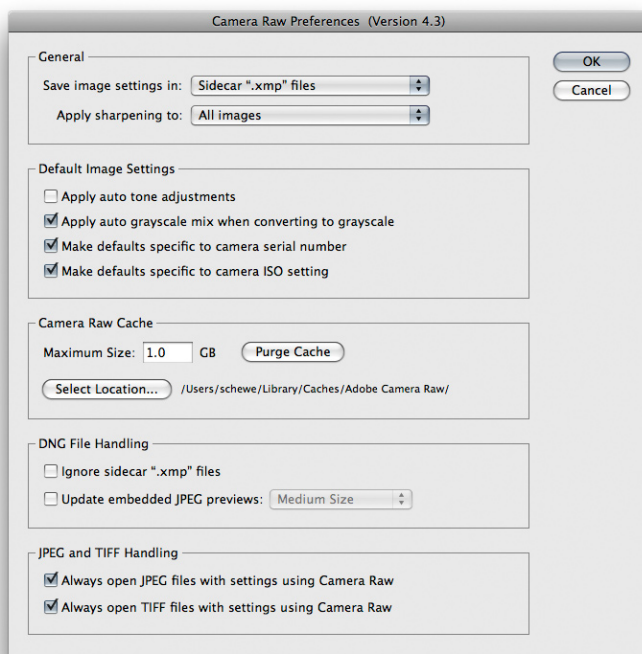


Figure 6: Camera Raw Preferences dialog box showing general options

General options

Save Image Settings In—The options are either Camera Raw database or Sidecar “xmp” files. An important decision you need to make is where to save edits you make to your raw images. Because the vast majority of proprietary raw formats (for example, Canon CRW and CR2 formats, Nikon NEF, and Olympus ORF) are undocumented, Camera Raw treats them as read-only. That way, there’s no danger of Camera Raw overwriting something important in the raw file. Instead, it lets you save the image settings you make in one of two places, in the Camera Raw database or in XMP sidecar files.

Why keep the settings only in the database? We're not sure there is a good use case for doing so, but that's where Camera Raw started saving the settings until the option to store them in sidecar files was included. ("Sidecar" means files that accompany the original camera raw image file in the same folder.) The general recommendation now is to always store them in sidecar files or have Camera Raw write the settings into the XMP in the files; that way the settings stay with the file.

Note: *Camera Raw writes XMP metadata (Camera Raw settings) into file formats that support it, such as DNG, JPG, and TIFF; if you choose to save settings in XMP sidecar files, Camera Raw will only create sidecar files for undocumented RAW formats.*

Apply Sharpening To—The options are to apply sharpening to *All images* or *Preview images only*. Sharpening is another choice you can make. In the old days, before Camera Raw 4.1, the common suggestion was *not* to use Camera Raw's sharpening. Hence, users needed a way to sharpen only the previews of images for Bridge. Now that Camera Raw has much better sharpening, we do our initial sharpening inside of Camera Raw, so there's no reason to sharpen only the previews.

Default image settings

The options here determine Camera Raw's behaviors for applying settings as well as how Bridge previews are built. The new auto tone adjustments differ from Camera Raw 3.6 and earlier, so some people don't wish to use them. This is a single global behavior (which can be overridden by presets) for whether Camera Raw applies default auto correction and Bridge previews. I tend to not apply auto corrections by default, but will sometimes use a preset that I can apply to a series of images if I wish.

You can now separate camera defaults both by camera serial number (if you have more than one camera body of a specific model) and by the ISO settings of the image. So, you could create separate calibration defaults if multiple camera bodies have different color responses, or decide what luminance noise settings to apply by default when shooting different ISO settings on your camera.

Camera Raw cache

To speed up efficiency when using Camera Raw, it's useful to cache the previews and other data to avoid repeatedly re-caching. You can set the maximum cache size, to delete older previews when newer ones are created when the cache limit is met. You can also dictate where the cache is stored. I usually default to the 1 GB size and keep the cache in the default location.

DNG file handling

Some applications (including earlier versions of Camera Raw) tend to create sidecar files even for DNG files, when they are not really needed. The Ignore Sidecar ".xmp" Files option lets you tell Camera Raw not to create these extraneous DNG sidecar files. You can also choose how to update the DNG embedded preview and what size to make the previews. Checking this option is a global Camera Raw preference, but you can choose to update DNG previews file by file in the Camera Raw Settings menu (see the entry "[Update DNG Preview](#)" in "The Camera Raw Settings menu" for more information).

JPEG and TIFF handling

To ensure that Camera Raw can always open images that already have Camera Raw or Lightroom settings attached, select this option to have Camera Raw be called to process these images. This lets you make any adjustments before processing the images.

Camera Raw Image Control panels

Figure 7 shows the full set of Camera Raw image-processing controls. Grouped by function, controls appear in tabbed panels accessible by clicking the tab header icons or using keyboard shortcuts. Each panel is broken down to settings that tend to interact with each other. However, it's not at all unusual to bounce back and forth between many of the panels when working on an image. You may make preliminary adjustments in the Basic panel, fine-tune in the Curves panel, and then need to go back to the Basic panel for further refinements.

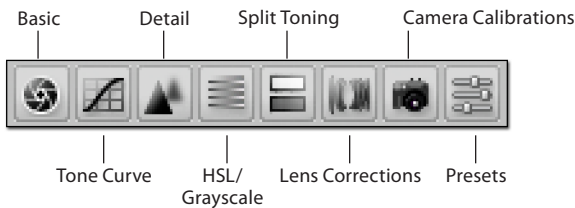


Figure 7: The Control Panel icons

Thomas Knoll, the designer and primary author of Camera Raw (as well as coauthor of Photoshop), designed the functionality in Camera Raw to be used top down, left to right. Your starting point is the Basic panel, which always appears by default. You make the gross adjustments here and then further refinements in subsequent panels such as Curves or HSL/Grayscale. When dealing with tone and color, you'll usually zoom back out to see your entire image. But when in the Detail and Lens Corrections panels, you usually need to make adjustments zoomed in.

Camera Raw's image adjustments, with the exception of dust and heal, are "global"; that is they affect all pixels in your image. Thus, your aim should be to get the best overall adjustments to your images and leave local corrections to Photoshop—where you can use selections and masks. You should also remember that image adjustments in Camera Raw are merely parametric (parameters) edits, not actual edits to the original file. So, you can always go back and adjust settings and reprocess the files to get alternative results. This is the main benefit of the nondestructive image-editing method that Camera Raw offers.

Generally, the one panel that you'll not need to use with regularity is the Camera Calibration panel. This special purpose panel is usually not used for image-specific adjustments, although you can use the Camera Calibration panel to make "creative" image adjustments.

The Basic panel

We're pretty sure it's called the "Basic" panel (Figure 8) because here is where most all your basic image adjustment settings will be set.

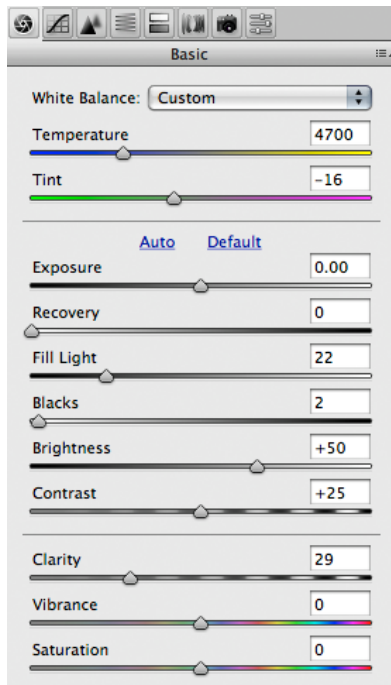


Figure 8: The Basic panel. Keyboard shortcuts: Command+Option+1 (Mac OS) or Ctrl+Alt+1 (Windows)

White Balance—So, start at the top at the Basic pop-up menu. You can use it to apply Camera Raw's default White Balance settings—if you want. I would generally prefer to use the White Balance tool or simply adjust the sliders. The Temperature slider adjusts the Yellow/Blue bias in the image, while the Tint slider adjusts the Green/Magenta bias. The readout in Temp is based on the Kelvin scale where 5500° represents daylight and 3200° is tungsten light. Thomas designed Camera Raw based on two color calibrations per camera, one at D65 and the other at Standard Illuminant A (2856° K). The White Balance is thus “tweened” between these two reference points in 50° accuracy, from the low end of 2000° up to 15000° (It's most accurate between about 2800-7000°; the remaining ranges are interpolated values.)

The Auto dilemma—The old ability to select individual Auto settings by controls are gone, as of Camera Raw 3.7. The auto tone setting algorithms were changed to allow interchangeable settings with Adobe Photoshop Lightroom. Now, all settings automatically adjust when you click the word Auto (which acts as a button). The upside is that the new Auto adjustments are improved. Try them; you may like them. You can always choose Undo or use the Auto button and then tweak individual sliders to taste.

Exposure—The Exposure slider is an adjustment of the extreme highlight point in your image. Because raw images are in linear gamma, it's critical to set the Exposure point accurately to that point just above clipping useful highlight information. The Exposure setting is influenced by the Recovery setting. So after adjusting the Exposure followed by adding Recovery, you may need to readjust Exposure. Holding down the Option (Mac OS) or Alt (Windows) key while adjusting the Exposure slider displays a screen preview alerting you to clipping points. We suggest setting highlights to barely not clip for any textural detail (except for specular highlights, such as the sun, which will).

Recovery—The Recovery slider is an algorithm designed to extract additional highlight detail even beyond the first clipped channel of your image. You can recover a remarkable amount of detail: remember that in raw images, there's a wealth of data in those highlights! The usual technique is to round trip between Exposure and Recovery to extract as much texture as you want while still maintaining pure white in the speculars (clipping in all three channels).

Fill Light—Fill Light is an adaptive image correction (it uses an image mask to bring up shadow detail) that is a complimentary tool for Shadows, much as Recovery is for Exposure. While Fill Light can substantially increase shadow detail, it should be used in moderation and in conjunction with fine-tuning your Shadows setting. Too much can look unnatural and introduce the risk of halos.

Blacks—The Blacks setting is basically the black clipping point. As with the Exposure slider, holding down the Option (Mac OS) or Alt (Windows) key with the Blacks slider active will display a preview of the clipping point. For normal full-range images, it's critical to set Blacks no higher than needed to achieve a true black. However, for low-contrast images (or images “exposed to the right,” a practice of increasing exposure for low-contrast scenes), don't be shy about setting it to a high number and tweaking the Fill Light to achieve an optimal result.

Brightness—The Brightness slider is a mid-gamma adjustment similar to the middle slider in Photoshop Levels. However, you should combine its use with, and set it after, Exposure.

Contrast—The Contrast slider is a simple S curve increase or decrease in the overall contrast of an image. It is a blunt instrument when compared to the Curve panel, and should be used with subtlety.

Clarity—Clarity is another adaptive image adjustment concentrating on increasing the midtone contrast of an image. It's useful for increasing the “punch” in midtones after you've made the general settings and before using the Detail panel.

Vibrance—The Vibrance adjustment boosts saturation in a nonlinear manner, where desaturated colors are boosted more than saturated colors. It will also respect and preserve skin color so you can boost colors other than skintones without getting oversaturated-looking people. Think of it as a more subtle saturation tool than merely Saturation.

Saturation—As its name implies, Saturation increases the overall saturation levels of an image. This tool works differently and arguably better than the Photoshop Hue and Saturation tool, but should still be used with subtlety.

The Tone Curve panel

The Tone Curve panel (Figure 9) is actually two different approaches to setting the tone curve of your image. On the left is the Parametric Curve editor and on the right is the Point Curve editor. Each offers different yet powerful alternatives for fine-tuning.

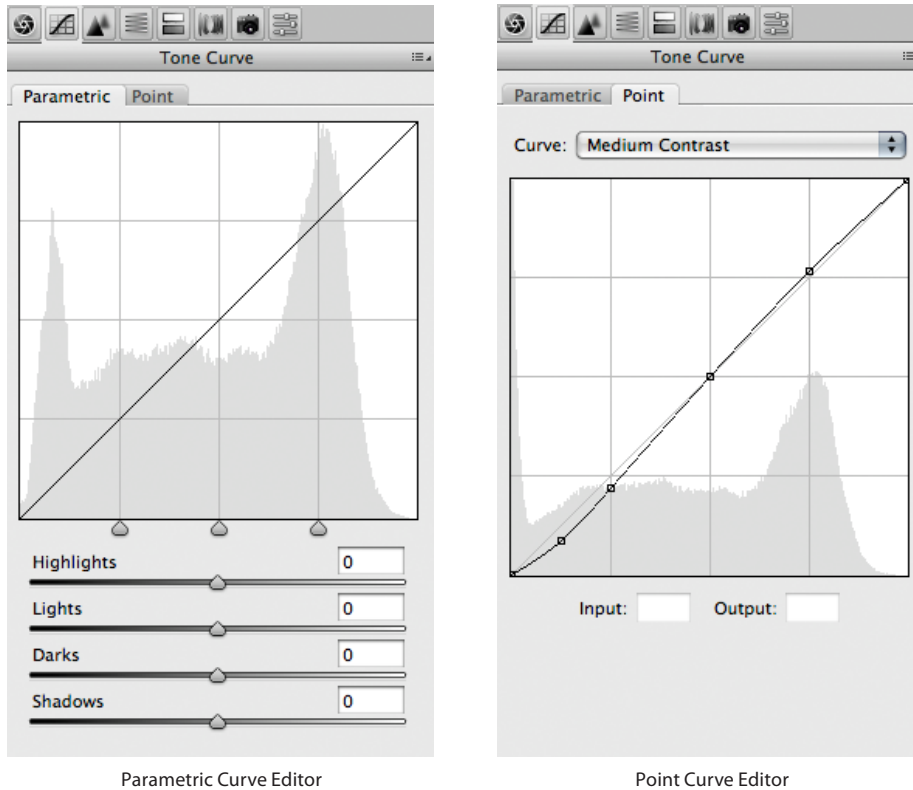


Figure 9: The Tone Curve panel. Keyboard shortcuts: Command+Option+2 (Mac OS) or Ctrl+Alt+2 (Windows).

The Parametric editor allows setting the curve visually by using one of four sliders: Highlights, Lights, Darks, and Shadows. The three sliders just under the curve graph are range sliders that affect where the four-slider adjustments occur in the curve. This innovation was inherited from Lightroom and offers a new and unique method of curve-editing.

The Point Curve editor allows selecting points on the curve or from within the image when holding down the Command (Mac OS) or Ctrl (Windows) key while mousing on your image. The readout at the bottom displays the original input value, and the output shows the post-curve value. You can apply very precise settings by careful point placement. To remove a point entirely, just drag it off the chart.

The Detail panel

Lots of changes in the Detail panel (Figure 10) occurred when Camera Raw 4.0 was updated to 4.1—particularly to the Sharpening controls. Previous versions had a single slider-edge concentrated sharpening adjustment. That has now been increased to four sliders whose adjustments can be previewed by holding down the Option (Mac OS) or Alt (Windows) key to view the slider's impact.

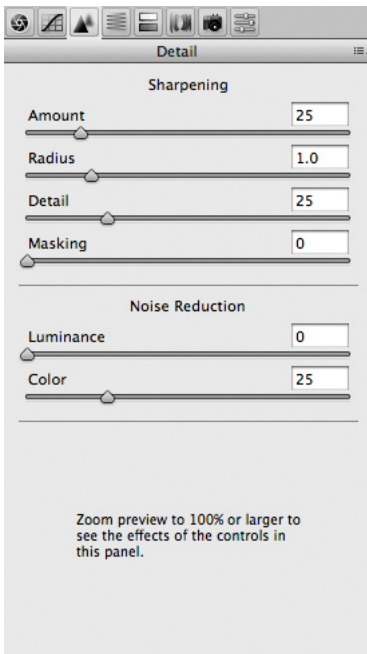


Figure 10: The Detail panel. Keyboard shortcuts: Command+Option+3 (Mac OS) or Ctrl+Alt+3 (Windows).

Zoom at least to 100% to see an accurate preview of the effects of the sharpening. If your preview zoom is set to less than 100% on navigating to this panel, a warning will appear: “Zoom preview to 100% or larger to see the effects of the controls in this panel.” If this warning appears, you’ll still be able to adjust the sliders, but you won’t be able to see what’s happening or use the Option/Alt key to preview, unless you zoom in to at least 100%. Zoom in more to better see the effects of settings on certain aspects of the image.

Sharpening controls—Sharpening has four separate controls:

Amount is a volume control that determines the strength of the sharpening being applied. It runs from 0, the default for non-raw images of no sharpening applied, to 150. At 150, without adjusting other controls, your image will likely be oversharpened. The amount can go to 150 because the other controls will alter how the sharpening is applied.

- **Radius** refers to how many pixels on either side of an “edge” the sharpening will be applied. In Camera Raw 4.1 (and above), radius controls go from a minimum of 0.5 pixels to a maximum of 3 pixels.
- **Detail** is similar in concept to USM’s threshold, but totally different in application and function. Detail varies how the sharpening attacks your image. If you run Detail all the way to the right (100) Camera Raw 4.1 (and above) sharpening will be very similar to Photoshop Unsharp Mask—not exactly, but similar. Running Detail to the left causes a halo dampening on the sharpening. Setting Detail all the way to the left (0) will almost completely pin the sharpening edge halo.
- **Masking**, as the name suggests, controls edge-masking that reduces the sharpening of non-edge areas while concentrating the sharpening on edges, which is a principle of “capture sharpening.” Camera Raw creates this edge mask on the fly. Note, however, as with Fill Light, setting the Masking control above 0 will cause some calculations to be performed, which can take a bit of time on slower computers. By default, the Masking is set to 0—meaning no masking and no mask being built.
- **Noise Reduction controls**—The Camera Raw team wanted to improve the demosaicing (converting Bayer array raw files into color files) and noise reduction capabilities in Camera Raw 4.x. Without requiring any additional controls, the underlying demosaicing and luminance noise reduction have been substantially improved.

By default, the Camera Raw Luminance noise setting remains 0. As with the sharpening settings, to see the effect of Luminance noise reduction, you must be zoomed to at least 100%. Zooming in further will give you a better idea of what the noise reduction settings are actually doing.

The HSL/Grayscale panel

The HSL/Grayscale panel (Figure 11) is another twofer in that you get either color controls for Hue, Saturation, and Luminance when working on a color image, or Grayscale Mix if you select the Convert to Grayscale option. When used for a color image, the HSL panel gives you a total of 24 sliders (yes, 24!) to control that exact hue, saturation, and luminance of the colors in your image. Far more precise and specific, the HSL sliders allow you to tune colors to your liking.

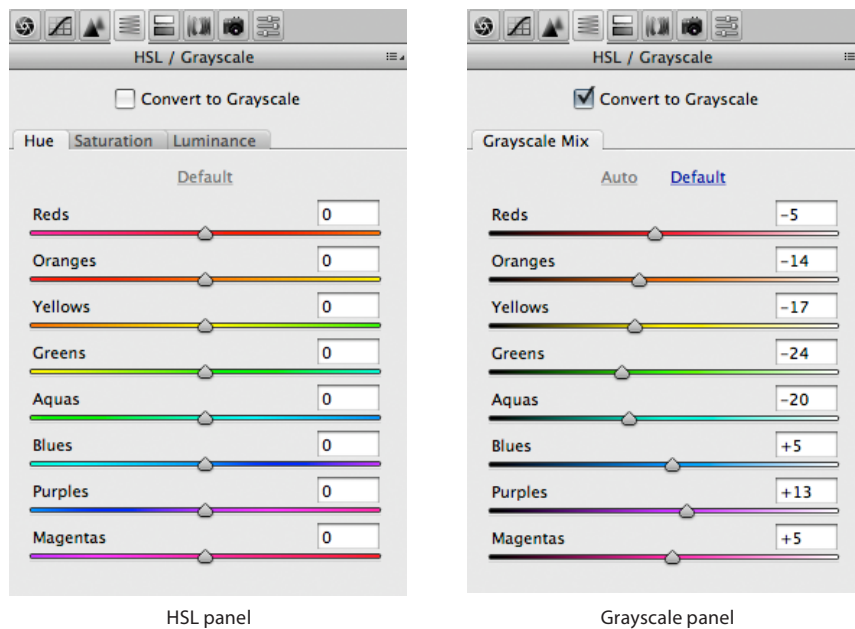


Figure 11: The HSL/Grayscale panel. Keyboard shortcuts: Command+Option+4 (Mac OS) or Ctrl+Alt+4 (Windows).

As with a lot of Camera Raw innovations, the way that the colors are broken down is non-traditional. Rather than sticking with the traditional Red, Green, and Blue additive primaries and the Cyan, Magenta and Yellow subtractive primaries, Camera Raw has broken the colors down to more useful natural color categories with extra colors thrown in. For space savings, the Hue, Saturation, and Luminance sliders are broken down by tabs.

Split Toning (Figure 12) allows adjusting both the hue and saturation bumps by Highlights and Shadows, and provides a Balance slider to adjust the split point of the toning. Originally designed to split-tone grayscale conversions, the Split Toning controls allow the same control even in color images.

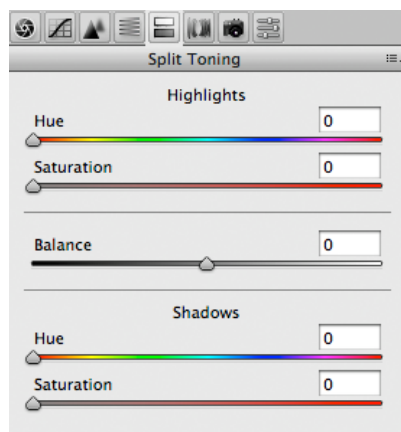


Figure12: The Split Toning panel. Keyboard shortcuts: Command+Option+5 (Mac OS) or Ctrl+Alt+5 (Windows).

The Lens Correction panel

Even with good “glass,” the best lenses will often suffer from chromatic aberrations—particularly in the corners. There are two flavors of aberrations, only one of which Camera Raw can correct: the inability to focus all colors of light at the same actual size. The second aberration, the inability of a lens to focus all colors of light at the same plane, Camera Raw can’t correct. The Lens Corrections panel (Figure 13) lets you correct the size of focused colors of light.

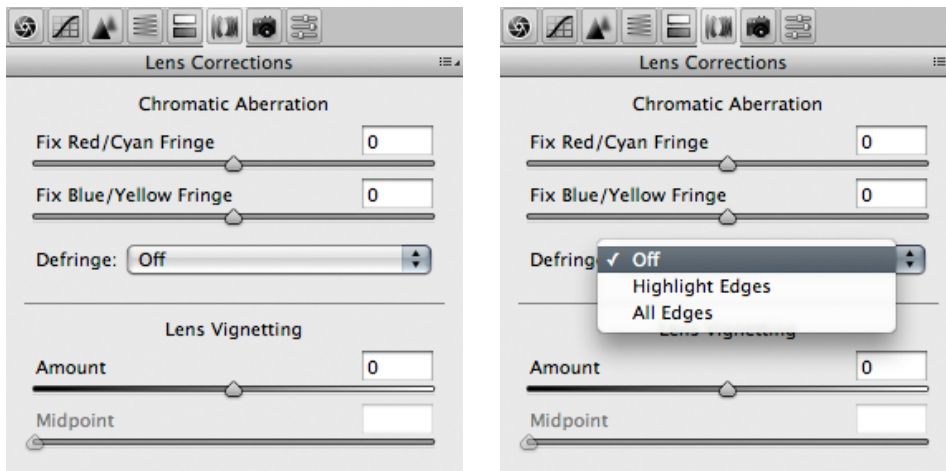


Figure 13: Lens Corrections panel showing (a, left) Chromatic Aberration options and (b, right) Defringe menu options. Keyboard shortcuts: Command+Option+6 (Mac OS) or Ctrl+Alt+6 (Windows).

Chromatic Aberration—The Chromatic Aberration sliders (Figure 13, left) allow you to adjust the size of the Red channel (Fix Red/Cyan Fringe) or the Blue channel (Fix Blue/Yellow Fringe). The best way to use these tools is to zoom into one of the corners of the image to about 200% and hold down the Option (Mac OS) or Alt (Windows) key while adjusting the slider. The ideal is to remove any color fringing in the corners where chromatic aberration is more likely.

The Defringe control (Figure 13, right) is a new adjustment for two image defects; Highlight Edges, where sensor flooding may occur along the edges of specular highlights, and All Edges, which will reduce the color fringing throughout the image.

Lens Vignetting—Another lens defect is vignetting where the corners of an image are darker than the center. This is often seen with super-wide lenses in both zooms and primes. The Lens Vignetting allows you to lighten (original design use) or darken (for creative effect) the corners of the image while using the midpoint slider to adjust where the increase or falloff occurs. This feature is intended to correct for a lens flaw and as such operates on the entire frame, not on a cropped portion of your image.

The Camera Calibration panel—Perhaps the most confusing, yet most critical panel, is Camera Calibration (Figure 14). Designed to account for differences by camera, of how individual camera sensors render color, or camera-by-camera (sensor by sensor) variations, this panel lets you adjust how Camera Raw interprets the color information coming from your camera. Obviously you can’t expect somebody to tune, by hand, each camera that is manufactured, so it’s the nature of the beast that some cameras will behave differently than those tested.

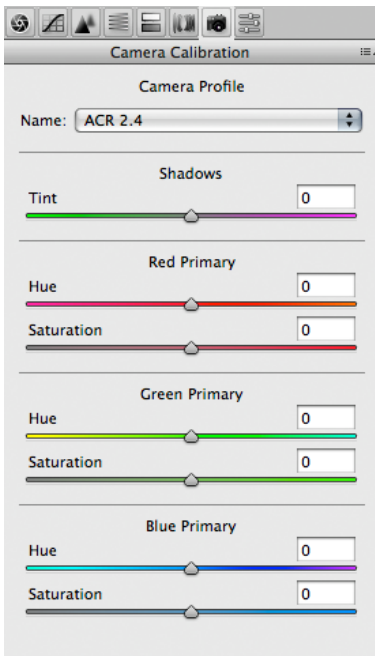


Figure 14: The Camera Calibration panel. Keyboard shortcuts: Command+Option+7 (Mac OS) or Ctrl+Alt+7 (Windows).

You can choose to adjust colors visually, making certain colors like red more warm (towards yellow) or cool (towards magenta), or you can choose a more automated method provided free from a fellow named Tom Fors (who automated Bruce Fraser's method of calibration in a Javascript). Go to the [chromoholics website](http://chromoholics.com) (<http://chromoholics.com>). To process color calibrations requires only the free script and a Gretag-Macbeth (now X-rite) Color Checker card and a decently exposed capture.

The Preset panel—New for Camera Raw 4 and likely overlooked by too many users, is Camera Raw 4's ability to store and use presets (see Figure 15). Presets differ from Camera Raw's defaults (which can also be changed); presets can be all settings or simply a subset of settings. Say for example, you've run camera calibrations on your cameras: one for daylight and one for tungsten. Well, it's simple to save those two different settings as subsets and apply them either in Camera Raw or in Bridge before even opening images in Camera Raw.

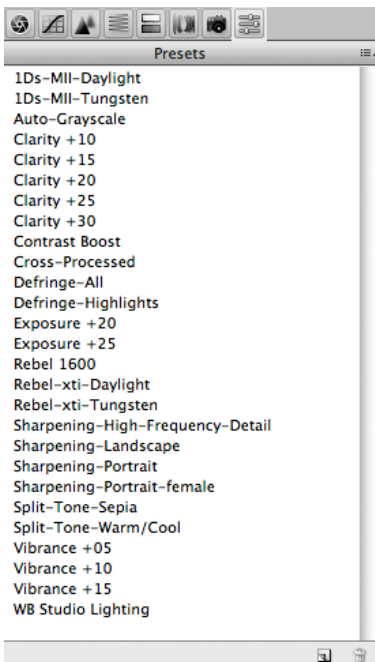


Figure 15: The Preset panel. Keyboard shortcuts: Command+Option+8 (or 9) (Mac OS); or Ctrl+Alt+8 (or 9) (Windows).

Note: Depending on your operating system preferences, Command-Option+8 or 9 (or Ctrl+Alt+8 or 9) may both work. If the number 8 is taken by the operating system, number 9 will also work.

Presets can consist of all settings or, more efficiently, subsettings (see Figure 16). When saving a new preset, give it a meaningful name so that by looking at it you can know what to expect when it's applied. Figure 15 shows a variety of saved presets listed in the Presets panel. Examples vary between camera calibrations (the 1Ds and Rebel presets) to clarity settings, to sharpening settings, among others.

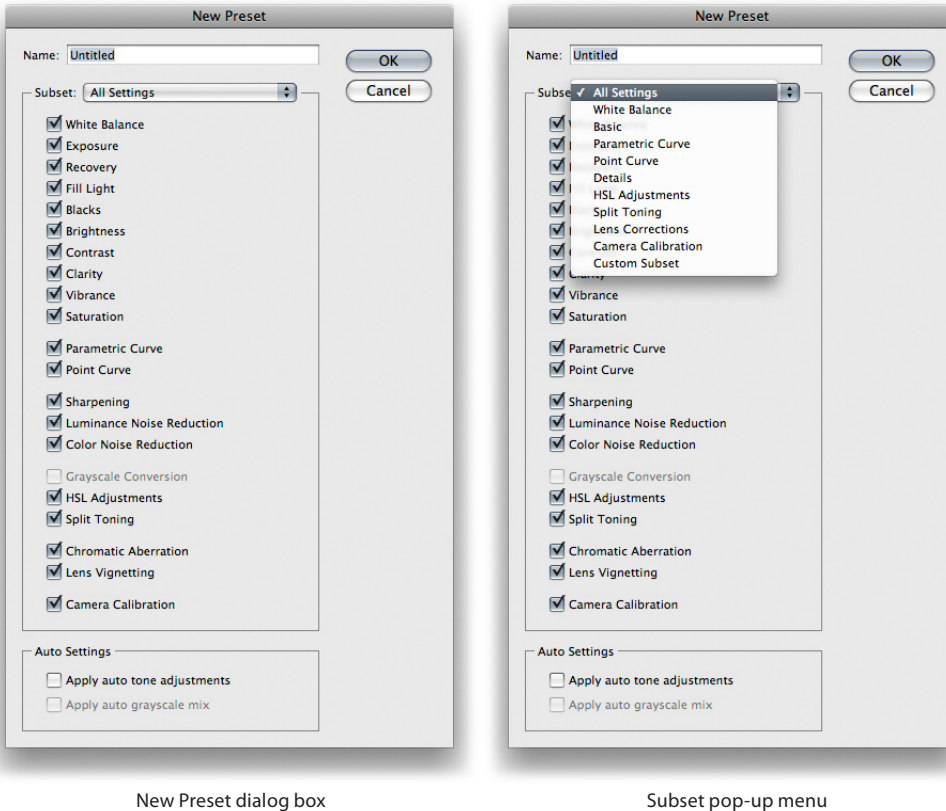


Figure 16: New Preset dialog box

Saving subsettings (Figure 16) is so useful because you can apply multiple settings, one after the other, to alter the total settings applied to a single or multiple files. As long as the subsettings being applied don't overlap, they won't be altered by subsequent subsettings. So, you could apply a camera calibration preset, followed by a clarity setting, followed by additional presets, and in this way apply a custom mix of presets. And you can apply these presets either from within the Camera Raw dialog box or from Bridge before ever opening an image in Camera Raw.

For the location of saved presets, see the end of the next topic, [“The Camera Raw Settings menu.”](#)

The Camera Raw Settings menu

Just as the Camera Raw Preference dialog box offers substantial “global” control over the way Camera Raw operates, the Camera Raw Settings menu (Figure 17) also provides important functionality on an image-by-image basis. You first took a look at this menu in “Camera Raw 4 defaults,” earlier in this paper, which discussed saving and resetting the Camera Raw defaults. But there is more hiding in the menu, and it's important to understand the options.

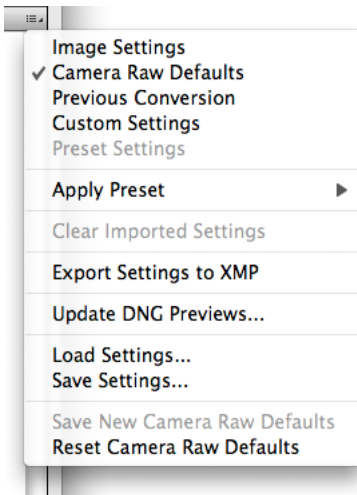


Figure 17: The Camera Raw Settings menu

The top part of the Settings menu contains both information and the ability to toggle through several states of your image. In Figure 17, a check mark is next to Camera Raw Defaults, which indicates that the settings are at the defaults and nothing has yet been changed. A check mark appearing alongside the Image Settings option would indicate that you've made changes that differ from the defaults.

Here's the magic decoder ring version to the various Settings menu options:

Image Settings will be checked if the image already had settings when you opened it. If you changed the settings after opening the image, selecting this option will return the settings to the same state when opened.

The **Camera Raw Defaults** option will be checked if the image had no settings upon opening. You would select this option if, after making adjustments to an image, you want to return to the Camera Raw default settings for this image.

The **Previous Conversion** option will change the current image's settings to match those of the image most recently opened in Camera Raw (the previous, not current image). This option can be useful if the current image shares properties with the previously converted image, but it can lead to unpredictable results if the most recently processed image bears no relationship to the current image.

The **Custom Settings** may share the same settings as the Image Settings if you've manually changed an image (which means the Camera Raw default is no longer applied). This option is checked if you make any changes to an image. You can select any of the menu items above Custom Settings and toggle between them to see the differences.

The **Preset Settings**, grayed out in Figure 17, would show the name of the Camera Raw preset if you had selected a preset either in Bridge (before opening the image in Camera Raw) or in Camera Raw.

The **Apply Preset** option lists all the currently saved Camera Raw presets. This list will be the same as that available in Bridge as well as in the Presets panel. Remember, applying presets is cumulative as long as the settings represent nonoverlapping subsets. If any settings overlap, the most recent setting wins.

Clear Imported Settings gives users the option of removing any settings in an image file. This is meant to allow users of Elements, with a simplified version of Camera Raw, to remove hidden settings. The option doesn't do anything when Camera Raw is used in Bridge or Photoshop CS3.

Export Settings to XMP. The function of this command is similar to that of the main Camera Raw Done button: the current settings in an image will be updated to the XMP metadata either embedded in the file (in the case of DNG, JPEG, or TIFF images) or written in an XMP sidecar file if the image is in a proprietary raw file format.

Update DNG Previews opens a dialog box that lets you choose the size of a DNG preview, if the image currently open in Camera Raw is a DNG file. This option applies to the current file. To set the DNG preview size globally for all files, use preferences (see “DNG file handling” for more information).

Load and Save Settings opens the Save Settings dialog box that allows you to load a specific setting preset that may not be in the Camera Raw Presets folder. Very similar in appearance to the New Preset dialog box, this dialog box does the same thing. Presets are saved in the following default locations:

- In Mac OS, User/Library/Application Support/Adobe/CameraRaw/Settings.
- In Windows XP, Boot drive\Documents and Settings\User Name\Application Data\CameraRaw\Settings.
- In Windows Vista, Users\User Name\AppData\Roaming\Adobe\CameraRaw.

The Camera Raw workflow options

New in Camera Raw 4, rather than wasting the space required for pop-up menus, Camera Raw workflow options have been relegated to a secondary dialog box that is opened by clicking the area shown in Figure 18. It’s not obvious at first that the readouts are actually a button to access the dialog box, but they are. Refer back to [Figure 1](#) for the location of the button.

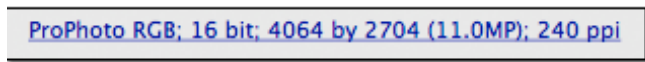


Figure 18: Camera Raw workflow options readout and button

The Camera Raw Workflow Options dialog box appears on clicking the file info readout at the bottom of the screen. Workflow Options (Figure 19) include various color space, bit depth, size, and resolution settings. These settings are sticky by use—meaning that once you set them, they won’t change until you change them again.

New in version 4.x is, the ability to Open In Photoshop As Smart Objects offers another way of dealing with raw files. Smart Objects are Photoshop layers that contain image data from raster or vector images, such as Photoshop or Camera Raw files. Smart Objects preserve an image’s source content with all its original characteristics, enabling you to perform nondestructive editing to the layer. So, opening an image from Camera Raw allows maintaining the raw image up until the file is flattened. However, the Smart Object layer has limits. You can’t use any brush tool on it or run filters unless the layer is rasterized. The Smart Object layer also increases the file sizes considerably. For more on Smart Objects, see Photoshop Help.

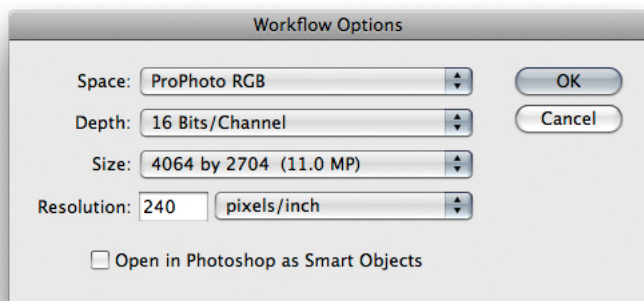


Figure 19: The Workflow Options dialog box

Editing multiple images in Camera Raw Filmstrip mode

If you had to adjust every slider on every image, you might conclude that Camera Raw isn't a productivity tool. Fortunately, the combination of Camera Raw, Bridge, and Photoshop offers several ways of editing multiple images; the method often most useful is built right into Camera Raw. In Filmstrip mode in Camera Raw, you can blitz your way through dozens or even hundreds of images, quickly applying general corrections and saving individualized treatment for those that need it. When you select multiple images, either in Bridge or in the Open dialog box, Camera Raw opens them in Filmstrip mode (Figure 20).

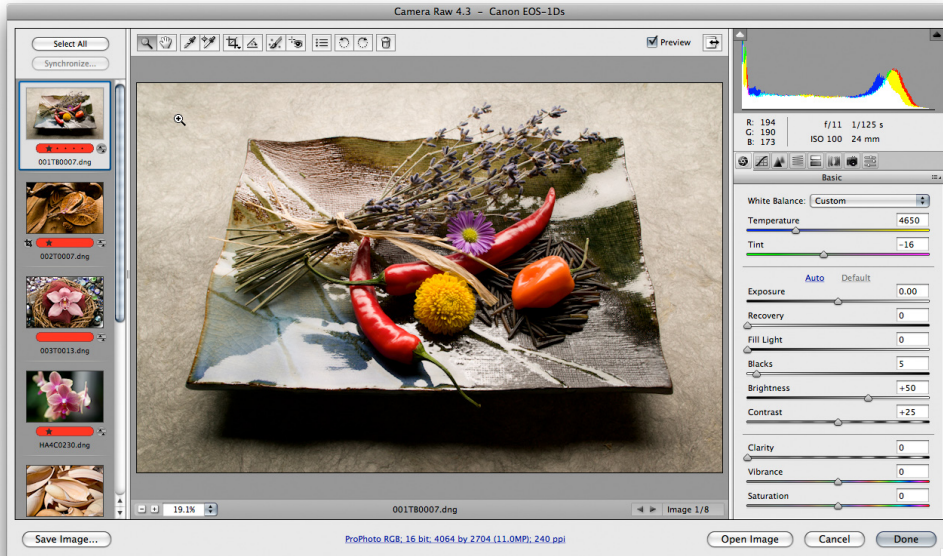


Figure 20: Camera Raw in Filmstrip mode (available only when multiple images are selected in Bridge)

In Filmstrip mode, Camera Raw offers a great deal of flexibility in editing multiple images, with these convenient features:

- Select all the open images using the Select All button, and your edits will apply to all the selected images. You can also select all by pressing Command+A (Mac OS) or Ctrl+A (Windows).
- Select contiguous ranges of images by Shift-clicking them.
- Select discontinuous ranges of images by Command-clicking (Mac OS) or Ctrl-clicking (Windows) them.
- When the focus is on the filmstrip, you can navigate through the images using the Up and Down Arrow keys.

When you're dealing with a sequence of similar shots, probably the most effective method is to edit a single image, and then quickly apply any or all of its settings to other images in the filmstrip by clicking Synchronize. This displays the Synchronize dialog box (Figure 21), which lets you specify exactly which settings should be applied to the selected images.

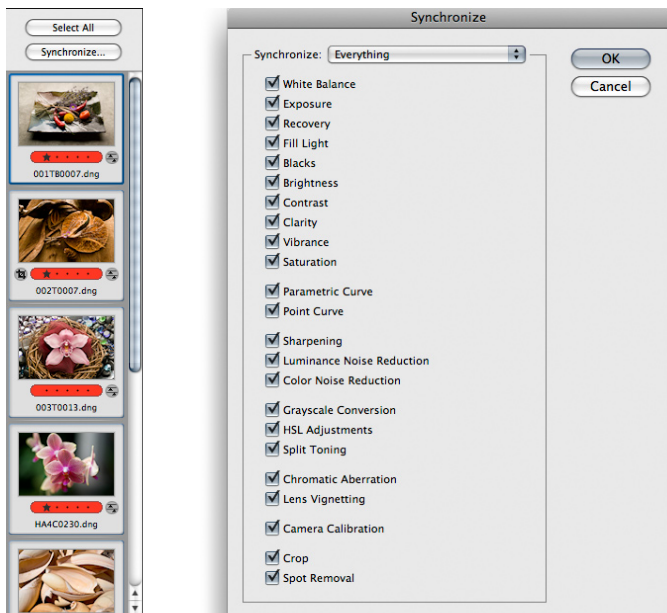


Figure 21: The Camera Raw Synchronize dialog box with multiple images selected (a, left), and the Synchronize button (b, right)

Clicking OK closes the Synchronize dialog box and has Camera Raw quickly apply the selected edits from the current image (the one showing in the Preview area) to the remaining selected images, and update the thumbnails accordingly.

Saving from Camera Raw

Camera Raw has the useful ability to save images directly from the Camera Raw dialog box without first opening them in Photoshop. But you don't need to save a raw image to apply edits to it: simply clicking the Done button in the Camera Raw dialog box writes the edits to the raw image metadata.

The Save Image function creates new image files. You can save images from Camera Raw as JPEG, TIFF, PSD, or as new DNG raw files with the original raw file's metadata, including Camera Raw settings, embedded in the DNG file.

Clicking the Save Image button at the bottom left of the Camera Raw dialog box displays the Save Options dialog box (Figure 22). It lets you specify a save location, file name or names, and format; remaining options depend on the chosen format.

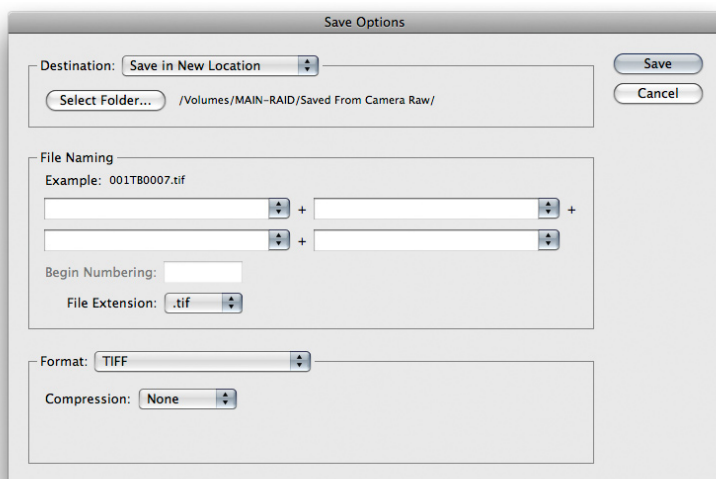


Figure 22: The Save Options dialog box

Figure 23 shows the different Save options for the supported file formats, Digital Negative (.dng), JPEG, TIFF, and Photoshop (.psd) files, respectively. The color space and pixel dimensions for saved JPEG, TIFF, and Photoshop files are set by the Workflow Options settings in Camera Raw. JPEG is always saved as 8 bits-per-channel; TIFF and Photoshop files use the Workflow Options setting. DNG contains all the original raw pixel data, and incorporates the metadata into the DNG file, eliminating the need for sidecar XMP files.

Figure 23 displays four panels showing the file format options for different file formats in Camera Raw. Each panel has a 'Format' dropdown menu and various checkboxes and dropdowns for additional settings.

- (a) Digital Negative:** Format: Digital Negative. Checkboxes: ☒ Compressed (lossless), ☐ Convert to Linear Image, ☐ Embed Original Raw File. JPEG Preview: Full Size.
- (b) JPEG:** Format: JPEG. Quality: 8, High.
- (c) TIFF:** Format: TIFF. Compression: None.
- (d) Photoshop:** Format: Photoshop. ☐ Preserve Cropped Pixels.

Figure 23: File Format options by format: (a) DNG, (b) JPEG, (c) TIFF, and (d) Photoshop (.psd)

Camera Raw 4 is a major upgrade and an extremely powerful tool. If you learn to use it effectively, you'll get the most from your digital captures, you'll do so speedily, and you'll have more time to shoot because you'll spend less time in front of the computer.

ABOUT THE AUTHORS

Bruce Fraser and Jeff Schewe are the co-authors of the Adobe Press book *Real World Camera Raw with Adobe Photoshop CS3* published by Peachpit Press.



BRUCE FRASER was an internationally recognized authority on digital imaging and color image reproduction. Before his death in 2006, Bruce co-authored the best-selling *Real World Adobe Photoshop* as well as *Real World Color Management*. He was also a principal and founder of Pixel Genius LLC, a collaboration of industry experts dedicated to creating leading-edge products and services for the photographic and digital imaging industries.



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FOR MORE INFORMATION

For a comprehensive overview of Camera Raw, please visit www.adobe.com/products/photoshop/cameraraw.html.

For a comprehensive overview of Photoshop, please visit www.adobe.com/products/photoshop/main.html.