Welcome to RAW Power 3.0

10 Quick Things to Know

1. Ratings and Flags. You can rate images and flag them in RAW Power. If you are using the File Browser in RAW Power, you can also use Finder Tags. They are automatically read in and synchronized.

2. Photos or Files. RAW Power includes a file browser to let you easily view folders and images on your disk. If you are using macOS Catalina, RAW Power is equally at home with your Photos library. You have full access to your Photos library in RAW Power 3 and can non-destructively edit images, rate, flag or do anything else that RAW Power can do with individual files on your disk. Changes you make to your Photos library will also be synched through iCloud Photo Library, if you are using it.

3. Batch Processing. The thumbnail grid in RAW Power enables you to make changes to multiple images at once, in the background. This is called Batch Processing. Simply select multiple images in the grid (using the Shift key or Command key) and right-click to:
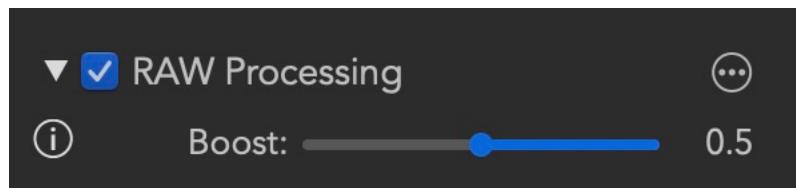
    - Apply a Preset (including Auto White Balance and Auto Curves / Levels)
    - Paste adjustments from another image
    - Revert to Original
    - Auto Enhance

3. Batch Export. You can also export multiple images at once, with control over the size, color profile, file format, bit depth and the name of the files too.

4. Windows and Tabs. RAW Power supports multiple windows and tabs. You can have different windows pointing at different parts of your disk or different albums of your Photos library,. You can dock the tabs into a single window or any mix of tabs and windows. You can also open multiple images for editing at the same time.

5. Extension. RAW Power includes a Photos extension which is the best way to use RAW Power if you use Apple's Photos.app on macOS Mojave. This extension provides all of the same editing features as the regular RAW Power app, and it's built right in. To use it, select an image in Photos for editing. Click on the "..." button and select RAW Power. Note: do <u>not</u> use Photos' Edit With function, as that does not send RAWs to RAW Power. If you are using Catalina, you can also use the extension if you would like to stay within Photos, but the standalone app has features not possible in an extension, such as ratings, flagging, and batch processing (so you can edit multiple images at once).

6. Boost. Boost is one of the most important controls in RAW Power's adjustment toolbox.

A slider in the RAW Processing adjustment, Boost controls the "look" of the RAW image. By default, RAW images can look very flat, and lack contrast or "punch." Boost provides that contrast and punch. This is good for well-

exposed images, but bad for over-exposed images. For the best highlight recovery for RAWs, set Boost to 0.5 or less. Also, if you want to have the least processing done to your images before applying your own, set Boost to 0.0 to shut it off completely. Learn more in the RAW Processing help page.
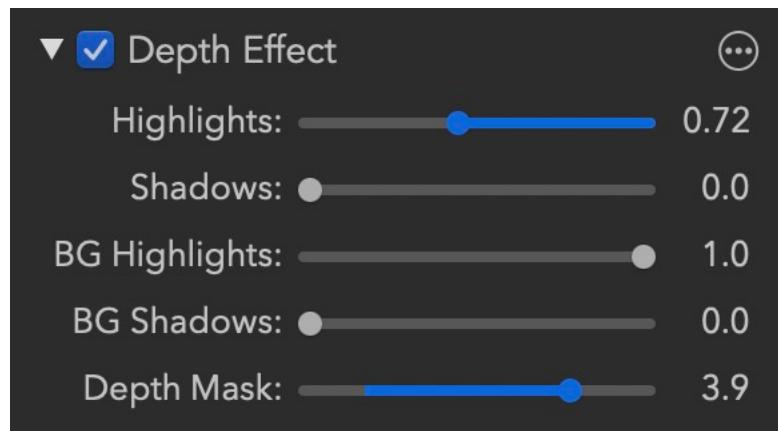
7. Hot Pixel Overlays. Next to the word "Histogram" in the adjustment panel, there are four circles.

If they are lit, then your image has over-exposed (clipped) areas. If you click on the circles, RAW Power will draw an overlay to show you which pixels are over-exposed. The gray circle will display red for pixels that are clipped in at least one channel, and blue for pixels that are 0.0 in all channels (completely black). There are also "Photoshop-style" overlays that show multiple colors -- see the information on the Tone adjustment to learn more.

8. Depth Effect and other image formats. While RAW Power is optimized for RAW images, it can adjust JPEGs, TIFFs, PNGs and other formats. If you have a JPEG shot with a dual-camera iPhone, you can use RAW Power's Depth Effect to manipulate the foreground and background independently.

You can also view and manipulate the depth data itself with this adjustment.

9. iOS and iCloud. Check out RAW Power for iOS, which has all of the same adjustments as the Mac version, and can read and continue edits you make on the Mac. That's because changes you make to the Photos library with RAW Power (extension or standalone app) are synched through iCloud Photo Library.

10. LUT, Channel Mixer, Levels, and Auto Adjustments. RAW Power has a wide range of adjustments to correct and improve your photos. In version 3.0, RAW Power has a new LUT adjustment for adding professionally designed looks or color grading to your images. In addition, there is a new Channel Mixer for tinting or swapping channels, and a Levels adjustment. RAW Power includes Auto White balance, and a new Auto Enhance for quickly improving your photos, including ones that are overexposed. All automatic adjustments can be applied in batch mode, so you can make quick work of many images at once.

New Features in RAW Power 3.0

New Adjustments (Photos Extension and Standalone App)
- LUT
- Levels
- Channel Mixer
- Auto Enhance with Face Balance
- Auto White Balance
- Auto Curves and Auto Levels has controllable clipping values

Features in the Standalone App:
- Browser

- Work with your Photos Library (requires macOS Catalina)
  - Add, delete, rename and rearrange albums
  - Delete, rename, and rearrange folders
  - Add and delete and rearrange items in albums
  - Non-destructively edit images
  - Mark images as Favorites
  - Recently Viewed album and Recent Albums section
- Rate and Flag images
- Finder Tags (File Browser only)
- Filtering by file type, edited, rating, flag and tag
- Show all items in subfolders (File Browser only)
- Refreshed Editing UI
  - New look for sliders
  - Custom order for adjustments and custom set of default adjustments
  - Edit in New Window provides a minimalist editing environment
- Batch Apply Auto Enhance, Auto White Balance, Levels, and Curves
- Many other small improvements throughout the app

Note: You can open individual files with the Open menu to make quick adjustments to images. Like Browser windows, you can have as many of those open as you like (and put them in tabs).

RAW Power Overview

RAW Power uses Apple's RAW engine to decode images, so any image you open in RAW Power looks the same as it would in Photos, Aperture, or iPhoto. This is one of RAW Power's key advantages. It also supports hundreds of RAW camera formats, as well as DNGs and iPhone RAW images. You can watch video tutorials of RAW Power on YouTube at:

<https://www.youtube.com/channel/UC7l78rOzFxaHG-e5AT-MGWQ>.

If you are using iCloud Photo Library, any adjustments you make to images with RAW Power for iOS will be synchronized to the photo library on your Mac. You can continue non-destructively editing those images with RAW Power for Mac, using the Photos extension or standalone app (and return to iOS again, if you like).

The Browser

The Browser Window is the heart of RAW Power. Use this window to peruse the images on your computer, select them for editing, and perform operations on multiple images at once ("Batch Processing"). There are two types of Browser windows: File Browser and Photo Library Browser.
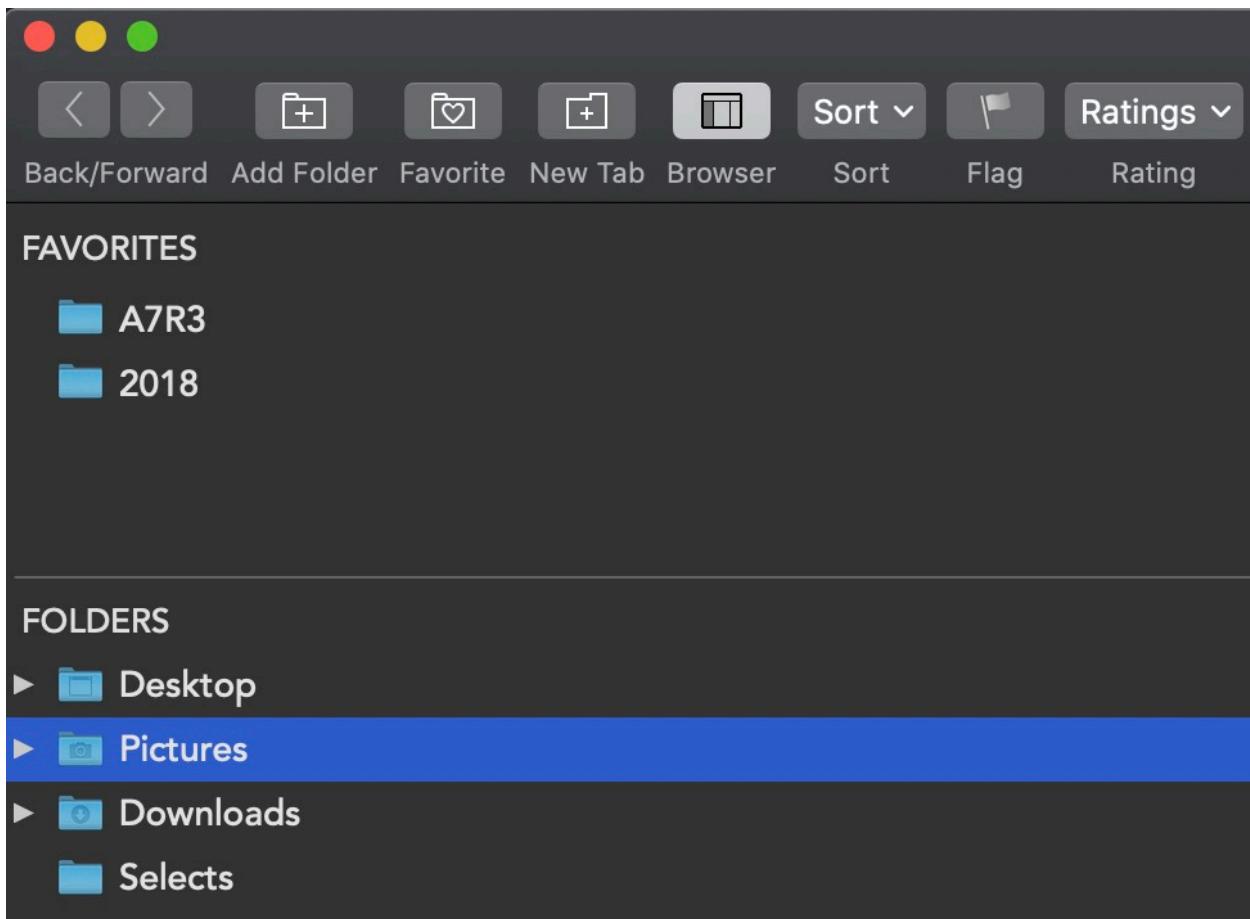
At the top of the window is the toolbar. There are standard navigation buttons, buttons to rate, flag, filter, and manage the workspace.

The File Browser

The File Browser lets you view and edit images on your hard disk that are not stored inside a photo library. When using the File Browser window, use the Add Folder toolbar button to get started.

Because RAW Power is "sandboxed," it does not have access to files on your computer unless you explicitly give it permission. You give permission by clicking the Add Folder button and selecting a directory for RAW Power to display. You can remove a folder at any time by selecting it and pressing the delete key or control-click to display a menu.
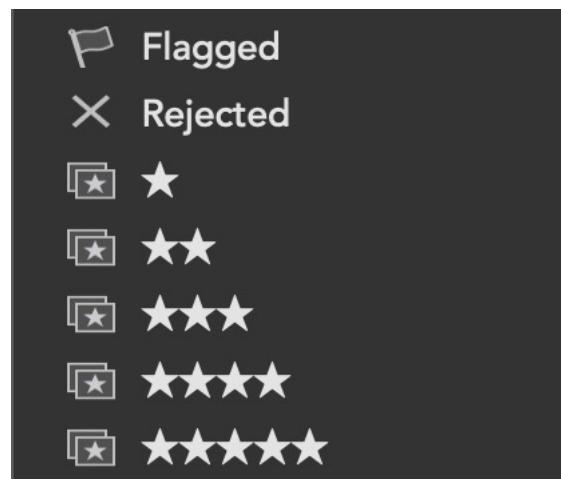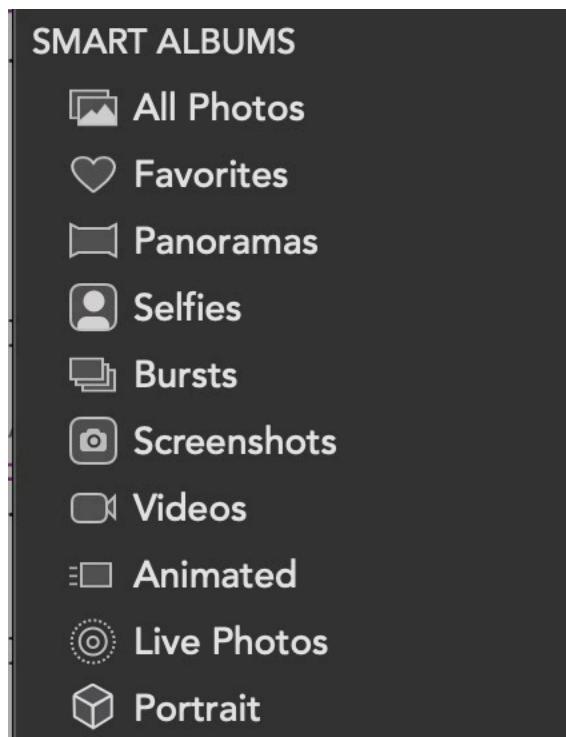
The left side of the window is the "Browser" itself. There are two sections: In Favorites, put your most commonly accessed folders. That section only shows the contents of the folder (not sub-folders), so it may not be suitable for a directory like "Pictures". The second section, Folders, is where you can put folders that contain hierarchical information (such as all the photos for a year, organized into subfolders by month. You can drag folders between the two sections. The line between Favorites and Folders can be moved if you need more space for Favorites and the Browser itself can be made wider or narrower.

Use the Back / Forward buttons as you would in a web browser.

Photo Library Browser

The Photo Library Browser window lets you navigate your Photos library. While Photos supports multiple photo libraries, there is only one System Photo Library. That is the one accessible to RAW Power. To change the System Photo Library, use the Preferences window in Photos. The Browser for Photos is a lot like the one for Files. However, all of the functions operate on the system photo library and any changes you make are immediately applied to the system photo library. For example, if you create an album in RAW Power, that album will appear in Photos. Similarly if you delete an album or a photo, that action will be made to the system photo library. Before any album or photo is deleted, you will be asked to confirm the deletion before it occurs. In the Recents section, there are special albums listed:
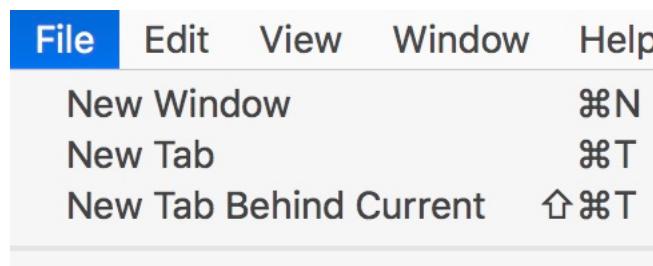

On the left are smart albums created and managed by Photos. On the right are special albums created and managed by RAW Power. These albums are used

for rating and flagging images. These are real Photos albums and will sync through iCloud Photo Library. So, if you rate or flag an image on your Mac, that change will be reflected on your iPhone or iPad if they are using the same iCloud Photo library. (Rating and Flagging is also a feature of RAW Power 3.0 for iOS).

In RAW Power, you can create, delete, rename, and rearrange albums. You can also create, delete, rename, and rearrange folders. You can also delete and rearrange the items in an album (except smart albums).

Tabs and Windows

RAW Power supports multiple tabs and multiple windows. That means that you can view multiple folders of your computer (or albums of your photo library) at the same time and manage your workspace the way you like. If you prefer to keep everything in one window, use tabs. If you prefer to have separate windows, then work that way. Or combine the two approaches.
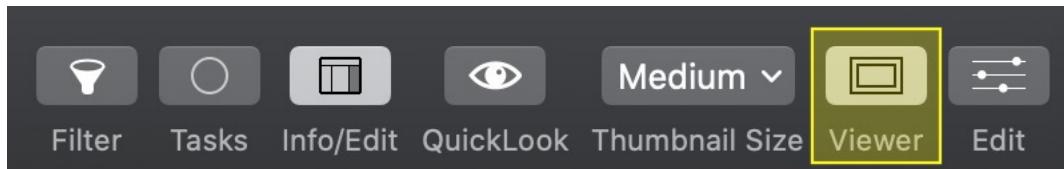

TIP: If you hold the Command key down when you click on a folder in the browser, it will create a new tab pointing at that directory / album.

The Grid / Filmstrip

When you select a folder in the browser, RAW Power will display the images in one of two ways:
1) A Viewer + Filmstrip at the bottom
2) A grid of thumbnails

You can choose which one by pressing "V" or clicking on the Viewer button in the Toolbar.

Next to the Viewer button is a popup menu that controls the thumbnail size and visibility of the filmstrip.

The QuickLook button works like the one in the Finder - press the button or tap the spacebar to quickly see a large version of your image. RAW Power's QuickLook is much faster than the one in the Finder. It is especially useful when you are looking at a lot of images in the thumbnail grid. Just tap the spacebar, and you will see a full-size image. The RAW will also be decoded for full-fidelity.

When you select an image, metadata appears on the right side:

INFO

File Name	_DSF3894.DNG
File Type	RAW
File Size	79.8 MB
Color Profile	Display P3
Flash	Flash did not fire
ISO	ISO 8000
Focal Length	35 mm
Exposure	0.00 ev
Aperture	ƒ 8.0
Shutter	1/100 s
Camera	X-Pro2
Lens Model	XF35mmF2 R WR
Date	Sep 17, 2017
Time	1:22:27 PM
Dimensions	6000 x 4000
Megapixels	24.0 Megapixels

You can also select <u>multiple</u> images in order to perform batch operations, like export or apply presets (see the topic on Batch Processing). When you select multiple images, one image is the "primary" selection and is the one that will


DSC01052.ARW   DSC01677.ARW
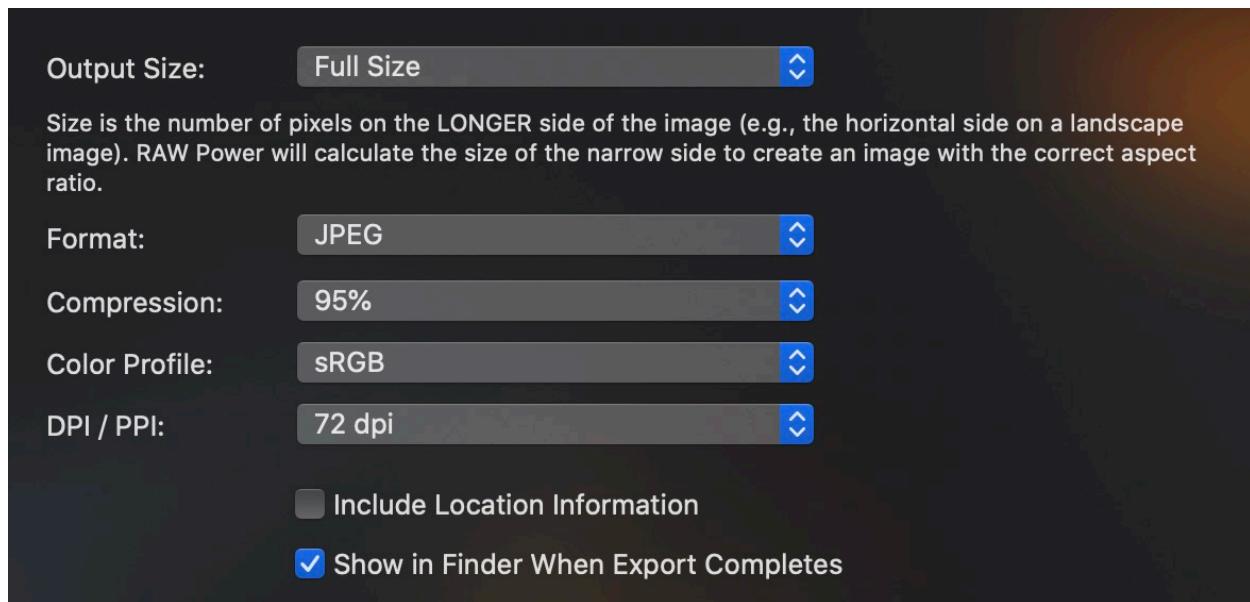
be edited or have its metadata displayed. The primary is denoted by a thicker border around the image.

Export

RAW Power provides multiple options for exporting images. The options depend on whether you have a single image selected or multiple ones. In both cases, begin exporting by choosing File > Export.

Single Image Export:
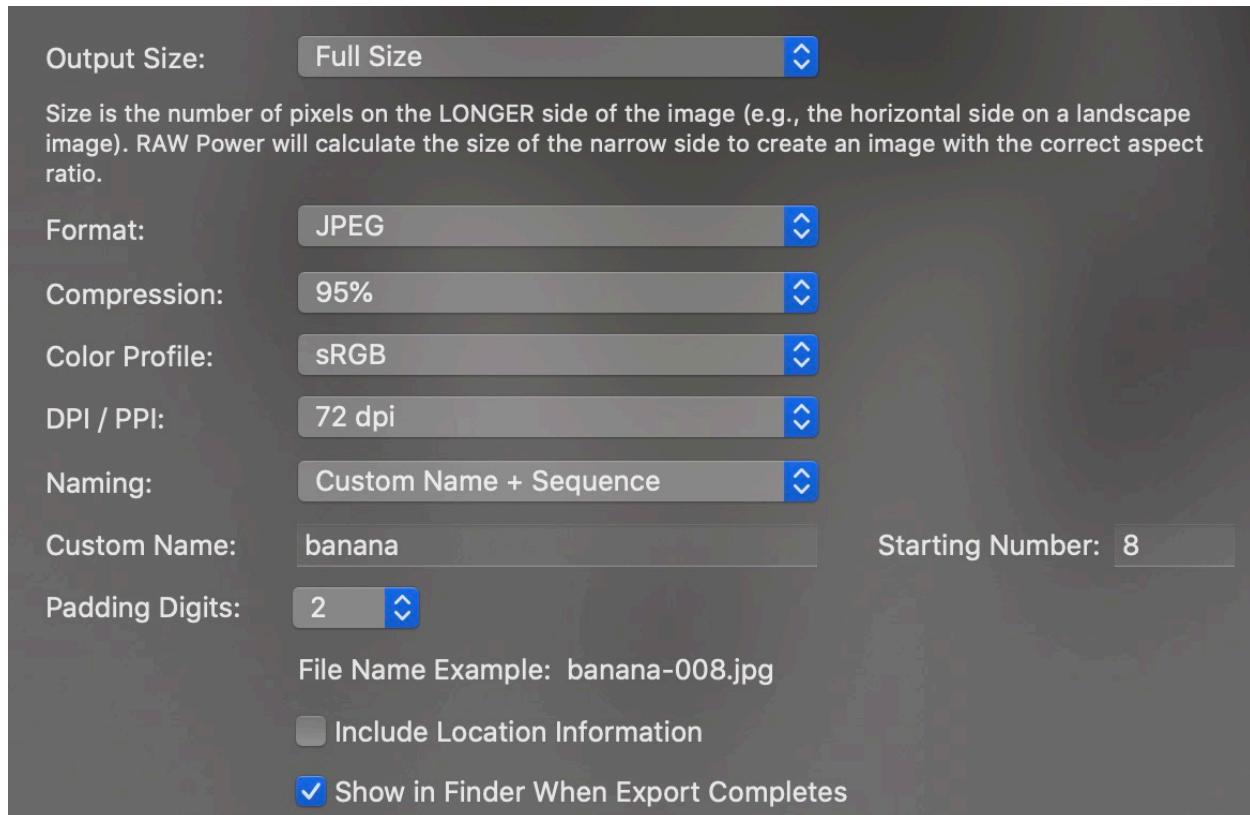
Note: if you cannot see these options, click the "Options" button at the bottom of the Save dialog.

1) Output Size: allows you to export a full size image or a choice of preset sizes. You can also select "Custom" and enter the size you would like.

2) Format: JPEG, TIFF (8 and 16 bit), PNG (8 and 16 bit)

3) For JPEGs, you can select a few preset compression options

4) Color profile

5) DPI / PPI allows you to tag the image for print. Some printers use this tag to determine the physical output size to print the image. It has no affect on the quality of the exported image.

6) Show in Finder will open the folder containing the exported images (and select those images when export completes).
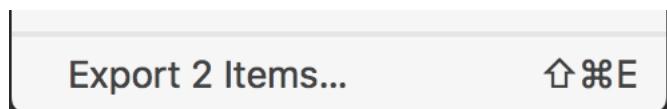
Export operates in the background.

Multiple File Export:

In this situation, you select the directory for the export files to go, and you can use the additional options to name the exported files as you choose. You can use the original file name, the file name + date, and the file name plus an incrementing sequence number.

Note: the menu item will change to show the number of items to export:

Many menus in RAW Power will change in this manner to reflect the number of items that will be affected by an operation.

Batch Processing
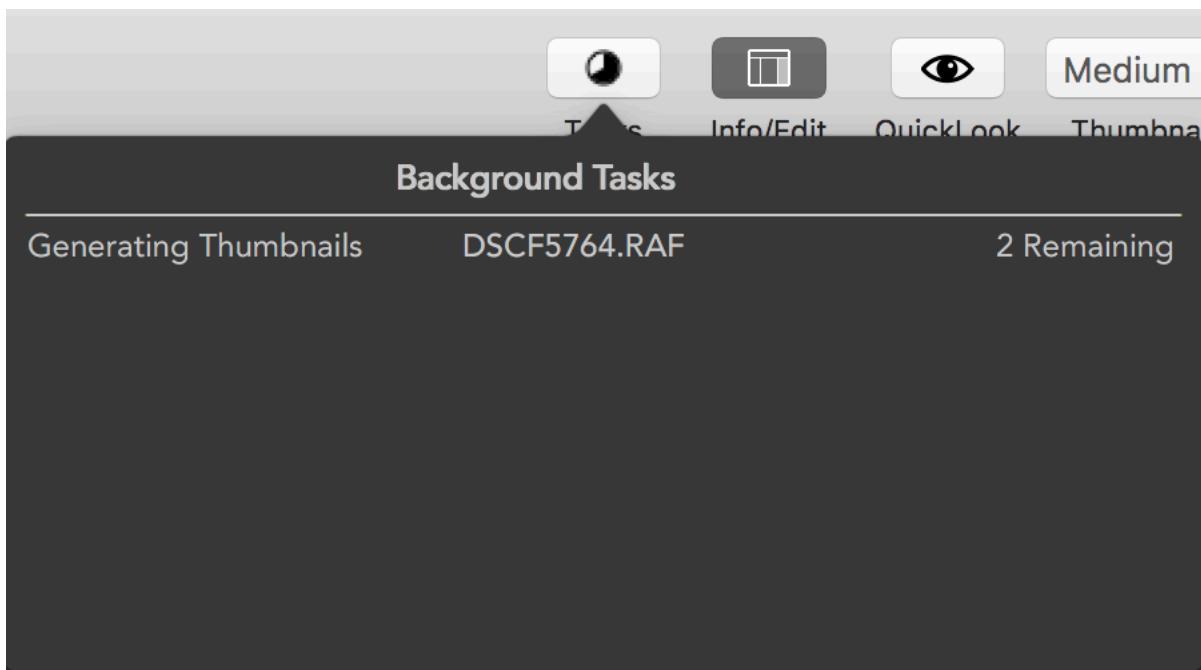
RAW Power can perform the following operations on more than one image at a time:

1) Export
2) Apply Preset
3) Apply Auto Enhance
4) Paste Adjustments
5) Revert to Original
6) Generate Thumbnails
7) Reveal in Finder
8) Move to Trash

The first six operations take place in the background. To use the batch processing feature, select multiple images in the grid or filmstrip (NOTE: batch processing does not apply to the Single File Editor, described in a separate section).

Once you have selected more than one image, you can use the menus at the top of the screen, or control-click on a selected image to bring up the contextual menu.

While RAW Power is working on the images, the task toolbar button will update. You can click on the button to see detailed status.

Tasks cannot be cancelled individually. However if you quit RAW Power, all outstanding tasks will stop.

Rating, Flags, Tags, and Filtering

RAW Power includes the ability to rate images on a 5 star rating scale. You can also set a flag on images to mark them as a reminder or for any other purpose

you choose. If you are using the File Browser, you can also get and set Finder Tags on your images. These are synchronized with the Finder.

This information is drawn as badges on the image thumbnails as shown below:

_MG_7187.jpg

In addition, you can filter your folders or albums on this data. Click the Filter button in the toolbar, where you can see the following controls:

You can filter by combining rules (such as Flagged AND Edited) or matching against any of the rules (Flagged OR Edited).

Single File Editing

While the typical way to use RAW Power is through the File Browser, it can also be used as a single-image editor (as in previous versions).

To do this, use File > Open, Open Recent, or drag one or more files to the application icon. You can also use File > Edit in New Window if you are using the File Browser (does not apply to the Photo Library Browser).

When you do this, RAW Power will open one new window for each file with just the editing environment displayed:

In this window, you can adjust the image (non-destructively) and export the adjusted image when you are done. Click the Cancel button to discard your edits or File > Save Edits to save them.
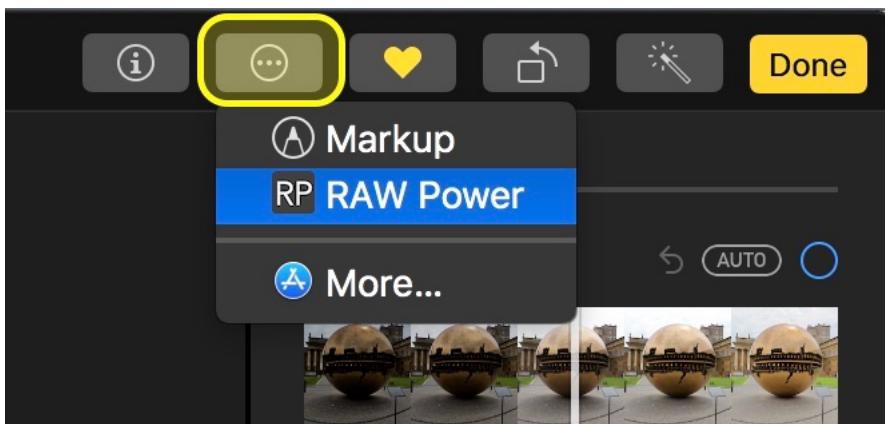
Note: You cannot use any of the batch processing commands in Single File Editor mode.

For details on editing images, see the section on Editing.

RAW Power Photos Extension

RAW Power is a hybrid that works both as a standalone application and as an extension to Apple's Photos application. If you use macOS Mojave and manage your photos with Apple's photo application, then you are best served by using the RAW Power extension. Otherwise, the standalone is usually a better choice.

To do this, select an image in Photos and enter Edit. From the "..." button, select RAW Power. If you do not see RAW Power listed, then select the More… option to enable it in Photos.

Edits you make in the RAW Power extension are saved into the Photos library directly. The original image is not modified. You can return to RAW Power at a later date and continue editing non-destructively. Note that edits made by the extension are not accessible to the standalone application.

If you use iCloud Photo Library, edits are visible to RAW Power for iOS.

Important note: Do not use the Edit With > feature of Photos. That feature is intended for applications that do not have Photos extensions. As a result, Photos will create a TIFF from the original image and you will be unable to use any of RAW Power's RAW processing controls.

If you want a very detailed explanation of how extensions and Edit With works, please read my article on the TidBITS website.

To use RAW Power as a standalone app, open it from LaunchPad or from the Applications folder in the Finder. From an editing standapoint, there are virtually no differences between the extension and standalone modes, except as follows:

	Extension	App
Output Options	JPEG only	JPEG, PNG, TIFF
Preferences	Button in window	Menu item
Adjustment storage	Inside Photo library	Sidecar files in sandbox container
Target file	Depends	User selected

The last line demands clarification. When using the standalone app, you choose which file to work on. When you use the Photos extension, you choose the "image" to work on, not a specific file. Photos decides which file to send as shown below:

Image State	What RAW Power receives
Unadjusted	Original file
Adjusted by Photos	Full-size JPEG with adjustments applied
Adjusted by other extension	Full-size JPEG with adjustments applied

If you adjust the image in Photos or in another extension, then Photos sends a JPEG image to RAW Power that includes those adjustments. RAW Power does not receive the original in that situation (and there is no way for it to get the original). For example, if you apply Selective Color to a RAW in Photos, and then select RAW Power, then Photos will send a JPEG to RAW Power that has been auto-enhanced. The same is true for crop, straighten, filters and even rotate. For best results, do not adjust the image in Photos before using RAW Power. You can tell if this happened because a yellow warning triangle appears in the toolbar at the top right of the RAW Power interface, and by the absence of the RAW Processing adjustment.

Again, this is explained in more detail in that article on TidBITS.

Apple requires Photos extensions to produce JPEGs and does not support other formats produced from extensions. The extension stores its adjustment

data in the Photo library. In contrast, the standalone app stores adjustment information in its "sandbox container" which is located at:

(Home)/Library/Containers/com.gentlemencoders.RAWPower/Data
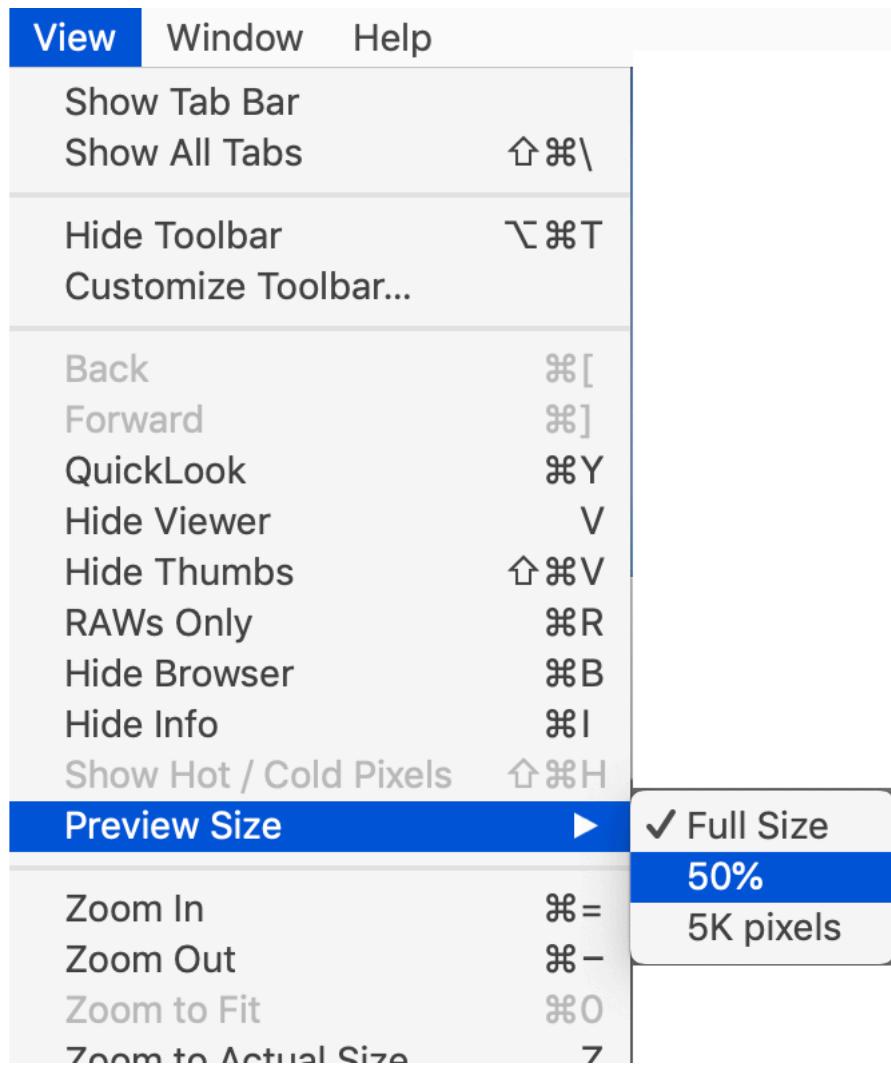
A separate sidecar is stored for each original file that is adjusted. RAW Power connects the sidecar with the original using a combination of original file name and certain metadata. The directory is not considered, so you can move the original file anywhere on that volume and RAW Power will still be able connect it to the adjustment sidecar. However, if you rename the original file, RAW Power will not associate the original with the old sidecar. If you copy the file to another volume, you need to use the Reconnect Files feature of the standalone app to update RAW Power with the new location. Both the extension and the app are sandboxed, so they have very restricted access to your files.

Thumbnails and Previews

RAW Power generates JPEGs automatically as part of the editing process. These images, called thumbnails and previews, are used throughout the app to provide a faster display of your images. The files are stored in the sandbox container of the application, along with the editing data (called a sidecar).

Thumbnails are smaller images, stored in a variety of sizes, and are primarily used in the thumbnail grid. Previews are much larger images that are primarily used in the Viewer when you are not editing.

RAW Power provides control over the size of previews, because they consume more disk space than thumbnails and take longer to generate. This control exists in the View menu:

Full Size previews are exactly that - the full size of the image. 50% previews are half-size in both horizontal and vertical directions (thus, one-quarter of the total pixels). If you want a preview that is the same size as a 5K display, select the last option.

Note: to avoid creating very small previews when images are cropped, the 50% option will not make an image smaller than 50% of the original (or the cropped

image size), whichever is smaller. For example, if you have a 20 megapixel image, and crop it to 18 megapixels, 50% will calculate a preview size of 4.5 megapixels (18 megapixels / 4). That is acceptable. However, if you crop that image instead to a 4 megapixel image, 50% would ordinarily make a 1 megapixel image. As that is unusable as a preview, the app will use the full 4 megapixel size for a preview.

Editing

RAW Power is fundamentally an image editor. It can edit a wide range of image formats, including RAW / DNGs, TIFF, PNG, and JPEG. The only differences between image types are the following:
1) Only RAW / DNG images get the RAW Processing adjustment
2) Only iPhone images with depth get the Depth Effect adjustment
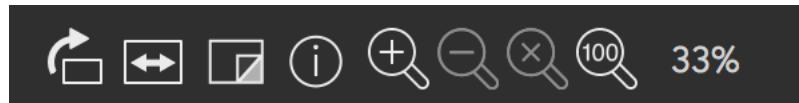
If you are in the RAW Power browser, enter Edit by clicking on the Edit button in upper right of the toolbar.

All adjustments are non-destructive, in other words, adjustments do not modify the original file. They are saved separately from the original file. In addition, you can start editing the file, quit and continue again at a later date without losing quality or options. You can switch off any adjustment you have made in the past.

TOOLS:
We will start the tour of RAW Power's editing features at the top of the editing panel:
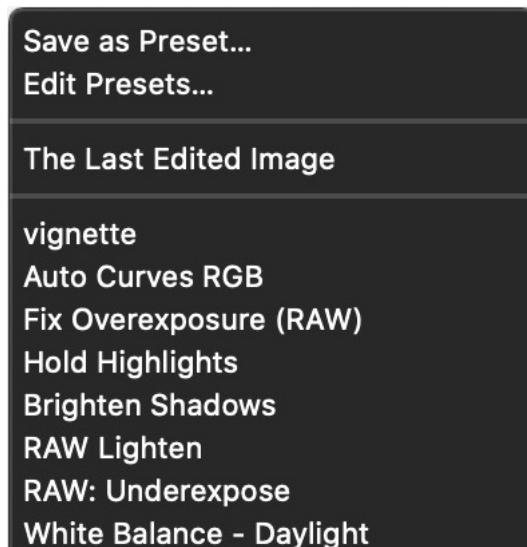
The buttons are, in order:

- Rotate: rotates the image clock-wise. Hold the option key to rotate counter-clockwise

- Flip: flips the image horizontally. Hold the option key to flip vertically.

- Show Original: shows the image without any adjustments except Crop, Flip, and Rotate.

- Info: shows metadata about the information (not available in the Extension - use Cmd-I in Photos)

- Zoom In, Zoom Out, Zoom to Fit, and Zoom to Actual Size

You can quickly zoom to 1:1 by double-clicking in the image view, or pressing the Z key. Repeat to return to Zoom-to-fit. You can zoom up to 800%. When you have zoomed about 100%, the Z key / double-click switch between 100% and that higher zoom level.

PRESETS:

Below those buttons are two menus. One for adding adjustments and the other for Presets.:
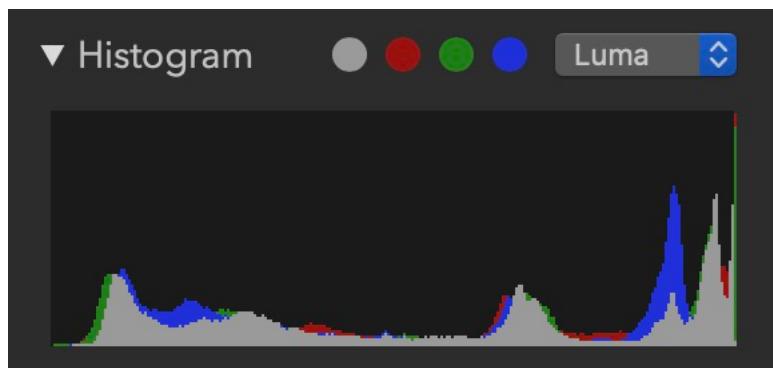
Presets allow you to apply a collection of adjustments in a single operation. You can use the built-in presets, or create your own. To create a preset, click "Save as New Preset…". To edit the list, export, or import presets, select "Edit Presets…". The adjustments for the last image you edited are automatically saved into a preset called "The Last Edited Image".

You can assign any preset as a Camera Preset (one preset per camera model). Once you do that, any image you open in RAW Power from that camera will be automatically adjusted with that preset. This is extremely useful if you want a specific look for all your images automatically. It's also useful for configuring Apple's RAW decoder (the RAW Processing adjustment) to your needs. For example, if you want your RAWs to be minimally processed when you open them in RAW Power, then open an image from that camera, move the RAW Processing sliders to low values and save a Camera Preset. Future images from that camera will be opened with those RAW Processing settings.

By default, RAW Power adds the preset's adjustments to your image's adjustments. Hold the option key to replace your existing adjustments with the preset.

HISTOGRAM AND HOT / COLD PIXELS:

Below Presets is the Histogram and Hot / Cold Pixels controls:
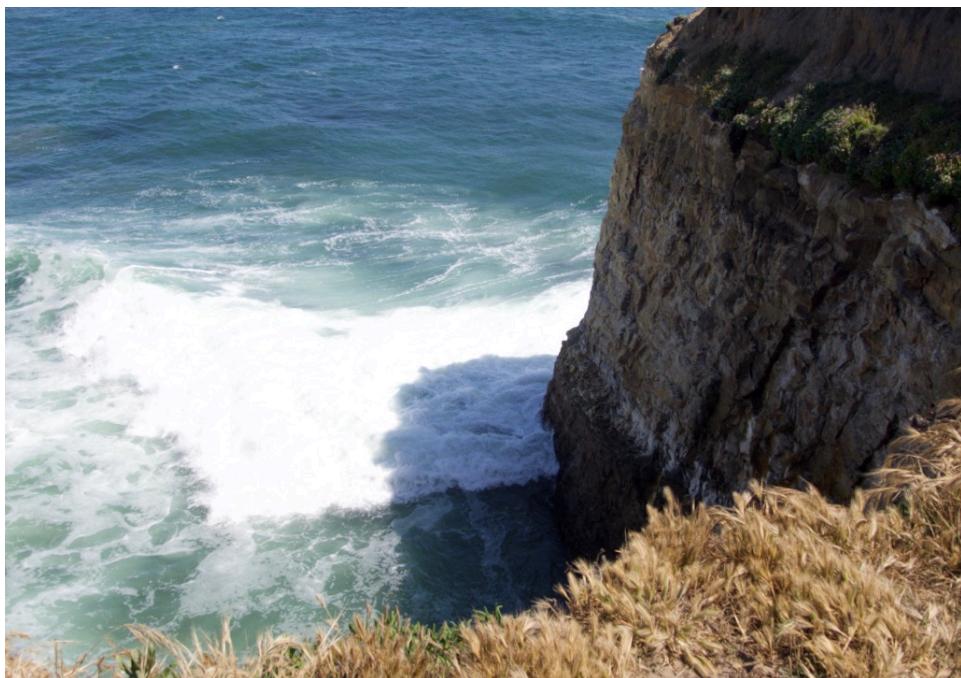
The histogram shows the distribution of pixel values in the image. The "gray" channel uses a luminance weighting for red, green and blue (Luminance is designed to match the way the human eye perceives light). You can hide the histogram by clicking on the triangle next to "Histogram."
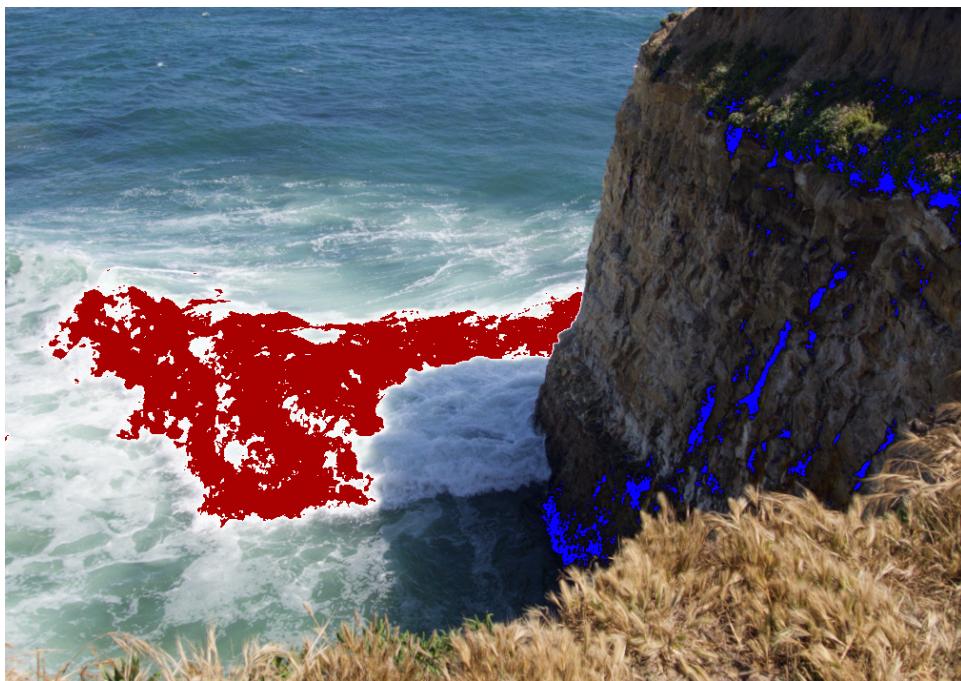
Note: Hiding the histogram can also improve performance.

Next to the word Histogram are four colored circles. When these circles light up, the image has clipped pixels. Clipped pixels are pixels which have one or more channels that are brighter than the maximum allowed in a JPEG (or other integer format). You can click on the circles to show which parts of the image are clipped. The gray circle will show hot pixels (at least one channel clipped) and cold pixels (black, all channels at 0.0).

This is a sample image with clipped pixels:

After clicking the gray circle, this is the display:

If you click on the red, green, or blue circles, you will see the pixels clipped in those channels only.

SLIDERS:

All editing sliders in RAW Power have the following additional features:
- Double-Click them to reset the value to the default
- Double-Click the value to the right of the slider to enter a precise value.
- After double-clicking a value, there are some keyboard shortcuts you can use:
    - Home: move to the lowest value
    - End: move to the highest value
    - Arrow keys move to the next increment for the slider (depends on the slider's range)

- Shift-Arrow to move in larger units

- Option-Arrow to move in smaller units

Copy and Paste

In the standalone app, you can copy the current adjustments on the image and paste them onto another image. Since RAW Power only supports one image at a time, use this feature as follows:

- Edit > Copy Adjustments

- Open the file you want to paste the adjustments on

- Edit > Paste Adjustments
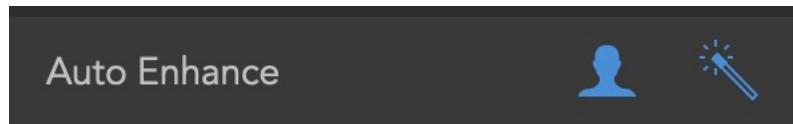
Like Presets, you have the option to add the adjustments to the target image, or to replace all of the adjustments with the copied ones. In addition, once you have copied adjustments from an image, you can select multiple images in the thumbnail grid and apply them all at once. To do this, right-click on one of the selected images and select Paste Adjustments. If the adjustments you are pasting have Auto White Balance, or Auto Curves / Levels, then the automatic algorithms will be recalculated on the pasted images.

Auto Enhance

To get a quick improvement to your photos, use the RAW Power Auto Enhance. This Auto Enhance has been tuned to improve a wide range of photos and can address the following issues:

- Overexposure and Underexposure

- White Balance

- Poor contrast

- Dullness of colors
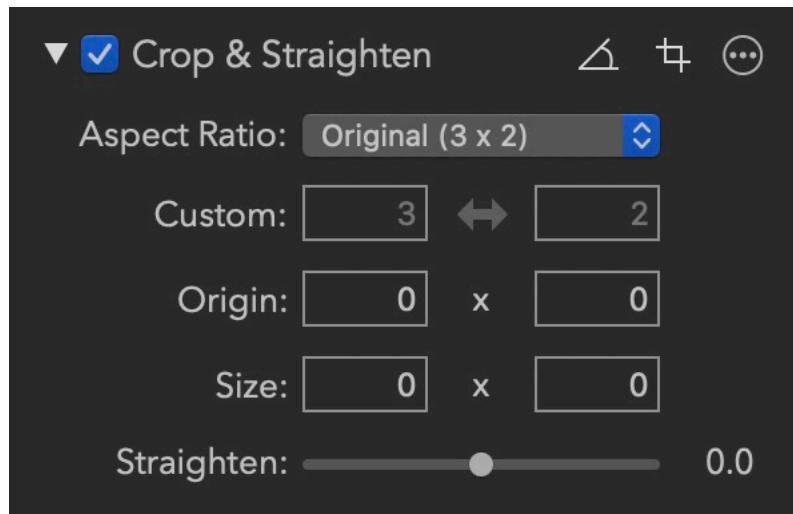
The RAW Power Auto Enhance is unique in its ability to handle overexposed images. It also includes a special white balancer which uses face detection. All of the changes made to your image by Auto Enhance are visible in the edit interface, and you can adjust or turn off any or all of them. In addition, you can apply Auto Enhance to many images at the same time. To do this, exit Edit. Then select the images in the Grid and use the menus (or contextual menus) to select Apply Auto Enhance. This operation is undoable.

By default, Auto Enhance uses Curves to make some of its improvements. If you prefer to use Levels, go to Preferences.

Crop and Straighten

Unlike Aperture, RAW Power combines Crop and Straighten into a single adjustment.
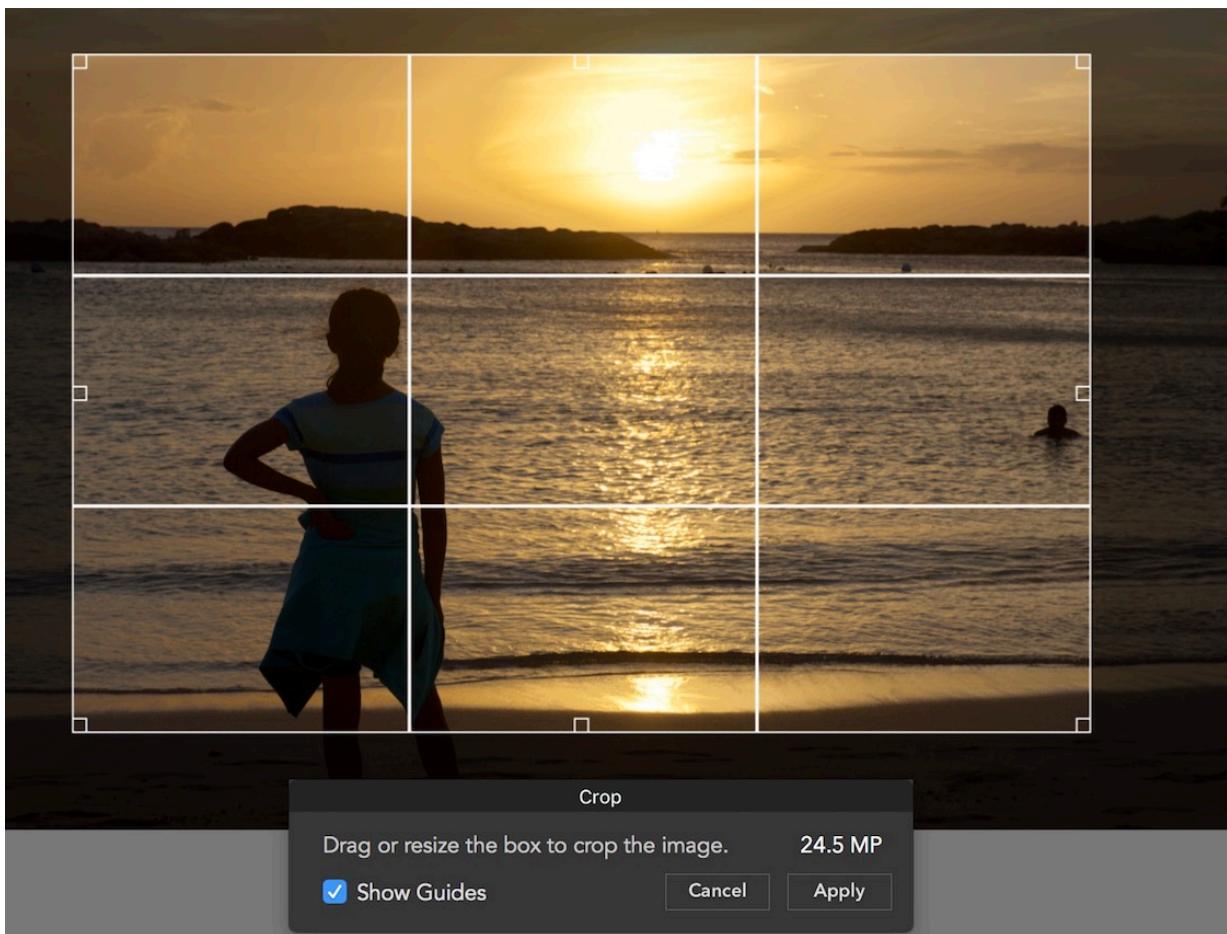
Aspect Ratio: This popup allows you to constrain the crop to a specific aspect ratio. There are also options for Unconstrained (free cropping) and Custom aspect ratios. When Custom is selected in the popup, the Custom fields immediately below the popup become enabled.

Origin and Size: This is the size of the image in pixels. You can type in a value for precise cropping. You can also specify the origin, which is the bottom-left corner of the image.

Straighten: This slider allows you to rotate the image from -20 degrees to +20 degrees.

Straighten Tool: This tool allows you to draw a line on the image to straighten it. This makes it easy to align the image by using a horizon, wall or other straight feature. A floating window appears when the tool is engaged.

Crop Tool: With the Crop Tool, you can drag and position the crop box. A floating window appears with the megapixel size and a checkbox to show / hide rule-of-third guidelines.
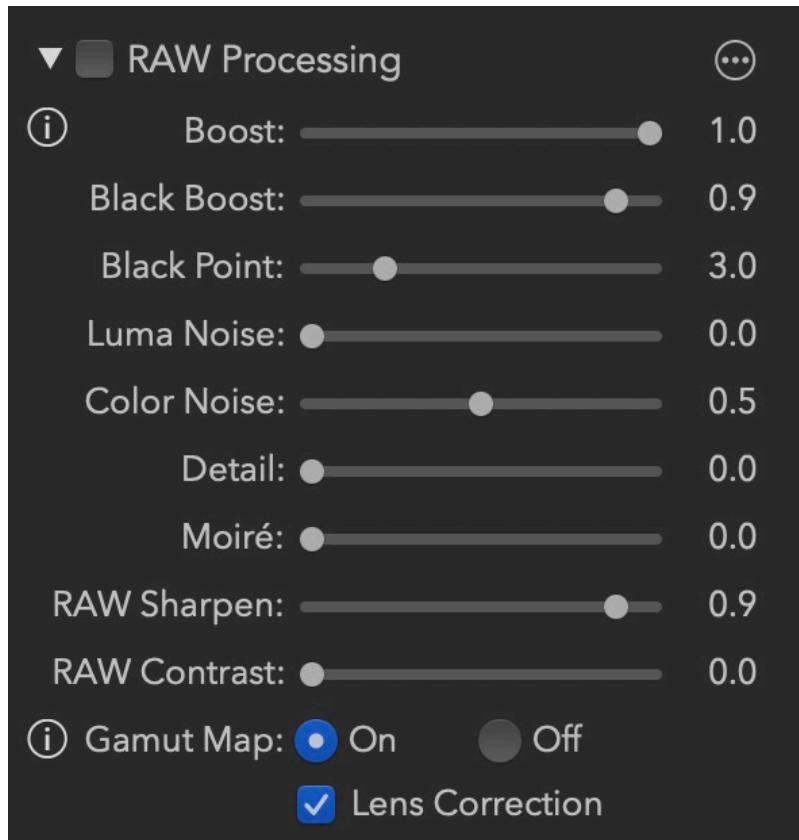
If both crop and straighten are applied, the image is rotated in the Viewer to help crop the image more accurately.

RAW Processing

RAW Processing is the adjustment at the core of RAW Power, providing unique control over Apple's RAW Engine. All of the sliders are GPU accelerated and real-time, so adjustments appear as soon as you move a slider. There are a few older cameras that don't have access to all of the below controls, but most do. Support for new cameras comes from Apple, which periodically releases Digital RAW Camera Updates. As of this writing, the list of supported cameras (and

any limitations) is at: https://support.apple.com/en-us/HT207049. As a rule of thumb, if Apple's Preview application can open an image file, then RAW Power can too.

Note: The RAW Processing adjustment only appears if you are adjusting a RAW image.

Boost: this slider controls the "look" of the RAW image. By default, RAW images can look very flat and lack contrast or "punch." Boost provides that contrast and punch. In general, this makes well-exposed images look good, but if you want the most control over your RAW images, decrease Boost to 0.5 or shut it off entirely by setting it to 0.0.

Black Boost: this slider adjusts the bottom or "black" end of the boost curve, allowing you to manipulate the darker parts of the image.

Luma Noise, Color Noise, Detail: These three sliders are part of Apple's RAW noise reduction. Luma Noise controls the black-and-white noise in the image. The Color Noise slider controls the colorful speckles that appear in noisy images. Sometimes applying strong noise reduction can cause the image to look flat or "plasticky." If that happens, consider increasing the value of the Detail slider. It restores some "grain" to the image to make it look more natural.

Moiré: This slider reduces the effect of moiré. Moiré is an artifact of digital sensors which can cause colored stripes to appear in finely detailed areas.

RAW Sharpen and RAW Contrast: RAW Sharpen is a subtle form of capture sharpening which works at the Bayer mosaic level. RAW Contrast is a type of local contrast (which can look like sharpening). RAW Contrast generally has a lot stronger effect than RAW Sharpen. Both are image-dependent — the characteristics of the image affect how these sliders operate and affect the default values of those sliders.

Gamut Mapping: In its final processing step, Apple's RAW engine ensures colors do not exceed the range of the working color space (Adobe RGB or P3). This is called Gamut Mapping. Colors that are near or outside the limit of that color space are changed to fit within the gamut. Without gamut mapping, colors that exceed the limit of the gamut will be clipped. Gamut Mapping usually provides good results, but having control over gamut mapping is helpful in some situations. For example, sometimes you may want the colors to
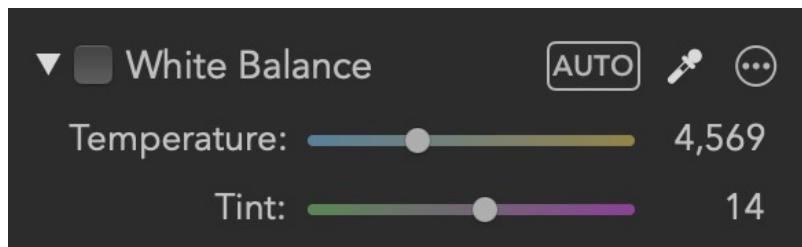
be clipped rather than mapped because you prefer the appearance. Or, you may want to use other filters in RAW Power to bring the colors back into gamut. Finally, if you are going to output a TIFF to Pro Photo RGB, then you should turn off Gamut Mapping because Gamut Mapping will limit colors to a smaller gamut than Pro Photo RGB's.

Lens Correction: Apple's RAW engine can correct for distortion and shading (vignette) in cameras with fixed lenses. It does not correct images for cameras with interchangeable lenses (e.g., DSLRs). RAW Power automatically applies this correction. If Apple's decoder cannot correct the lens distortion for this file, a message will appear in place of the Lens Correction checkbox.

TIP: Double-click any slider to reset it to its default value.

White Balance

White Balance adjusts the image's color balance and tint. Temperature is expressed in degrees Kelvin, where lower temperatures result in a bluer image and higher temperatures in a redder image.
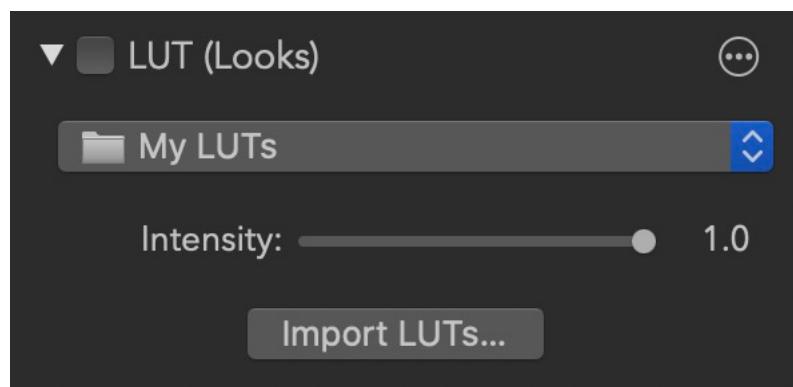
You can drag the sliders to set a white balance, use Auto White Balance, or use the sampler button. To use the sampler, click the sampler button, then click a neutral gray in your image. Do not click on a bright white area; you should select an area that is uniform in color and that you want to appear gray.

If you drag the sampler on the image, the white balance values will update continuously until you release the mouse button. There is a built-in Auto White Balance Preset that you can use to white balance several images at once using the RAW Power Batch Processing feature.

TIP: Command-Shift-W is a shortcut for clicking the white balance picker.

LUTs (Looks)

A great way to get a distinctive look for your photos in a single click is through LUTs. A LUT is a combination of color changes that can simulate film stock or the type of color grading that happens in movies.

Use the Intensity slider to control the amount of the effect to apply. RAW Power includes a basic set of LUTs, but you can add your own. These are copied into a

folder in the RAW Power sandbox folder. You do not need to have the LUT on all of your machines if you use iCloud Photo Library. RAW Power will store the LUT into the adjustment data, which is uploaded to iCloud.

Tone

The Tone adjustment allows you to control the brightness of the image. There are four related controls in the Tone adjustment.

Exposure: this slider controls the brightness of every pixel. Setting the value to 1.0 makes every pixel twice as bright. At 2.0, every pixel is four times as bright. Moving the slider to -1.0 makes every pixel half as bright.
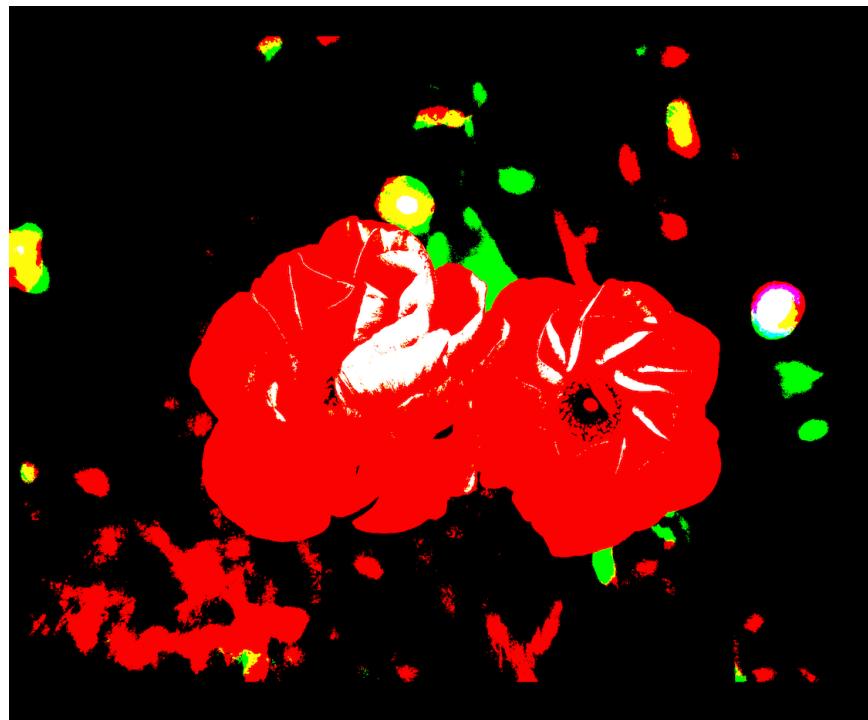
Highlights: this slider darkens just the brightest pixels of the image.

Shadows: this slider brightens the darker pixels of the image.

Recovery: this slider works like a "selective exposure". Only the brightest pixels are affected, but unlike highlights, it adjust the brightness just like exposure. Sometimes you will get better results with Recovery and other times Highlights will work better.

TIP: If you have an overexposed image, the following can give decent results quickly: Boost = 0.5; Recovery = 0.5, Shadows = 0.3. You can then fine tune the results.

Press the Command key when dragging any slider in the Tone adjustment to show another type of clipping indicator. For Exposure, Recovery and Highlights, the indicator draws black for pixels that aren't clipped, and draws red, green, blue, or a mix of those colors for clipped pixels. For example, if a pixel is clipped in red, you will see red. If it's clipped in red and green, it draws yellow, because yellow = red + green. If it's clipped in all three channels, you will see white. This technique replaces every pixel in the image, unlike the hot pixel overlay. Below is an image, but with the Command key pressed while moving Exposure.

If you hold the Command key while dragging the Shadows slider, RAW Power will shows pixels that are at 0.0 in each channel. Thus, blue indicates that the
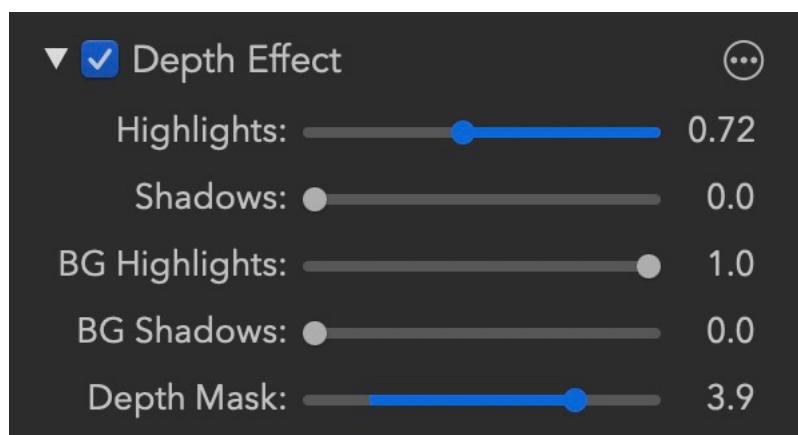
pixel's blue channel is 0 and yellow means the pixel's red and green channels are both zero. Because it gets complicated when more than one channel is either 0.0 or 1.0, here is a chart that describes what pixels are drawn in each multi-channel case:

Pixel Shown	Channels that are clipped
Yellow	Red and Green
Cyan	Green and Blue
Magenta	Red and Blue
White	Red, Green and Blue

Like the Shadows slider, the Black Boost and Black Point sliders in RAW Processing show 0.0 pixels if you press the command key while you drag them.

Depth Effect

The Depth Effect adjustment is added automatically to any images shot on an iOS device using the dual cameras. The adjustment allows you to adjust the highlights and shadows of the background and foreground independently. It also provides control over the definition of foreground and background by manipulating the depth mask.

▼ ✓ Depth Effect	⋯
Highlights:	0.72
Shadows:	0.0
BG Highlights:	1.0
BG Shadows:	0.0
Depth Mask:	3.9

Highlights: darkens the brightest pixels in the foreground. Press Command while dragging the slider to get an overlay of the hot pixels.
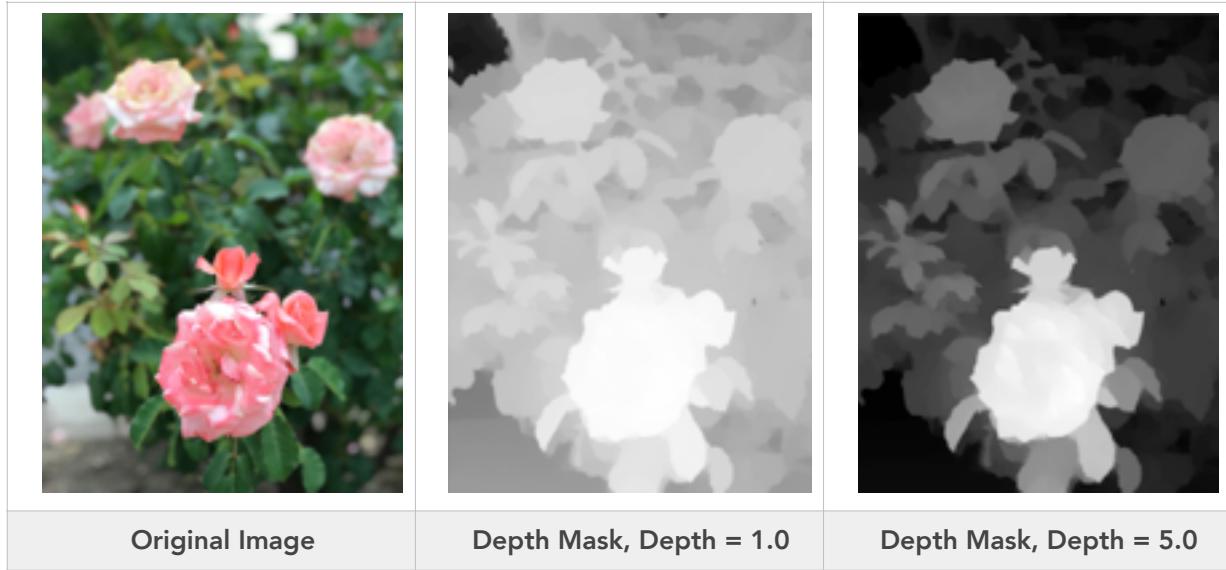
Shadows: brightens the darkest pixels in the foreground. Press Command while dragging to get an overlay of the cold pixels.

BG Highlights: darkens the brightest pixels in the background. The Command key displays hot pixels for this slider as well.

BG Shadows: brightens the darkest pixels in the background. The Command key displays cold pixels for this slider too.

Depth: controls what the other sliders consider foreground and background. Sliding it to the left makes more of the image "foreground" and sliding to the right makes more of the image "background". So, if you move the slider all the way to the left, the entire image is "foreground" and the two background sliders have no effect. If you move the slider all the way to the right, then very little of the image will be affected by the foreground sliders, while most will be affected by the background sliders.

If you hold the Command key down while dragging the depth slider, you will get a overlay of the depth mask itself. Here is an example depth mask at its default value and with the depth slider at 5.0. Lighter shades of gray denote foreground and darker shades denote background.

| Original Image | Depth Mask, Depth = 1.0 | Depth Mask, Depth = 5.0 |

Basics

The Basics adjustment provides some simple, familiar tools.

Brightness: makes the image brighter or darker using a gamma function. A gamma function ignores black pixels and white pixels, but all other pixels are made darker or lighter depending on the value of the slider.

Contrast: this is a simple contrast slider to make an image look more or less "punchy." While this is a simple tool to use, consider using Curves for precise control (discussed below).

Saturation: this slider controls the richness of colors in the image. Be careful with this slider when people are present in the image, as it can make skin look orange. Moving the slider to the extreme left creates a simple black and white image ("fully desaturated")

Vibrancy: this slider is related to saturation but doesn't affect skin tones. As a result, it is a better choice for images with people in them but may not provide the best results for sunset images.

Levels

Levels lets you quickly work with the color range of an image. Most people find Levels to be easier to understand than Curves, but it is less powerful as well.

You can select the channel to work with. Gray and RGB refer to the same channel, but show the information differently. RGB shows each channel overlaid, while Gray just shows luminance. The Equal RGB button controls the way Levels processes the Gray channel. If it's set to Equal RGB, then red, green,

and blue are affected equally. However, if it is set to Luminance, then the gray curve affects the red, green and blue curves according to the luminance equation, which weights green more heavily, and blue the least. This approach avoids enhancing color casts and is much easier than converting the image to the "Lab" color space in Photoshop and manipulating it that way.

Levels also includes an Auto Black and Auto RGB feature. Auto Black sets the black and white points on the Gray / RGB channel. You can choose the amount of black and white data to be clipped in Preferences. Auto RGB does the same thing but to the Red, Green, and Blue channels. Auto RGB can correct color casts, when Auto Black is more for correct contrast problems.

Curves

Curves is a very powerful adjustment that allows precise manipulation of pixel data. Curves can be thought of as a custom adjustment where you precisely describe the effect on each channel of each pixel. Each curve expresses a mathematical equation. The X coordinate is the input value, and the Y coordinate is the output value. In other words, $y = f(x)$. By default, the input and output is the same, resulting in no change to pixels. This is expressed as a 45 degree line, because at every point on such a line, $y = x$, and therefore no change occurs. Black (0.0) is on the left, and white (1.0) is on the right.
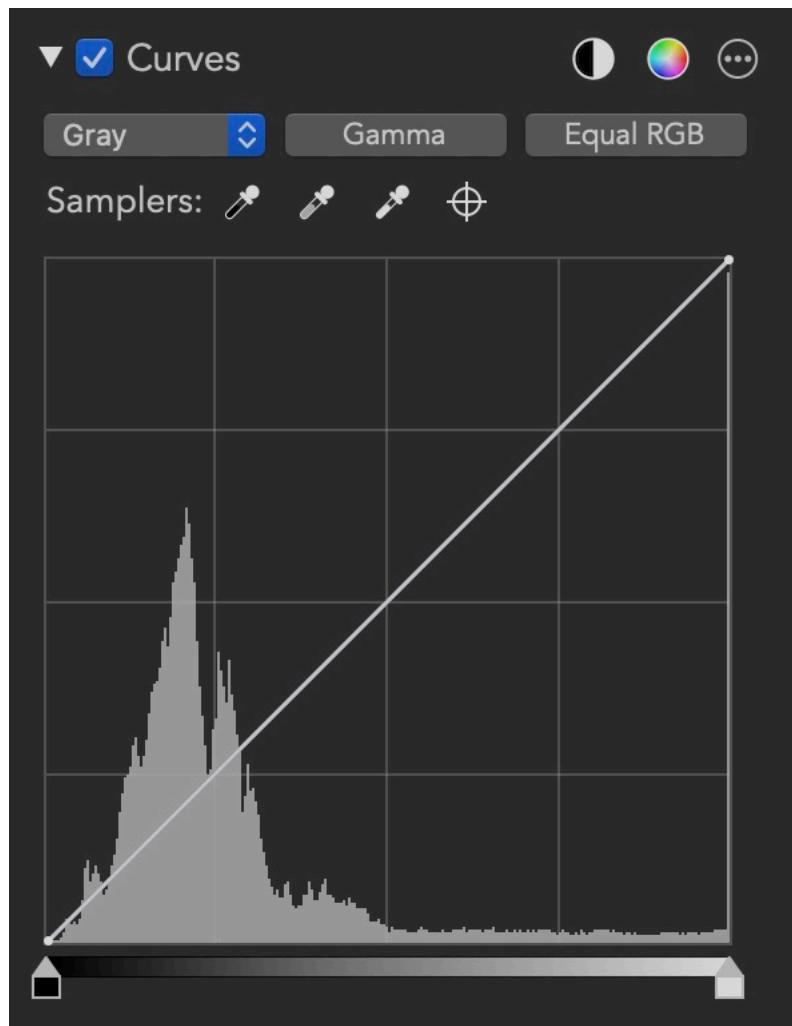
The Curves adjustment consists of four separate curves, one for "Red," "Green," and "Blue" and a "Grays" curve. The red, green, and blue curves only affect one channel of each pixel, while the gray curve affects all three channels. Initially, you will only see the Grays curve — you access the other curves using the "Show:" popup. Once you have modified some of the curves, you may want to see all of them at once. If so, select the "Overlays" setting in the Show: popup.

You can click on a curve to add a point, which you can then drag to the position of your choosing. The image updates in real-time to account for the change in

the curve. There are limitations on how close points can be to each other, so sometimes the RAW Power will prevent you from adding or moving curve points.
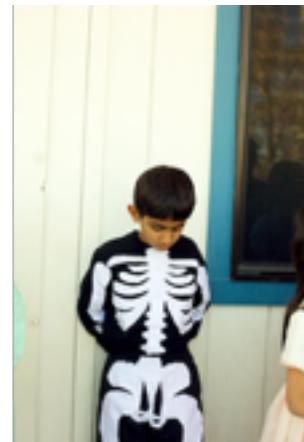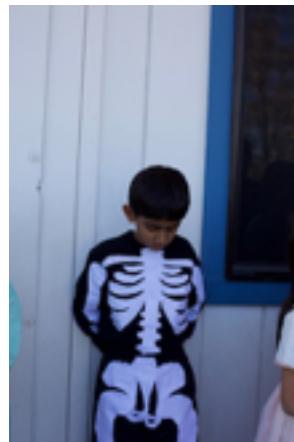
People often use Curves to adjust contrast. To do that, make an S-shaped curve in the Gray channel as follows in the image at the top.

The more it looks like an"S," the greater the contrast.

At the top of the Curves adjustment are two automatic buttons: Auto Black and White and Auto RGB. Auto Black and White is a good way to make sure your

image has good contrast. Auto RGB also does that, and corrects color casts in the image. It does this by changing the red, green and blue curves. You can choose the amount of black and white data to be clipped in Preferences. Here is an example image using the Auto RGB control to eliminate the color cast in the image:

There is a built-in Auto Curves (RGB) Preset that you can use to apply Auto Curves to several images at once using the RAW Power Batch Processing feature.

The Gamma button switches Curves between a Gamma mode and a Linear mode. The current state of the button indicates the current mode — by default, Curves is in gamma mode. When in Gamma mode, Curves gamma-corrects the data before applying the curve data and then reverses the correction before sending the image data to the next adjustment. Gamma is generally a good default, but if you want maximum control over the bright areas of the image, Linear can be a better bet.

The Equal RGB button controls the way Curves processes the Gray channel. If it's set to Equal RGB, then red, green, and blue are affected equally. However, if

it is set to Luminance, then the gray curve affects the red, green and blue curves according to the luminance equation, which weights green more heavily, and blue the least. This approach avoids enhancing color casts and is much easier than converting the image to the "Lab" color space in Photoshop and manipulating it that way.
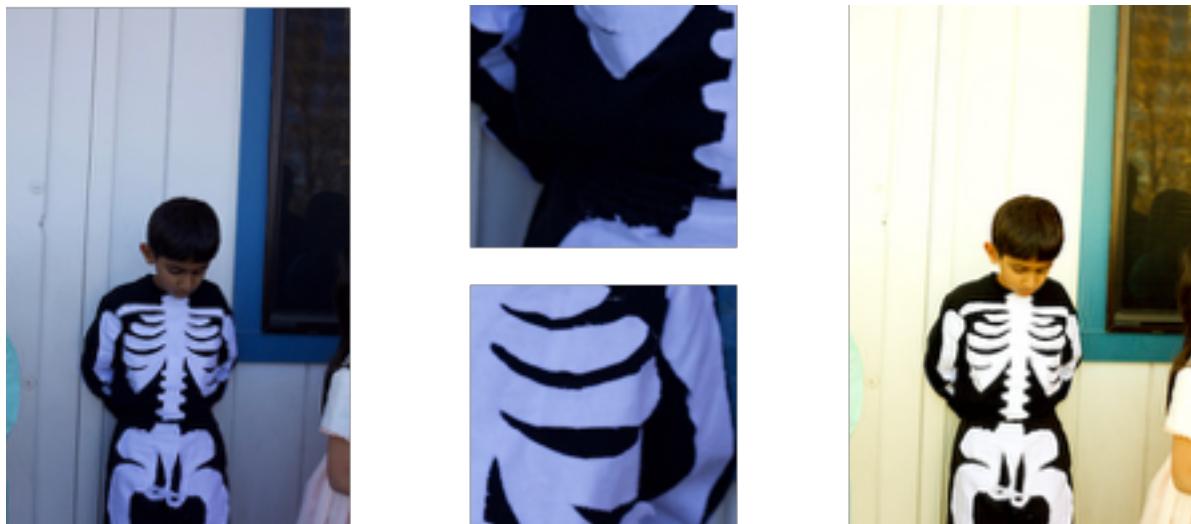
Here is an example using an image with an S-shaped contrast curve. On the left is the image in Equal RGB mode and on the right, in Luminance mode:

The Samplers section of the Curves interface lets you place points on the curve by clicking on portions of the image. The first control sets the black point for the image; the second sets the 50% gray point, and the third control sets the white point. Each of these can cause the image to change appearance. The last sampler is the "target" sampler. It places a point on all of the curves at the color value of the pixel you click on with the mouse. Except in extreme cases, the target sampler does not affect the image.
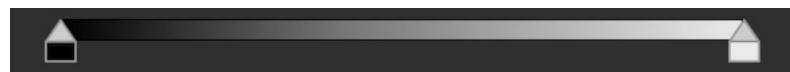
Like the White Balance sampler, the curves samplers update continuously if you drag on the image while using them.

In the following example, the color cast is removed using the black and white samplers. The sampled points are circled.
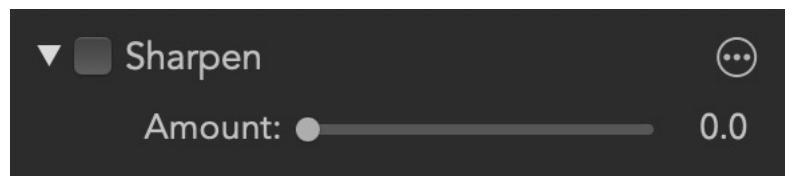
Once any point is placed on the curve, you can move it around to adjust the colors similar to the one you sampled. You can delete points with the delete key on the keyboard, or right-clicking on the Curve to get a contextual menu.

At the bottom of Curves are the black and white point controls. These are simple controls to set the darkest and lightest colors for a given curve as shown below.

Hold the Command key when dragging the black and white controls to get the same overlay as appears with the Tone adjustment sliders.

Sharpen

The Sharpen adjustment is a simple but very effective sharpener. It sharpens just the luminance channel of the image, which provides good results without accentuating color noise, unlike Unsharp Mask.

This sharpener is a different algorithm than the one in RAW Processing, so you can try each to decide which looks better for your images. Definition (in Enhance) also has a sharpening effect.

Black and White
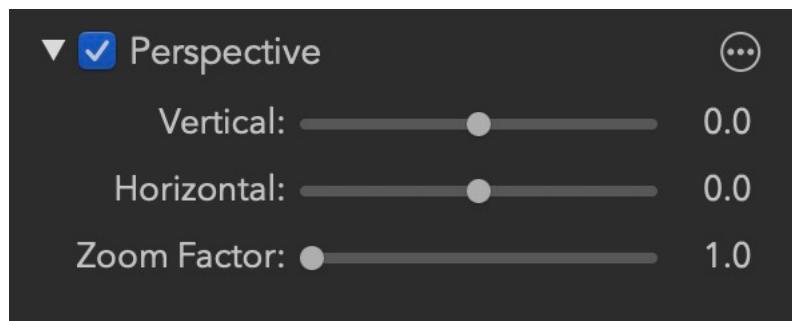
The Black and White adjustment creates a range of monochrome images by controlling the mix of red, green, and blue pixel data applied to each channel.
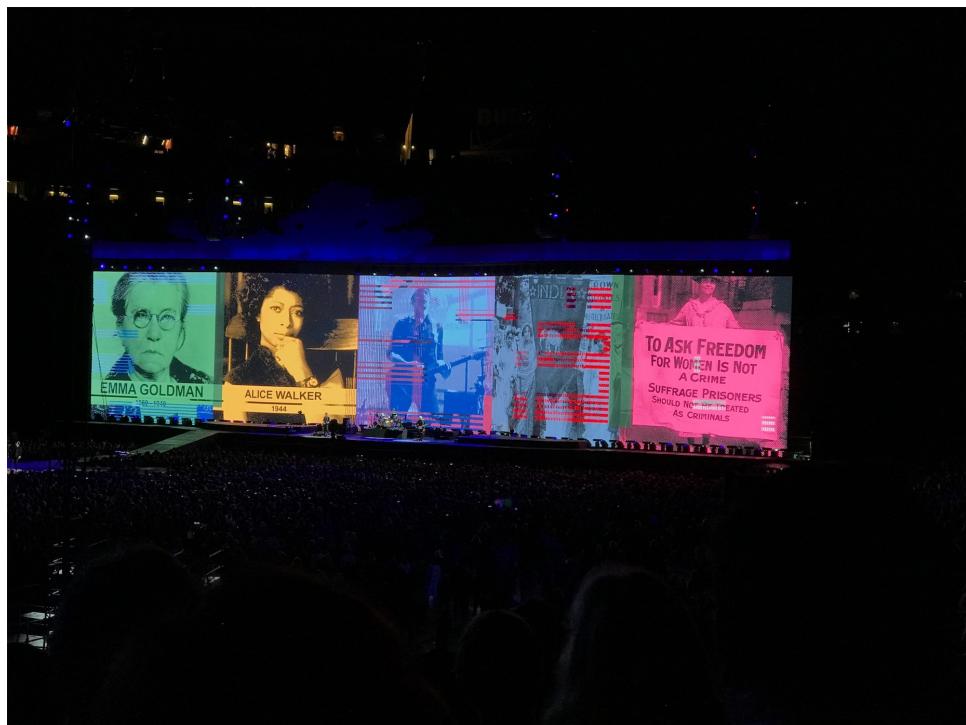

By default, Black and White will convert the image into a monochromatic image using the luminance equation. This usually produces a better result than simply averaging the pixels or using 1/3 of red, green, and blue. In addition, there is a preset menu which allows you to create standard mixes similar to color filters placed in front of the camera lens. Examples include Yellow, Red, and Orange filters. You can also create your own mix using the sliders.

Perspective

The Perspective adjustment lets you rotate an image in 3D to make lines parallel. It is useful for buildings shot upward at an angle, roads and other subjects which have strong straight lines.
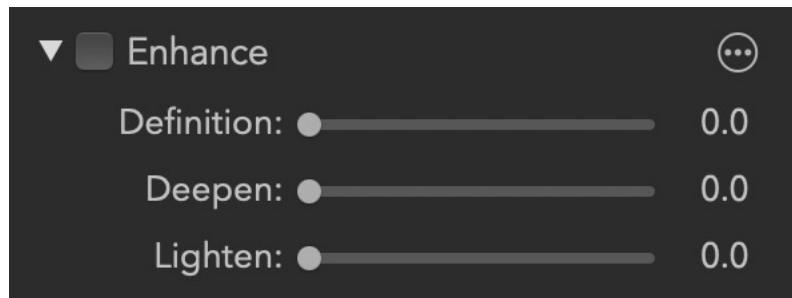

You can correct perspective in the vertical or horizontal direction. By default, perspective will zoom the image in to avoid showing black areas. However, that may be undesirable if the subject area disappears from view. In that case, use the Scale Factor slider to zoom back out. You will then need to crop the image yourself. Here is an example of the perspective filter in action:

Enhance

The Enhance adjustment contains three adjustments for enhancing photos.
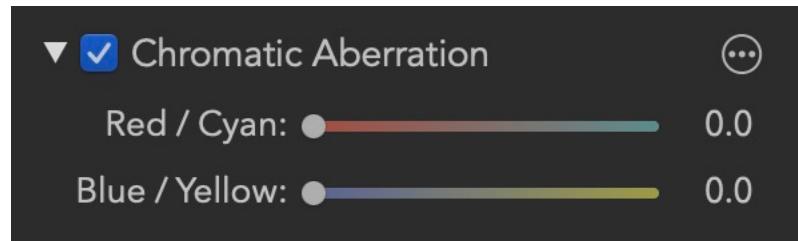
Definition: This slider sharpen edges by applying "local contrast".

Deepen: This slider darkens an image without dulling white areas. It works like a "Multiply Blend".

Lighten: This lightens images without affecting black pixels. It works like a "Screen Blend".

Chromatic Aberration

Chromatic Aberration is an artifact caused by the way light strikes a lens. The individual color components split and hit different areas of the sensor causing ghosting.
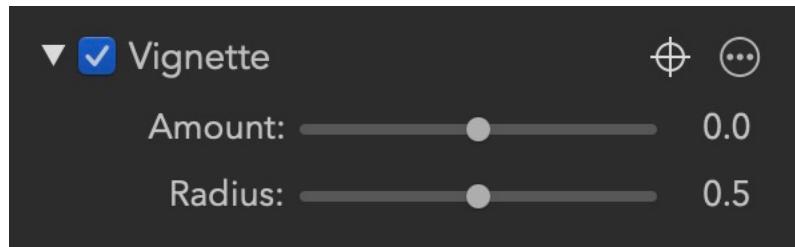

The two sliders control different types of aberration. You will usually see aberration near edges / high contrast areas. If you have red or cyan aberration, use that slider. Otherwise, use the second slider to control blue / yellow aberration.

Here is an example of chromatic aberration:

Vignette

Vignette darkens the edges of the image to draw the viewer's eye to the subject (usually at the center).

Amount: controls the darkness of the vignette.

Radius: controls the size of the vignette.

Target Point: You can click the target button to set the center point of the vignette. This is useful when the subject of the image is not in the center. If you drag the mouse after clicking the target button, the center point will update continuously until you release the mouse button.

Vignette is the only adjustment whose effect is applied after crop.

Channel Mixer

A channel mixer is a very powerful tool for tinting images or completely changing the look of your image. You can even swap channels (exchanging blue for red, for example).

Click on the three-color control to choose the color channel to manipulate. Then determine the amount of red, green, and blue data to copy into that

channel. The Constant slider simply adds red, green, or blue to the image for a quick tinting effect.

Reconnect

This is an advanced topic that applies to the File Browser only. RAW Power stores its editing and rating / flag information in files stored within its "sandbox," which is a directory inside your home folder on your disk. RAW Power stores information in the sandbox that lets it connect its data with your original images. Part of the identifier is the file name of your image, and part is the identifier generated by macOS. As a result of this system, RAW Power can connect editing and rating information to your original even if you move the file elsewhere on your disk. However, if you rename it, or move it to another volume, the link is broken.

RAW Power doesn't have a way to fix the link if you change the file name, but does have a way to fix the link if you copy the file to another volume. Here are the steps to do that:

1) Copy the files (using the Finder or whatever)
2) Select the folder in RAW Power that has the original copies
3) Pick File > Reconnect Files
4) Pick the location of the copies (on the destination disk)

5) The app will walk you through the Reconnect process. You can either copy the edits over, or transfer them. If you transfer them, then the edits on the original files will be removed.