

# PHOTOKit™ SHARPENER 2.0

A COMPLETE SHARPENING WORKFLOW™  
for Adobe® Photoshop®

Sharpening has long been one of the most essential but least-understood aspects of digital imaging. PhotoKit SHARPENER 2.0™ (PKS2) provides, not just a set of sharpening tools, but a complete sharpening workflow from capture to output that is designed to produce optimum sharpness on any image, from any source, reproduced on any output device, while still leaving enough control to address both the differing requirements of individual images and the differing tastes of individual users.

If you simply want to start using PKS2 right away, you can skip ahead to the “New Features” on page 4, but the following discussion may be useful to help you understand why we created the sharpening workflow and how it works.

## Why sharpen?

Sharpening is necessary for several reasons, each of which imposes its own demands and sometimes those demands contradict each other. Whenever we turn photons into pixels, we lose some sharpness, because no matter how high the resolution of our capture devices they sample a fixed grid of pixels, turning the continuous gradations of tone and color that exist in the real world into discrete pixels. Some lenses render the scene more sharply than others, but even the finest lenses still introduce some softness. Sometimes we want to make the image sharper than it really was, to tell a story, make a point, or emphasize an area of interest. Sharpening can be used as a creative tool. Sharpening is needed because output devices also introduce some softness. When we turn pixels into halftone dots or stochastic dithers of inks, or even into continuous-tone dots on dye-sub printers or film recorders, we lose sharpness again.

We need to apply sharpening to counteract the softness introduced by both capture and output, and to satisfy our creative goals.

## The Sharpening Problem

When we try to use a single round of sharpening on a digital image, we immediately encounter a problem. The image source requires one kind of sharpening, the image content needs another, while the output medium needs still another sharpening treatment. Why is this?

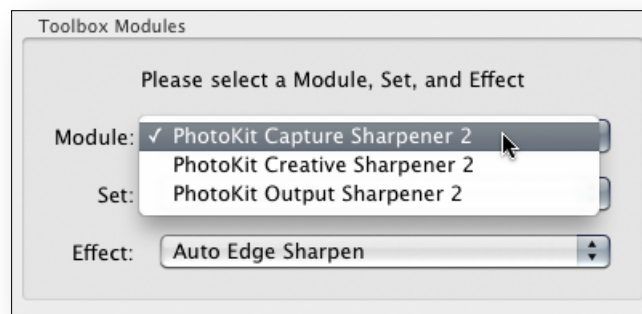
- Different capture mechanisms—film formats and digital cameras—have their own signature combinations of detail and noise. The challenge is to sharpen the detail without exaggerating the noise, so successful sharpening must take into account the relationship between image detail and the noise of the image source, whether film grain or a digital camera filter mosaic. Incorrect sharpening can make the grain or noise more, rather than less, obvious.
- Different subjects need different treatments. Apparent sharpness depends on the contrast along what we see as edges. A close subject with soft detail such as a head shot has wider edges than a high-frequency image such as a forest full of trees, so each requires a different treatment in terms of sharpening radius. Incorrect sharpening either obscures small details, or oversharpenes textured areas such as skin tones.
- Output processes differ in the way they render the conversion from pixels to printed dots, so sharpening that works well for an inkjet printer may fail when sent to a halftone output process such as a web press, or to a continuous-tone process like a film recorder. Incorrect sharpening either produces insufficiently-sharp results, or makes obvious sharpening haloes along high-contrast edges.

No matter how hard we've tried to reconcile these three demands in a single round of sharpening, we've never been happy with the results. Independently, several of the PixelGenius team had developed a two-pass approach to sharpening—performing a round of gentle sharpening close to capture time, and a second round tailored for the specific output process—but we each did things a little differently, proceeding as much by instinct as anything else.

To create PKS2, we first analyzed what we had been doing independently, then we tested thousands of images from different sources and sent them to a variety of outputs. The result is PhotoKit SHARPENER 2.0.

## The Sharpening Workflow Solution

The solution, a well-thought-out sharpening workflow, is relatively simple in concept. Rather than try to address all the factors that influence sharpening in a single edit, the sharpening workflow splits sharpening into three stages.



The PhotoKit SHARPENER 2.0 workflow modules.

- **Capture Sharpening** is applied early in the image-editing process, and aims simply to restore any sharpness that was lost in the capture process
- **Creative Sharpening** is usually applied locally to accentuate specific features in an image—for example, we often give eyes a little extra sharpness in head shots.
- **Output Sharpening** is applied to files that have already been sized to final output resolution, and is tailored to a specific type of output process. Output sharpening has one specific purpose - to compensate for dot-gain.

The benefit of dividing sharpening into these three phases is that it lets us handle the various competing needs separately. Capture Sharpeners compensate for the image source and image type without having to worry about output issues. Creative Sharpeners apply directly to the image at hand without having to worry about image sources (since they've already been handled by the Capture Sharpeners). Output Sharpeners concentrate solely on the needs of the output process (since the image has already been sharpened adequately in the two previous phases).

The three sets of sharpeners have been carefully tuned to work together. You can archive images that have had Capture Sharpening and Creative Sharpening applied; then, when you want to produce a printed or web version of the image, you can simply resize to the required dimensions, apply the appropriate Output Sharpener and output the file. This provides three key benefits:

- **Ease of use.** At each stage of the sharpening workflow you can make relatively simple decisions rather than try to address all the sharpening issues with a single edit. You can even automate large parts of the sharpening workflow by writing Photoshop Actions to call the individual Sharpeners.
- **Optimal sharpening.** Addressing each sharpening issue separately means that you can produce much better results than would be possible using a single round of sharpening, so your output is tack-sharp, without obvious and offensive sharpening haloes.
- **Repurposability.** Uncoupling output sharpening from the rest of the sharpening process means that you can keep a single version of the image and simply produce different versions, optimally sharpened for output, when you need them.



## The PhotoKit SHARPENER 2.0 Advantage

Many other great sharpening tools are available to Photoshop users, but PKS2 is the only one designed from the ground up to provide a complete sharpening workflow. And PKS2 offers some other significant advantages.

## Non-Destructive Sharpening

All sharpening effects are implemented as Layers or Layer Sets leaving the source image untouched, whether it's a flat file or a complex layered construction. Sharpening effects remain non-destructive and adjustable until the user flattens the layered image or merges the sharpening effects into a normal pixel layer.

## Automation

PKS2's default settings are designed with automation in mind. You can utilize its built in Batch Mode to apply multiple effects without worrying whether or not it will wreck your images.

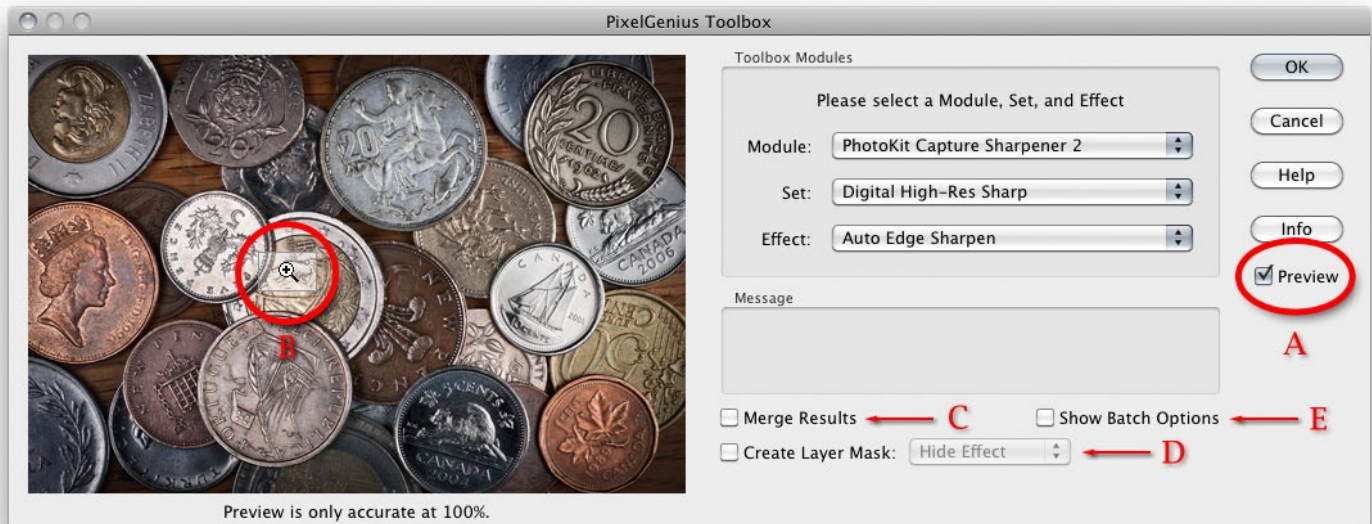
## Control

Most sharpening tools offer a take-it-or-leave-it result. PKS2 produces layers at default opacities that allow you to increase or decrease the amount of sharpening after you've run the effect. For even more control, the Capture and Output Sharpener effects return separate layers for the light and dark sharpening contours. Additionally, those Capture Sharpeners that apply Smoothing do so on a third separate layer. Finally, for even more control, all PKS2 modes are configured to be allowed to create a layer mask with each effect, allowing further fine-tuning by editing the layer mask.

## PhotoKit SHARPENER 2.0 New Feature Highlights and User Interface

PixelGenius has worked hard to add new features and address previous users' requests. As a result, we have redesigned the user interface (UI) to take advantage of what we call the PixelGenius Toolbox. First introduced with the release of PhotoKit Color

2, the Toolbox UI provides for an image preview as well as additional functionality as shown in the figure below. The red letters highlight the changes and additions.



The basic PhotoKit SHARPENER 2.0 dialog window.

**A** - The new dialog window in PKS2 now includes a preview button that allows seeing a preview of the selected sharpening effect. The preview will only be accurate when the preview window is zoomed to 100%.

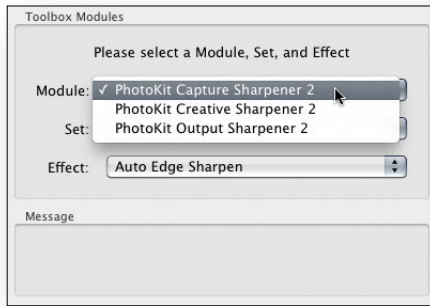
**B** - The cursor inside of the preview window shows the area of the image that will be zoomed in when you click the mouse.

**C** - New to PKS2 (but previously available in PhotoKit Color 2) is the ability to have effects with multiple layers and layer groups returned as a single combined pixel layer. This feature can help keep file sizes down although it does impact the flexibility of individual layer adjustments after an effect has been applied.

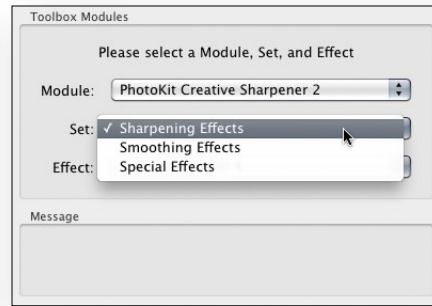
**D** - The Create Layer Mask options allow all PKS2 effects to be brushed in or out depending on the Hide or Show effect options. The Hide Effect returns a layer with a layer mask set to black. The Show Effect returns a white layer mask that shows the final effect. To paint in an effect with a Hide Effect layer mask, paint with white. To remove the effect on a Show Effect layer paint with black.

**E** - The Show Batch Options allow stacking multiple effects to be run one after the other. So if you have a common capture, creative and output sharpening series you use, you can add those effects to a batch list. The batch list can be saved and loaded.

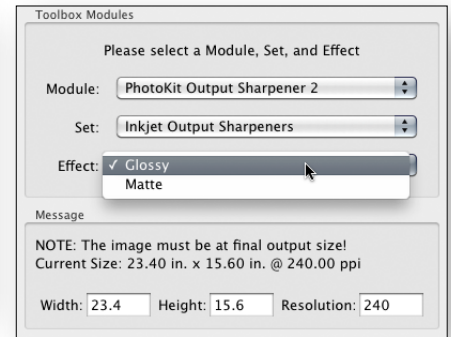




Selecting the Toolbox Module for Capture Sharpener 2.



Selecting the Set under the Creative Sharpener 2 Module.



Selecting the Effect under the Inkjet Output Sharpeners, Set.

## Toolbox Module, Set and Effects

To use PKS2, first select the Module, then the Set and finally the Effect as shown in the figures above. Generally, the Capture Sharpener would be the first step in a sharpening workflow unless you've already done capture sharpening in a separate application such as Camera Raw. The Creative Sharpener is

usually used to make local sharpening or smoothing adjustments. The last stage of sharpening would be for the final Output Sharpener after all other sharpening rounds and after the image dimensions and pixels per inch have been determined.

## The Toolbox Preview

The PixelGenius Toolbox provides for a preview of the selected Module, Set and Effect. You should note, however, the Preview is only accurate when the Preview has been zoomed into 100% (one screen pixel for each image pixel). When you move the cursor around the Preview you'll see a cursor that includes the magnify icon as well as a white rectangle that shows where the 100% Preview will be selected and shown. Clicking in the zoomed out image will sample that area and accurately preview the selected Effect

in the zoomed in Preview. Once Previewed, you can zoom back out by clicking in the Preview window again.

Because PKS2's effects are complicated and processor intensive, we don't allow scrolling in the zoomed in Preview. However, zooming out of one area and zooming back into a new area is fast. We suggest practicing with the zoom function to get the hang of using it.

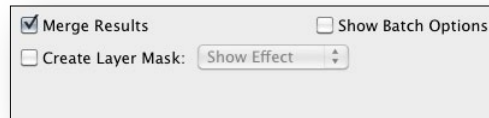


Close up figure of the Preview showing the entire image and the 100% zoom cursor.



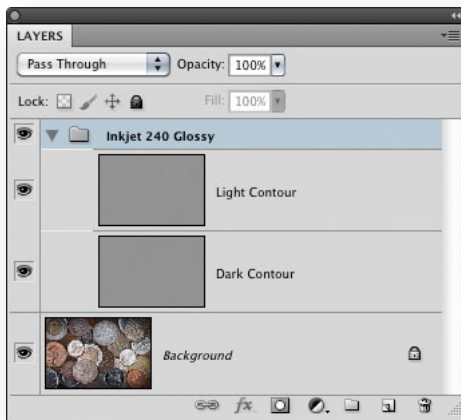
Close up figure of the Preview at 100% zoom. Note the cursor changes to the minus magnify icon.

## The Merge Results Option

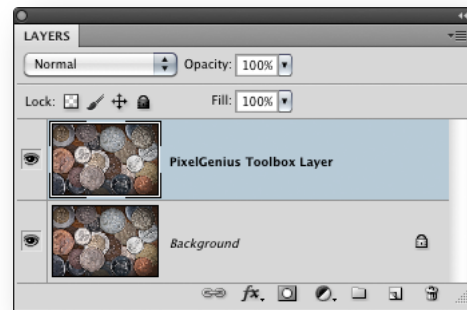


Selecting the Merge Results option will condense down all of the various layers PKS 2 may produce into a single pixel layer as shown below. In this example, an Inkjet 240 Glossy layer group containing two layers

has been combined into a single PixelGenius Toolbox Layer. This can provide considerable file size savings but does limit flexibility because the individual layers are combined.

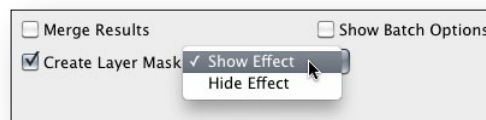


Layers panel showing individual layers and layer group.



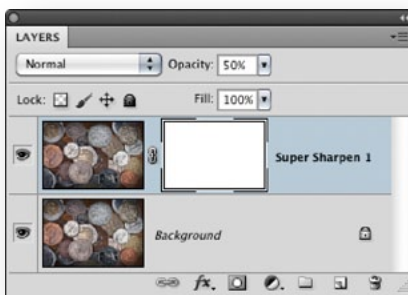
Layers panel showing the result of selecting the Merge Results option.

## The Create Layer Mask Option

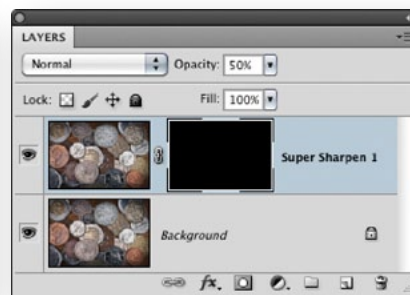


The Create Layer Mask option allows you to automatically add a layer mask set either to Show Effects (white layer mask) or Hide Effects (black layer mask). The only functional difference is whether or not you want to paint in or out an effect. In the figures below, the left Layers panel shows the result of

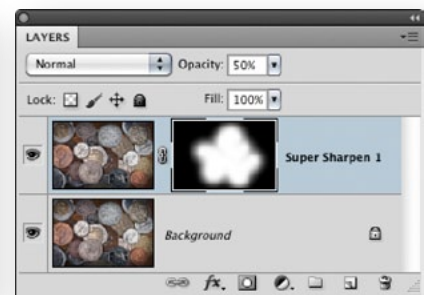
applying a Super Sharpener 1 effect from the Creative Sharpening set with a Show Effect option. The middle figure shows the Hide Effect result. The figure on the right shows the result of painting in the layer mask to isolate the effect to the center of the image.



Layers panel showing the layer mask set to Show Effects.

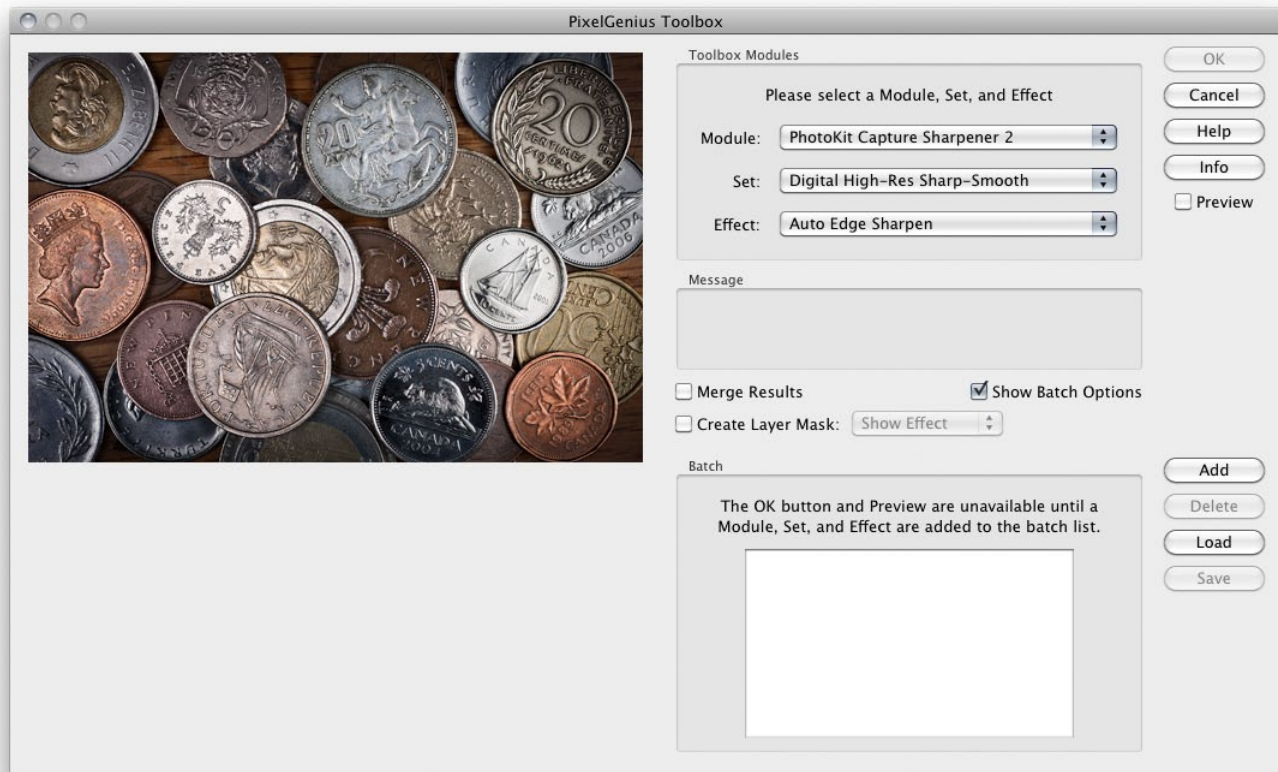


Layers panel showing the layer mask set to Hide Effects.



Layers panel showing the layer mask painted to allow the effect to show through in the center of the image.

## Show Batch Options

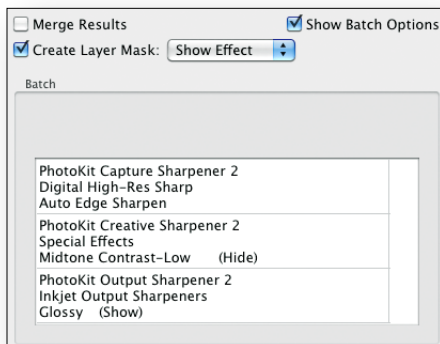


Show Batch Options checked before adding any Effects. **Note:** the OK button and Preview are unavailable until you actually add an Effect to the batch list.

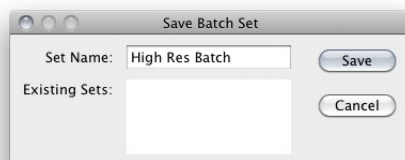
To extend the workflow concept of PKS 2, we've designed a built in batch capability to the PixelGenius Toolbox. This allows you to select and add multiple effects not only from PKS 2 but also from PhotoKit Color 2 (you'll need the most recent free update) and the upcoming PhotoKit 2. You select a Module, Set and Effect, and a Layer Mask choice just as you would normally but instead of running them, you use the Add button to put them into a batch list as shown in the figure below. If you inadvertently add an unwanted effect simply highlight the offending effect and click

“Delete”. In this example, 3 sharpening effects and two Layer Mask choices have been added to the batch list. You can also save a batch list and use it over again. The figure in the middle shows the Save Batch Set dialog where you can name the set. The lower right figure shows the Load/Delete Batch Sets dialog which is accessed by clicking on the Load button of the main PKS 2 dialog.

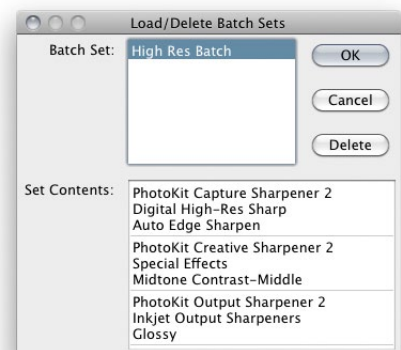
You can save as many batch lists as you wish although you can't edit an individual list after it is saved. You'll need to delete the list and create a new one instead.



The Show Batch Options with three sharpening effects and two Layer Mask choices already added.



The Save Batch Set dialog with the Set Name entered as High Res Batch.



The Load/Delete Batch Sets dialog. Clicking on the saved batch list will display the effects saved in the list.

## Sharpening Basics

Sharpening is basically a very localized contrast adjustment. Increasing the contrast along edges in the image produces the appearance of increased sharpness.

If you've ever wondered why Photoshop's principal sharpening tool, the Unsharp Mask filter, is called Unsharp Mask when the result is to make the image appear sharper, the simple answer is that it replicates an analog darkroom technique called unsharp masking. The original negative is duplicated, then the original and the duplicate are attached to one side of a transparent carrier (often a piece of window glass). When the enlarger is focused on the negative on the bottom of the glass, the negative on top acts as an out-of-focus, or unsharp, mask that increases the contrast along the edges in the image.

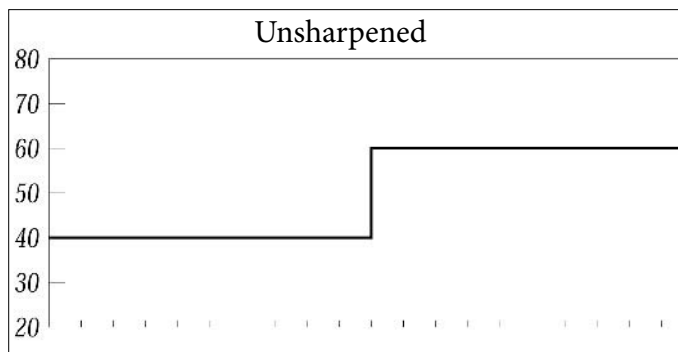
Digital sharpeners simulate this effect by looking at each pixel, deciding whether or not it represents part of an edge and then increasing the contrast around it. The typical result is a sharpening "halo" along edges.

Edges in images consist of lighter pixels contrasting with darker ones, so when that contrast gets exagger-

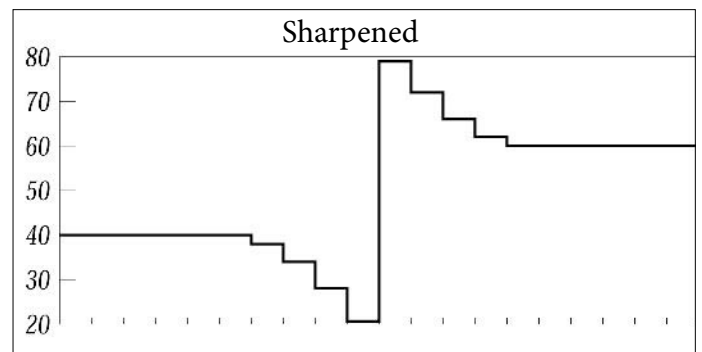
ated to increase the apparent sharpness of the edge, the resulting halo has darker pixels that we refer to as the "Dark Contour" and lighter pixels that we refer to as the "Light Contour".

In an ideal scenario, the dark pixels are darkened to exactly the same visual extent as the light pixels are lightened. However, this ideal is rarely met in practice, so often we see some tonal shifting between the sharpened and unsharpened versions of the image. In many cases, this tonal shift is unobjectionable or even desirable, but we recognize that such judgements are highly subjective, so in PKS2 we provide the ability to adjust the strength of the light and dark contours independently.

This is a capability that we've long wished for in Photoshop. As it turns out, the capability was there all along, but finding it and rendering it usable required considerable ingenuity. Now that we have it, we wonder how we managed to do without it for all these years!



This image and graph depict an edge transition—from 40 to 60 percent. Each tick mark across the bottom of the graph represents a column of pixels.

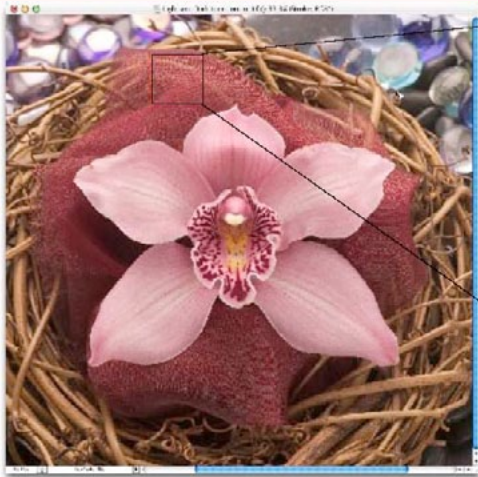


After sharpening the transition is accentuated - It's darker on the dark side and lighter on light side, creating a halo around the edge.



## Controlling Dark and Light Contours

On this image the default sharpener settings darken the image slightly. Adjusting the opacities of the light and dark contours independently—to 70% for the light contour and 45% for the dark contour—produces a result that's sharp, but is closer to the original tonal values.



Original



Unsharpened detail at 200%



Capture sharpen at default opacities



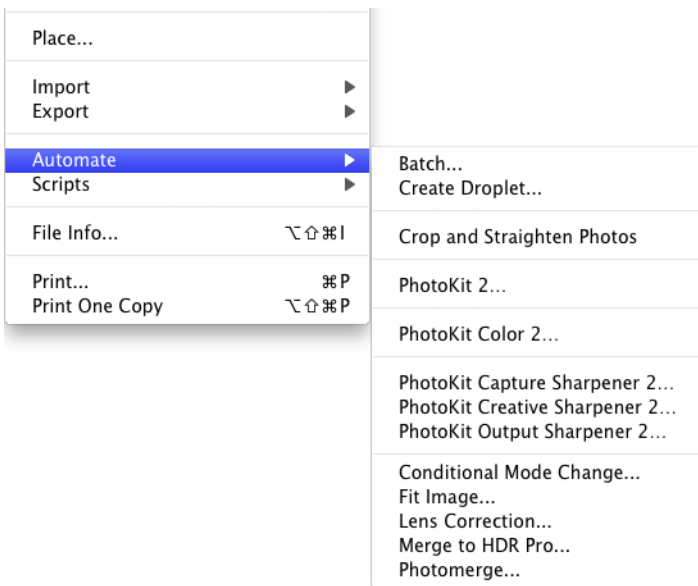
Light contour at 70%, dark contour at 45%



The Layers panel showing the sharpened image above. The default opacity is 66% but you can adjust it to modify the sharpening halos. In the example above, the Light Contour has been adjusted to 70%.

## PhotoKit SHARPENER 2.0 Menus

As we explained earlier, good sharpening has to take into account the characteristics of the capture medium, the content of the image and the properties of the output device. Addressing all these issues in a single round of sharpening is, we believe, impossible, so PKS2 divides sharpening into three phases: Capture Sharpen, Creative Sharpen and Output Sharpen. The three sharpening phases appear as separate commands on Photoshop's Automate submenu, PhotoKit Capture Sharpener..., PhotoKit Creative Sharpener..., and PhotoKit Output Sharpener... arranged in the order in which they're typically used.



For best results we recommend starting out with unsharpened files (turn off any sharpening in the scanner or capture software) and using PKS2 to apply all sharpening. Turning off sharpening in scanner or camera capture software isn't always easy, though we haven't yet encountered a case where it was impossible. If Capture Sharpening oversharpens images, it's likely that some sharpening is being applied beforehand, in which case you'll need to dig deeper into your scanner or camera capture software to find the Off switch!

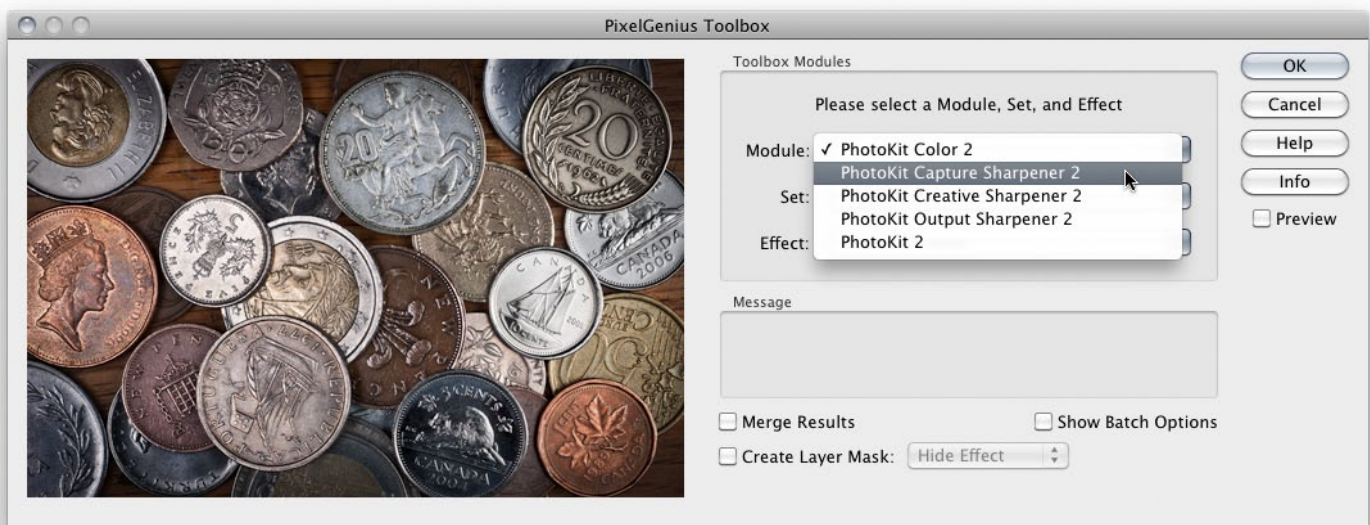
The figure at the bottom of the page shows the PixelGenius Toolbox Module drop down menu with not only PhotoKit SHARPENER 2 but also PhotoKit Color 2 and the new PhotoKit 2 (due 1st. Quarter, 2011). The ability to select any of the PixelGenius PhotoKit products allows you to combine and mix & match effects from any of our products. This is particularly useful when combining effects across multiple products when using the Batch Options.

## PhotoKit SHARPENER 2.0 Image Requirements

PKS2 has only two requirements for images.

Images can be in 8 or 16-bit mode  
Images can be in Greyscale or RGB mode

PhotoKit SHARPENER 2 does not support:  
CMYK, Lab nor Indexed color spaces.



The basic PixelGenius dialog with the Module menu shown expanded down showing PhotoKit Color 2, the three PhotoKit SHARPENER 2 modules and PhotoKit 2 (due the first quarter of 2011). Note, it doesn't matter which Module you select in the Automate menu, all installed Modules are still available in the drop down menu.

## Capture Sharpeners

Capture Sharpeners are designed to apply gentle sharpening early in the workflow. The sharpening is concentrated in the midtones, applying relatively little sharpening to shadows and highlights (no sharpening is applied to pixels lighter than level 250 or darker than level 10). That way, there is sufficient “headroom” to apply sharpening tailored for different output processes, while allowing you to work on a reasonably sharp image. The Capture Sharpeners may be gentler than the sharpening techniques you’re used to, but when they’re combined with Output (and, optionally, Creative) Sharpeners they produce very sharp results.

### Selecting a Capture Sharpener Set

The Capture Sharpener sets are named for the image source. The film sets are effective at almost any scanning resolution—the key factor is the relationship between the edges you wish to sharpen and the inherent noise structure (grain) of the film. The Digital Capture sets are organized by capture size and by the degree of smoothing they apply, from least to most. Unless it’s obvious that an image needs smoothing (it already has visible noise or artifacting), we recommend that you first try the Auto option.

The amount of noise present in a digital image usually correlates with the ISO speed at which the image was shot. But cameras vary widely in their behavior, so it’s difficult to provide a set of magic numbers that dictate when smoothing is required. As a general rule, it’s unlikely that images captured at 400 ISO or slower will need smoothing, and equally

unlikely that images captured at 1600 ISO or faster won’t require smoothing, but there’s a large gray area in between. The images on the following page are illustrative of varying degrees of noise, and show the effects of sharpening alone, and sharpening with smoothing.

Choose the Capture Sharpener set that corresponds most closely to your image source. The Capture Sharpener sets are described in more detail here:

**35 Positive Film:** for scans from 35mm positive film.

**35 Positive Film METW:** for scans from 35mm positive film of close subjects with soft detail and very wide edges, such as portraits. The METW (Modified Edge Transition Width) algorithms are designed to emphasize wide edges while minimizing grain.

**35 Slow Negative Film:** for scans from 35mm negative film at speeds of up to 400 ISO.

**35 Fast Negative Film:** for scans from 35mm negative film at speeds faster than 400 ISO.

**6x6 Positive Film:** for scans from medium-format positive film (6x6, 6x7, 6x9).

**6x6 Negative Film:** for scans from medium-format negative film (6x6, 6x7, 6x9).

**4x5 Positive Film:** for scans from large format positive film (4x5).

**4x5 Negative Film:** for scans from large format negative film (4x5).



A 35mm positive image with soft detail and wide edges may benefit from the 35 Positive Film METW sharpeners.

**NOTE:** If the image you have loaded into PKS 2 has metadata indicating the image is from a digital camera, you won’t see the film based capture sharpeners. The film based sharpeners are only for scans from film. If you have an image without camera data you will see the entire list of the Set including sharpeners for film and digital capture.

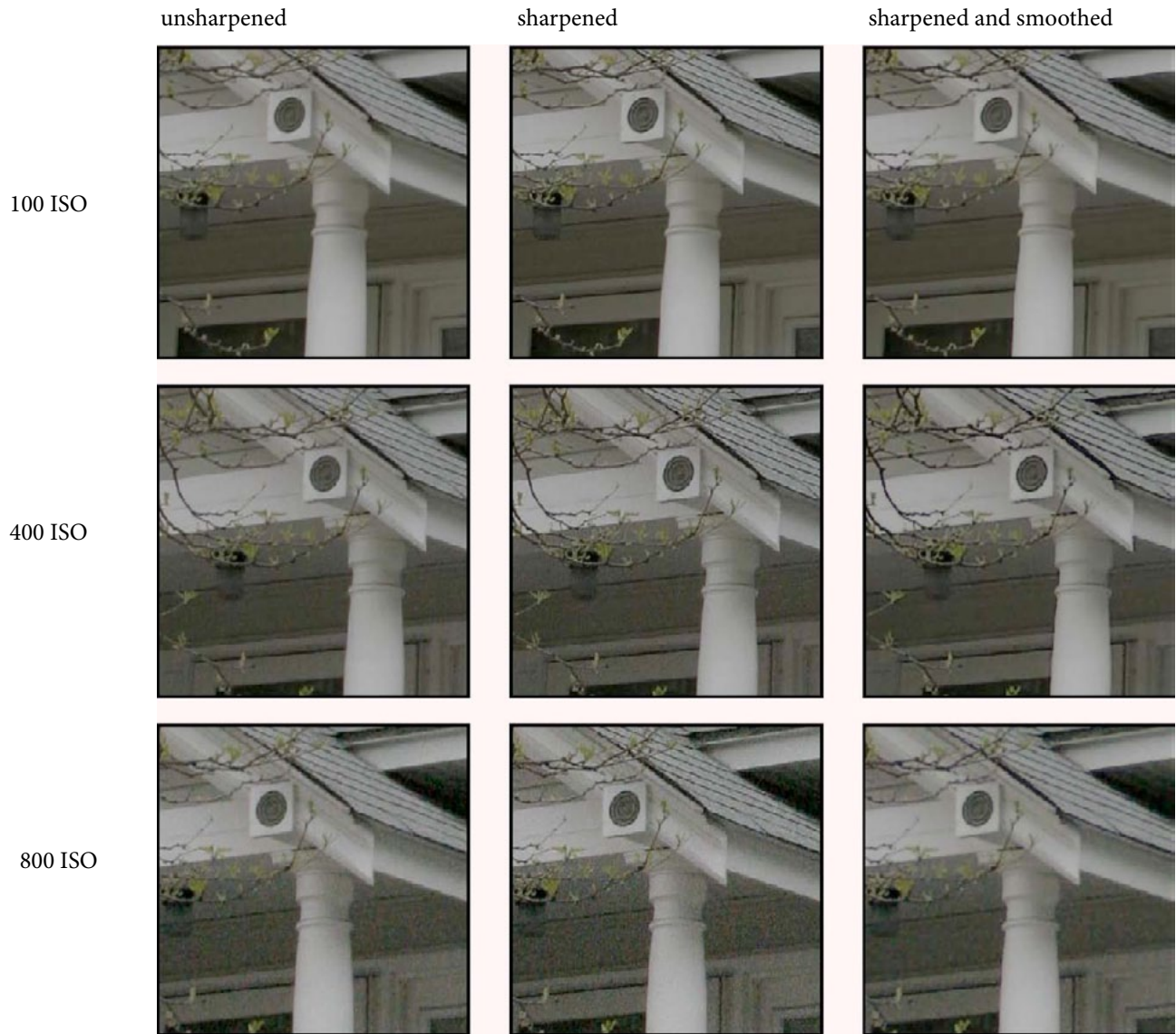




Original Image

### Sharpening and Smoothing

Shown below are details from versions of the image at left, shot at 100, 400, and 800 ISO, unsharpened, sharpened, and sharpened and smoothed. The 100 ISO image definitely does not benefit from smoothing; the 800 ISO image definitely does; while the 400 ISO image is a judgement call.





**Digital Low-Res Sharpen:** for digital captures of up to approximately 4 megapixels (pixel dimensions of up to approximately 2500 x 1600) that are relatively free of noise and hence don't require smoothing.

**Digital Low-Res Smoothed Sharpen:** for noisier digital captures of up to approximately 4 megapixels (pixel dimensions of up to approximately 2500 x 1600) that require some smoothing in addition to sharpening.

**Digital Mid-Res Sharpen:** for digital captures of up to approximately 6 megapixels (pixel dimensions of up to approximately 3072 x 2048) that are relatively free of noise and hence don't require smoothing.

**Digital Mid-Res Sharpen and Smooth:** for noisier digital captures of up to approximately 6 megapixels (pixel dimensions of up to approximately 3072 x 2048) that require smoothing in addition to sharpening.

**Digital Mid-Res de-JPEG Sharpen and Smooth:** for digital captures of up to approximately 6 megapixels

shot as JPEG, that display obvious magenta-green JPEG artifacts as well as noise—see below. (We typically only see this on images shot at 800 ISO and above.)

**Digital High-Res Sharpen:** for digital captures of 8 or more megapixels (pixel dimensions of approximately 4000 x 2700 and upwards) that are relatively free of noise and hence don't require smoothing.

**Digital High-Res Sharpen and Smooth:** for noisier digital captures of 8 or more megapixels (pixel dimensions of approximately 4000 x 2700 and upwards) that require smoothing in addition to sharpening.

**Scanning Back:** for digital captures made with scanning back cameras at almost any resolution. The key difference between scanning backs and more typical one-shot digital cameras is that scanning backs capture real red, green, and blue data for every pixel, producing an essentially grain-less capture.



Unsharpened



De-JPEG Sharpen and Smooth

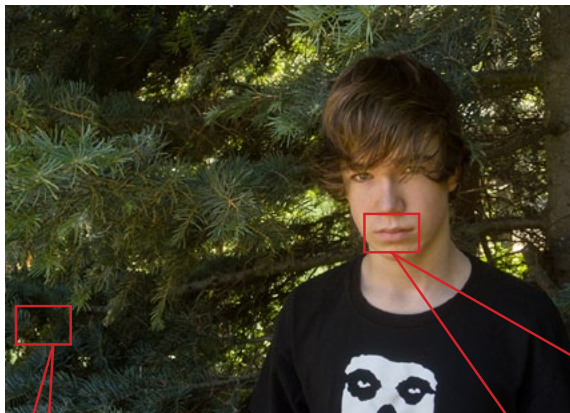
## Choosing a Capture Sharpener Effect

Each Capture Sharpener set contains five effects tailored to emphasize different edge widths, labeled Auto Edge Sharpen, SuperFine Edge Sharpen, Narrow Edge Sharpen, Medium Edge Sharpen and Wide Edge Sharpen, respectively. (The sole exception is scanning backs, where the images are so clean that there's no need to emphasize edges and downplay non-edges.)

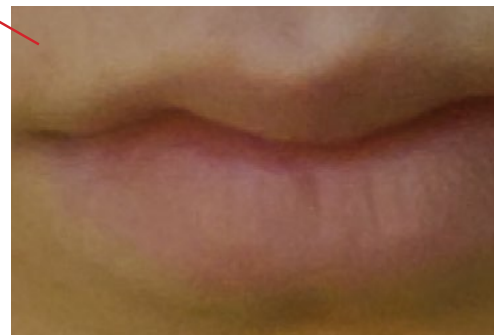
**Auto Edge Sharpen** analyzes your images and determines the optimal sharpening based on the the average frequency. We recommend that you try this first and then analyze the results. This selection will generally produce the best overall Capture Sharpening. However, in the unlikely event that the Auto sharpening adversely affects select areas

Choosing between these five flavors of sharpening is not an exact science (if it were, we'd have a less ambiguous naming convention) and is to some degree a matter of taste. Generally, the Auto Edge Sharpen will produce the best results, however, in some cases the use of one or two of the other four may render a better overall Capture Sharpening.

of the image we recommend that you mask them out, temporarily turn off the Auto Edge Sharpening Group and then run the appropriate Edge sharpening for the masked out area. This effect should then be restricted to the area in question through the use of a mask. The Auto Edge Sharpening group should then be turned back on.



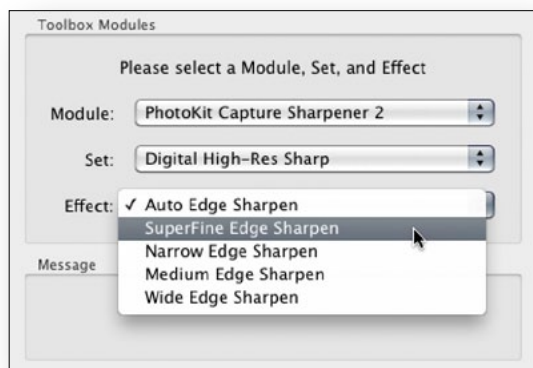
In this example we have an image that needs both a Narrow Edge Sharpen (pine needles and fine branches) as well as a Wide Edge Sharpen for the subject. The Auto Sharpen Edges determined the optimal sharpening and in this case both the narrow and wide edges received an appropriate amount of Capture Sharpening.



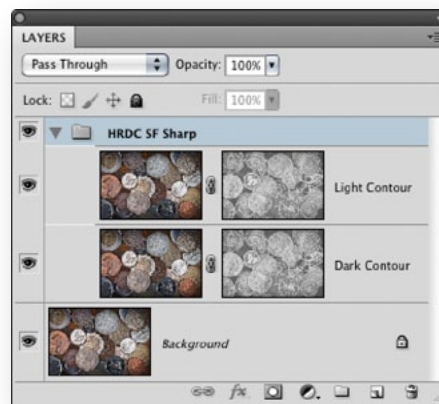


**SuperFine Edge Sharpen** is designed for busy images with tiny details right at the limit of the capture medium's ability to resolve as shown below. This effect is rarely needed, but we added it to PhotoKit SHARPENER 1.2

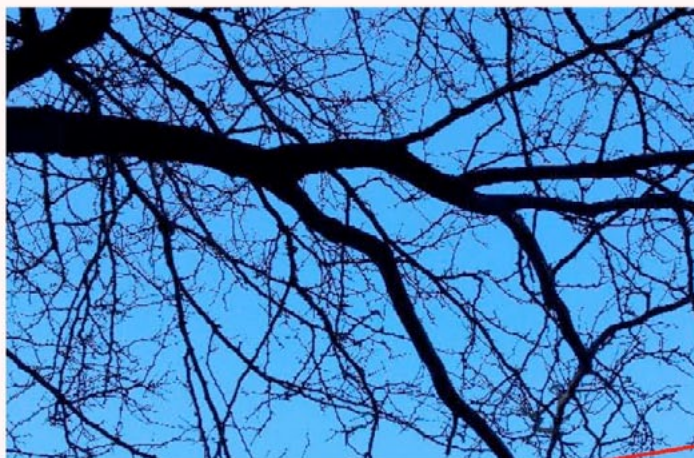
after receiving a small but significant number of images from users who found that the Narrow Edge Sharpen effect was still too coarse and obscured useful detail.



Selecting SuperFine Edge Sharpen from the Effect menu.



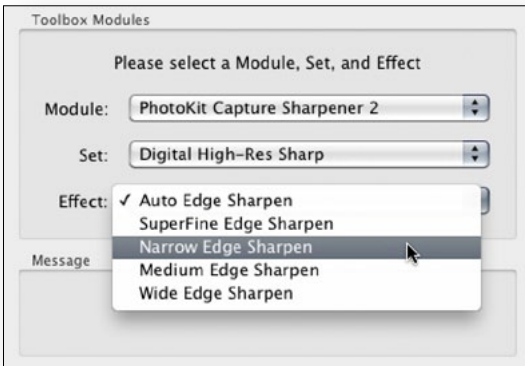
The layer group name reflects the Set: HRDC Sharp and the Effect: SF.



These detail images show SuperFine Edge Sharpen, near right, and Narrow Edge Sharpen, far right.

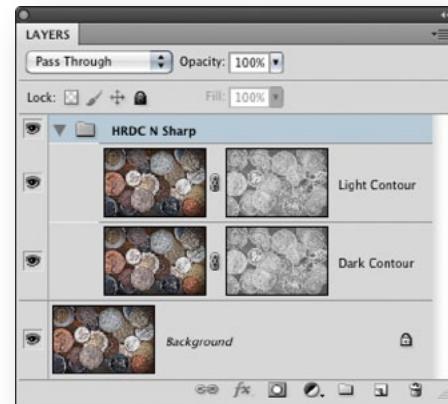


**Narrow Edge Sharpen** is designed for “high-frequency”, busy images with lots of tiny details shown below. The differences between Narrow Edge Sharpen and SuperFine Edge Sharpen are quite subtle, but unless you’re concerned with details around the single-pixel level, Narrow Edge Sharpen is usually a better choice for high-frequency images than SuperFine Edge Sharpen.



Selecting Narrow Edge Sharpen from the Effect menu.

Bear in mind that all the effects will sharpen all edges to some extent—the difference is simply one of emphasis. Each of the edge widths emphasizes a different general tendency in the image. Once you gain some experience using PKS2, you’ll find that it’s relatively easy to match the effect to the image to produce the results you want.



The layer group name reflects the Set: HRDC Sharp and the Effect: N.

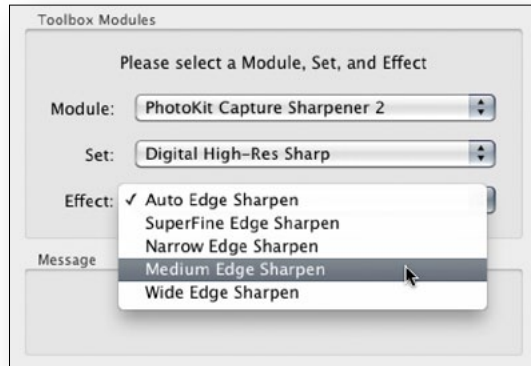


These detail images show Narrow Edge Sharpen, near right, and Wide Edge Sharpen, far right. The Wide Edge Sharpen actually obscures some of the finer details and produces wide sharpening contours that look unnatural.

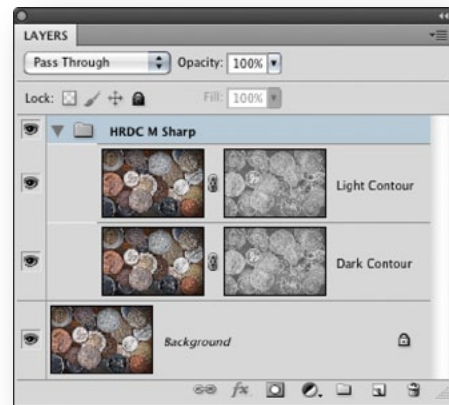




**Medium Edge Sharpen** is designed for “normal” images, like the examples shown here.



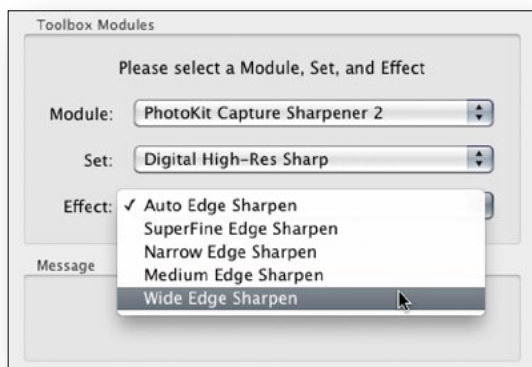
Selecting Medium Edge Sharpen from the Effect menu.



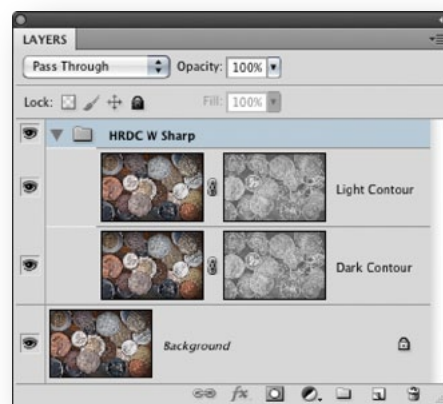
The layer group name reflects the Set: HRDC Sharp and the Effect: M.



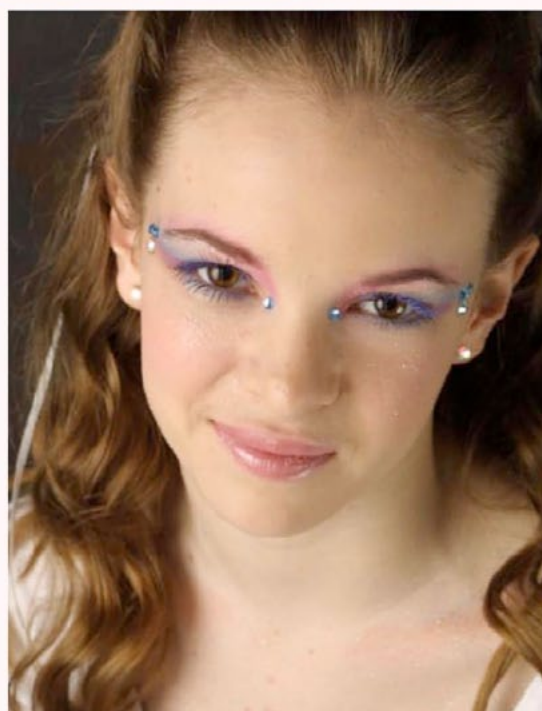
**Wide Edge Sharpen** is designed for close subjects with relatively soft detail, where the goal is to emphasize edges without applying significant sharpening to textured areas like skin, as in the examples shown below.



Selecting Wide Edge Sharpen from the Effect menu.

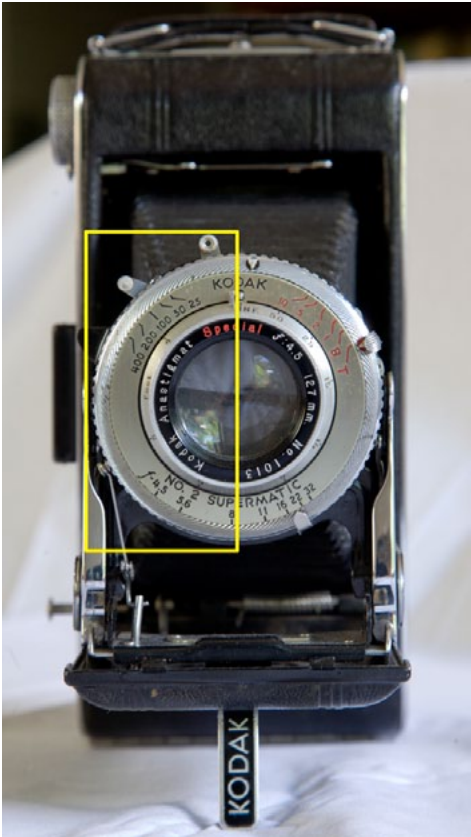


The layer group name reflects the Set: HRDC Sharp and the Effect: W.





Auto, SuperFine, Narrow, Medium, and Wide Edges Compared



On any single image, the differences between Auto, SuperFine, Narrow, Medium, and Wide Edge Sharpen may be quite subtle. The image details below show the same image with Auto, SuperFine, Narrow, Medium, and Wide Edge Sharpen applied. The example below illustrates just how subtle the Capture Sharpening is. The Difference image is a Calculation that shows where the Auto Sharpen has enhanced the image. Although it's barely perceivable by the eye, on a pixel level it's significant.



Original Capture



Auto Sharpen



Difference



Auto



SuperFine Edge



Narrow Edge



Medium Edge



Wide Edge

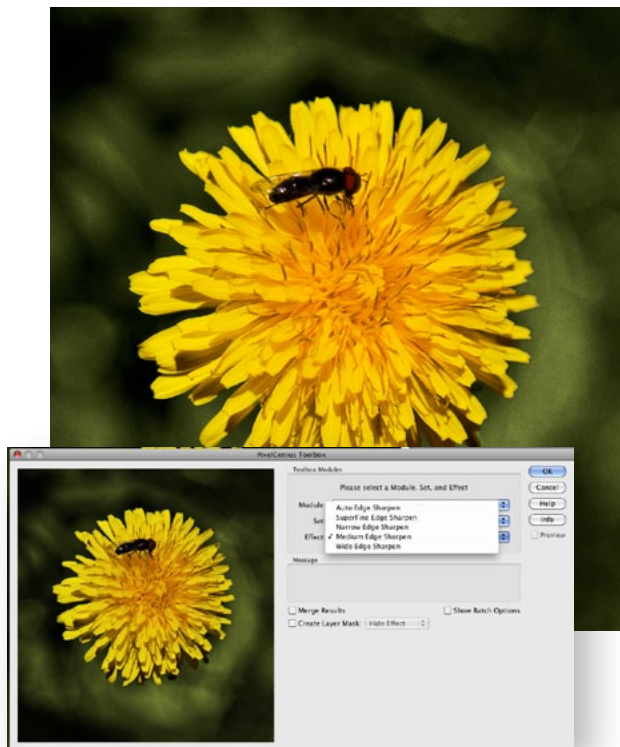
## Comparing Sharpening Results

All PhotoKit products, including PKS2, follow the same basic rules. First and foremost, PhotoKit never harms the original image. All PhotoKit effects are applied on additional layers, leaving the original source image untouched. Second, PhotoKit effects offer great flexibility by using all currently visible layers as the source for the effect.

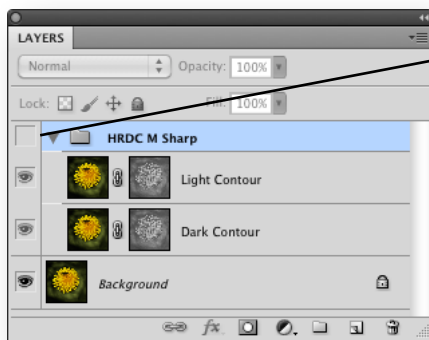
This lets you control exactly how effects are applied.

For example, if you want to compare two different effects—two different Capture Sharpeners, for example—you simply run the first effect, then turn off the visibility for that effect in the Layers palette before running the second one.

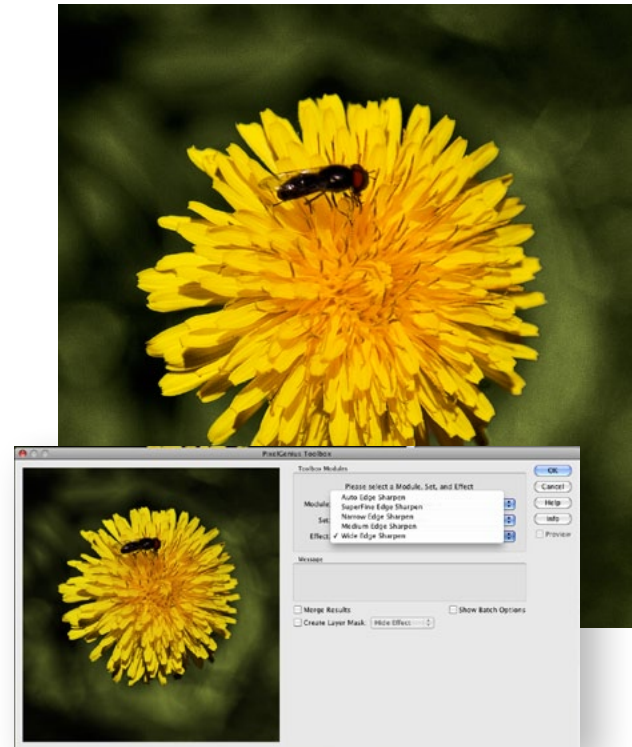
### Comparing effects



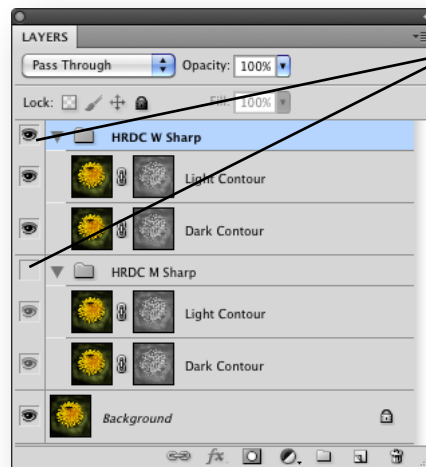
Run the first effect, then ...



hide the result.



Run the second effect, then ...



compare the results by turning each layer set on and off.

**NOTE:** PhotoKit SHARPENER 2 will use all visible layers when applying the effects. If you don't wish for a layer to be included in the processed result, simply un-check that layer or layer group.

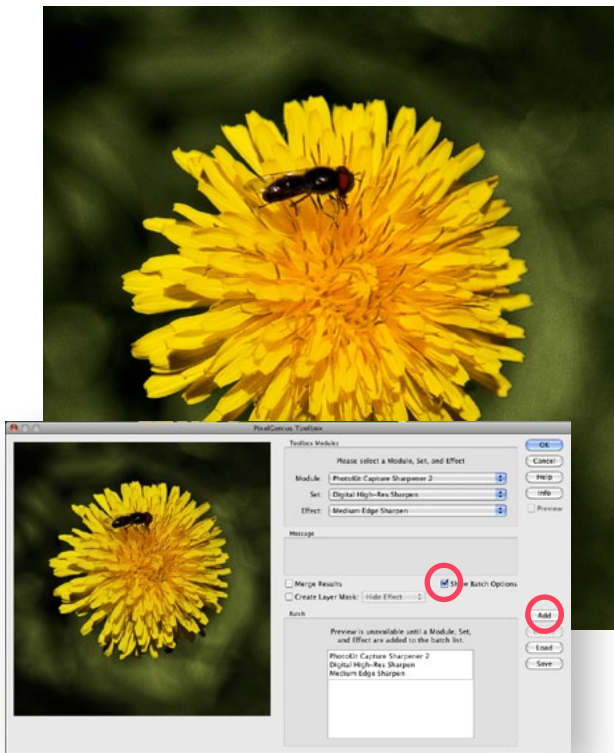


If, on the other hand, you want to look at the cumulative result of running two effects, you can use SHARPENER'S Batch Mode. Batch Mode allows the user to add multiple effects and apply them all with one click. The resulting effect will be cumulative.

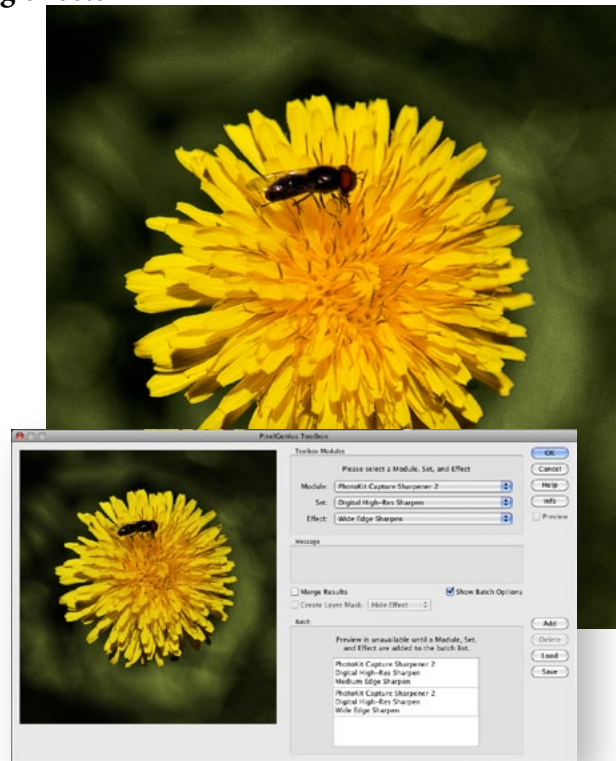
A possibly non-obvious consequence of this behavior is that when you want to add layer-based edits (for example, a Curves or Hue/Saturation

Adjustment Layer) to an image that already contains one or more PhotoKit effects, you should add the new adjustments at the top of the layer stack, above the PhotoKit effects, rather than underneath them in the Layer stack.

## Stacking effects

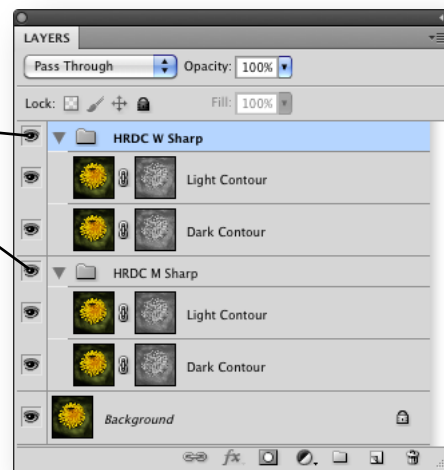


Select the "Show Batch Options" then choose the first effect and click "Add".



Select the next desired effect and click "Add". When you have finished selecting effects click "OK" and the cumulative effects will be render and appear in your Layer Stack.

View the cumulative results.



## Post-Effect Controls

After you've run the effect, PhotoKit returns a Layer Set, named for the effect, that contains a Light Contour layer (A.), a Dark Contour layer (B.), and in some cases, a Smoothing Layer (D.). This allows for substantial tweaking of the sharpening effect after it has been applied.

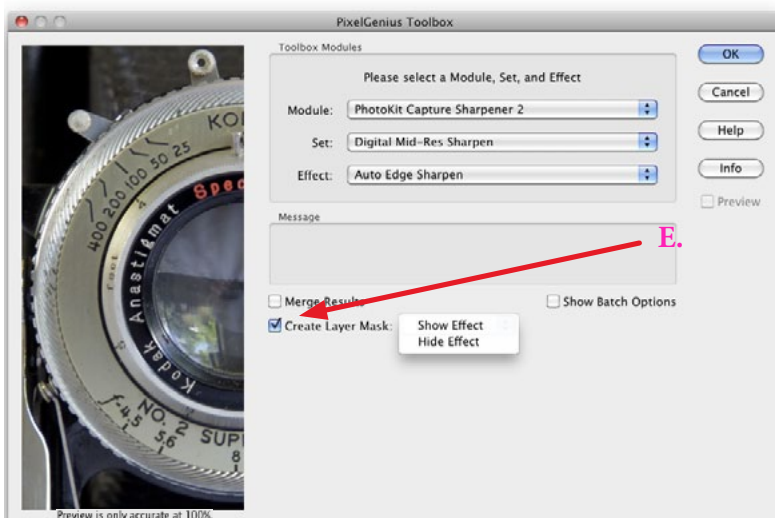
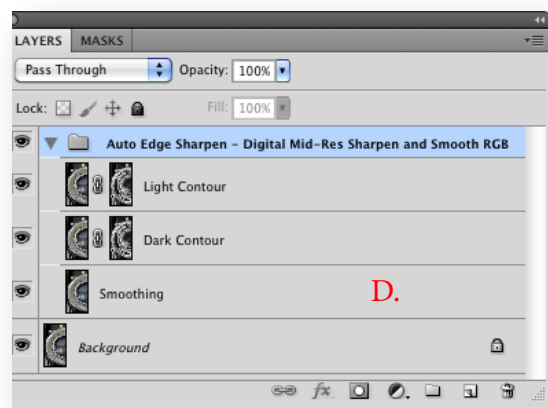
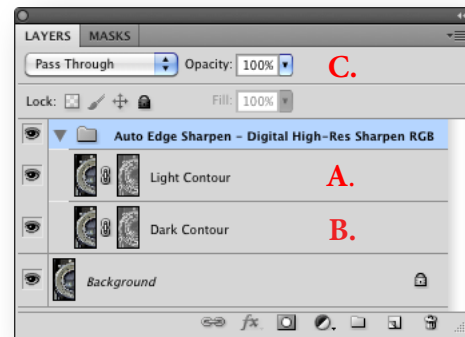
**Layer Opacity:** You can vary the strength of the effect by adjusting layer opacities using the Opacity slider (C.) in the Layers palette.

The Sharpening Layer Set always appears with 100% opacity. You can reduce the strength of the sharpening by lowering the opacity of the layer set. The individual Light and Dark Contour layers for Capture Sharpeners always appear with a default opacity of 66%, so you can increase or decrease the strength of the light and dark contours independently by varying the respective layer opacities.

You may find that you often want to reduce the opacity of the smoothing layers, or even turn them off entirely. But the sharpening layers are based on the result of the smoothing layers, so even if you wind up discarding them, they've still played a useful role.

**Layer Masking:** To localize the sharpening effect you add a layer mask to the Sharpening Layer Set by selecting "Create Layer Mask" checkbox "E." in the PKS2 dialog. You can also select whether you want

to create a mask to hide the effect (black mask), or a mask that reveals the effect (white mask). Click the layer mask's tile to activate it for editing. It's active when the icon has border. You can now paint *in* the effect (Hide Effect / Black Layer Mask) using a white brush or you can paint *out*. (Show Effect / White Layer Mask) using a black brush.



## So Where Are The Sharpening Brushes?

Previous versions of PhotoKit Sharpener have included options that would allow the painting in of or out of the sharpening effect. This functionality has not been removed but rather extended to all effects available in PKS2.

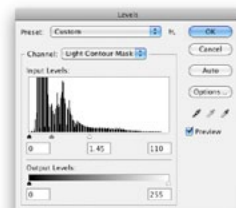
## Capture Sharpen

The Capture Sharpener set is designed so those users who want the ultimate in control can fine tune the effect. The example shown here is relatively unsubtle—we wanted to make sure that the before-and-after difference is obvious. Use them only when you want to make subtler changes than can be achieved by adjusting the layer opacities.

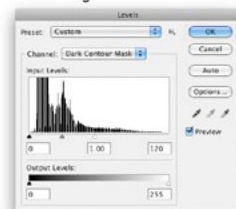
In PKS2 we preserve the mask through which sharpening is performed as a layer mask. Layer masks control the visibility of the layer to which they apply: white in the layer mask makes the layer fully visible, black hides, intermediate grays make it partly visible. Editing the layer mask allows you to fine-tune the effect of the Sharpening layer. One very easy way to fine-tune the sharpening is to adjust the contrast of the Layer mask using Levels (Curves works too, but Levels offers the advantages of speed and simplicity). In the example shown here, we pull the white input slider down, creating more white pixels in the Layer mask, and hence more sharpening. On the Light Contour layer, we also make a midtone adjustment using the gray slider to darken the midtones, compensating for the white slider move so that areas we want to leave unsharpened are indeed left that way.

The simple rules to follow:

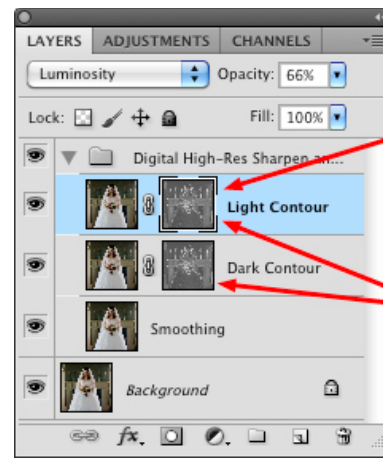
- Adjusting the black input slider in Levels creates more black pixels and protects more of the image from the effect.
- Adjusting the white input slider in levels creates more white pixels and applies the effect to more of the image.
- Adjusting the gray input slider in Levels changes the slope between pixels that are affected and pixels that are protected.



Light contour edit

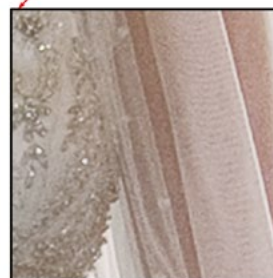


Dark contour edit

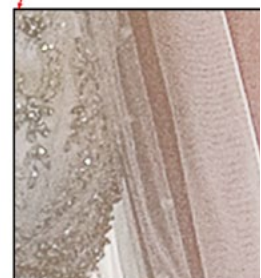


Selected Layer mask

Layer masks



before editing



after editing

## Flattening the Capture Sharpen Layer Set

Once you're happy with the results of the Capture Sharpener, you may wish to flatten the layer set to reduce the file size and the concomitant demands on memory, scratch disk space and storage. You can either flatten the image, which burns all the changes into the Background layer, or, if you wish to keep your Background layer intact, merge the effect into a new layer. The trade-off in doing so is that you make a smaller file, but *you lose the ability to edit* since you no longer have separate sharpening layers. We recommend that you always flatten images before a mode change—from RGB to CMYK, for example—but you needn't do so for RGB-to-RGB conversions.

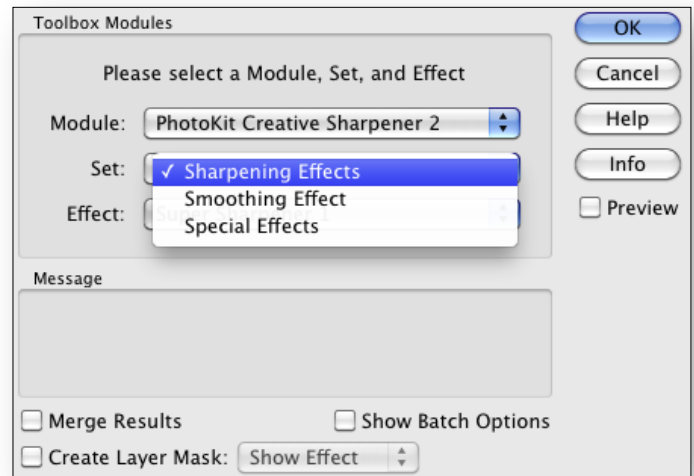
**Flattening the image:** Choose Flatten Image from the Layer menu. All layer-based edits are burned into the Background layer and the individual adjustment layer and layers are deleted.

**Merge to a new layer:** Choose Merge Visible from the Layer fly-out menu while holding down the Option (Mac) or Alt (Windows) key, or press Command-Option-Shift-E (Mac) or Control-Alt-Shift-E (Windows). The sharpened image is merged to a new layer. Finally, delete the sharpening Layer Set to reduce the file size.

## Creative Sharpeners

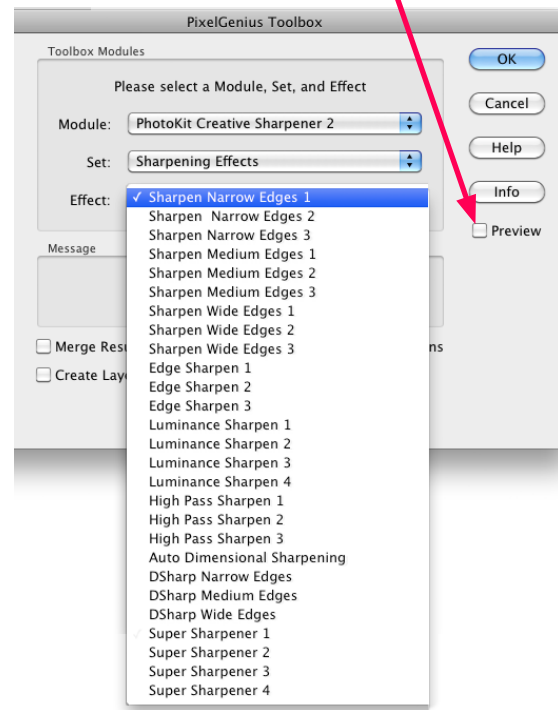
The Creative Sharpeners are designed to apply to images after running Capture Sharpeners and before Output Sharpeners. By nature, the primary use of Creative Sharpeners is for localized sharpening or smoothing of areas in an image. While most images may fall into one of the primary categories we've chosen such as Narrow, Medium, and Wide edges, in general all images exhibit some cross-category tendencies. Additionally, the content of an image may dictate that certain areas of an image need more sharpening or even more smoothing, to optimize the composition.

The Creative Sharpening effects are divided into three sets: Sharpening Effect, Smoothing Effects, and Special Effects.



## Sharpening Effects Set

The Sharpening Effects Set is a collection of heavy duty effects. These effects can be previewed on-screen by checking the Preview checkbox.



**Warning:** As with all sharpening effects, you should understand that it is possible to oversharpen an image and therefore ruin it. We suggest the user take a subtle approach when using the Sharpening Effects. However, also remember that all PhotoKit 2.0 effects return fully editable layers that can always be lowered in opacity or turned off, so we encourage you to experiment and see how far you can push the effect.



## Sharpening Effects

The Sharpening Effects return a layer with the sharpening effects applied to the pixels of the layer. As with all PhotoKit 2.0 Effects you can choose to include a white (Show Effect) or black (Hide Effect) layer mask. If you choose a black mask (Hide Effect) you can paint in sharpening to selected areas of your image. *You, the user, need to actively reduce the overall opacity of the layer masks brush yourself.* An easy keyboard method of changing a brush's opacity is to simply press a number key after the effect is run. Pressing the 5 key will give you 50% opacity, a 3 gives 30%. We suggest using an opacity of between 10%-30% for gentle buildup of effects and a 50% opacity for a quick buildup.

Remember, you can always paint away the effect by selecting black as the foreground color, so you can always adjust your final blend very precisely. An easy way to toggle between White/Black and Black/White is to type the “x” key. This exchanges the foreground and background colors.

**Warning:** When using Layer Masks, if you select and activate a different layer, and then return to the pixel layer with the layer mask, be sure to click on the actual layer mask to target the mask and not the pixel layer. Otherwise, the painting will be applied over your pixels instead of on the mask.

The Edge Sharpen effects apply sharpening only to simple edges in three strengths from 1–3. The Luminance Sharpen has an additional strength and applies sharpening only to the luminosity of an image, while the High Pass Sharpen effects use an Overlay blend mode to enhance edge halos. The Dimensional Sharpening applies an inverted Luminosity mask to a modified High Pass Sharpen effect to restrict the amount of sharpening according to tonal content. Darker areas get more sharpening than lighter areas. All Sharpening Effects result in global sharpening over the entire image, but they can be manipulated by adjusting the default 66% layer opacities, or by including a layer mask.

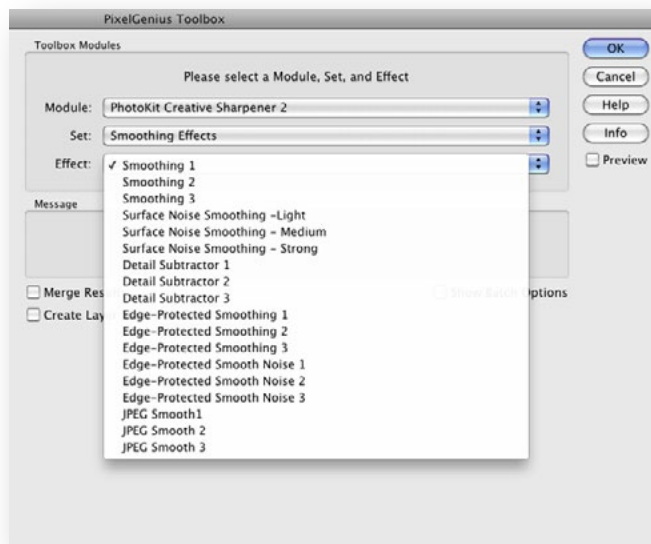
Also included in the Sharpening Effects is Super Sharpener in varying strengths. The Super Sharpeners are special purpose tools— use them with caution. If your image is already sharp, these effects may indeed vastly oversharpen those areas in your image. But the Super Sharpeners can actually create textural detail where none was visible before. In general, you should use these effects at the default opacity of 50% or less. Also, be sure you examine sharp-edged areas of your

image and include a layer mask to locally reduce the opacities or use the eraser tool to eliminate those areas in your image that break.

The Super Grain effects add a digital replication of photographic film grain while sharpening an image. These grain effects can be usefully applied over re-touching to help integrate the overall textural appearance, and hide irregularities. Adding a low level of photographic grain to digital captures can also make the capture look more “film-like”. As with all of the Creative Sharpeners, you should use judgement and self-discipline to resist over-applying these effects. Remember, while the image is still in layer form, you can exercise enormous control over the flavor and strength of sharpening or smoothing, but once it's flattened, you can't undo the effects. Also remember to leave some headroom for the final stage of the sharpening workflow, the Output Sharpeners, which will handle destination-specific sharpening requirements.

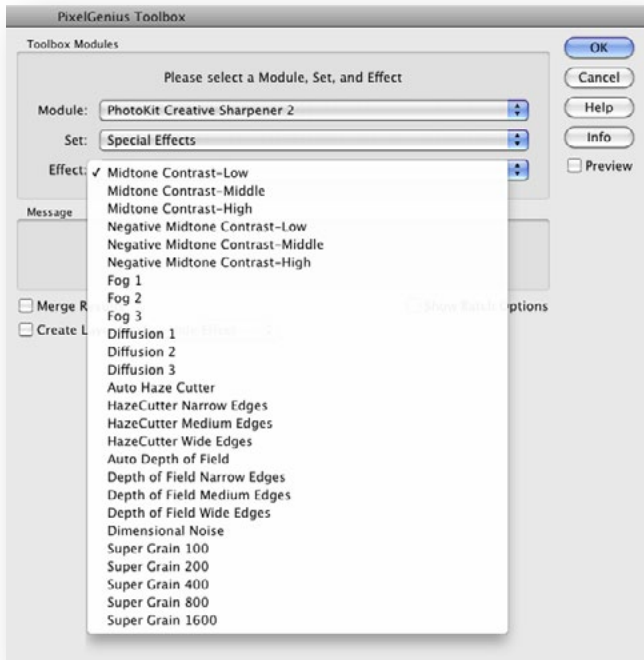
## The Smoothing Effects

The Smoothing Effects apply a gentle low level blur or contrast reduction that can be very useful for smoothing skin or other areas of unwanted texture.



We've also included four special smoothing effects for solving specific image problems. The Edge-Protected Smoothing, and the Edge-Protected Smooth Noise only apply their effects to non-edge areas of the image, so you can apply the smoothing to large open areas without the need for special layer masks to protect the edges. The Detail Subtractor reduces local contrast to “smooth out” detail and texture. The Edge-Protected Smooth Noise has the added benefit of adding

back in a low level of soft noise or grain that can help when working on images with higher ISOs. The JPEG Smooth effects help mitigate the noisy magenta-and-green shadow artifacts found with some cameras.



## The Special Effects

These are effects that fall outside of traditional sharpening or smoothing effects.

**Midtone Contrast** effects enhance tonal separation and help combat dot-gain when outputting your images to print. Select the effect that most closely reflects your target midtones. The effect layer defaults to 20% opacity. The effect generally works best between 20 - 40% opacity so if you decide to use a higher setting be sure to check the results for unwanted “halos”. \

**Negative Midtone Contrast** effects “flatten” the midtones and reduce the contrast of the midtone values. The same setting considerations outlined above for the Midtone Contrast Effects apply here.

**Fog** effects apply a lightening blur effect, similar to shooting with a fog filter over the lens, so highlights attain a soft glow.

**Diffusion** effects apply a darkening blur, similar to applying diffusion over an enlarger lens when making B&W prints, so the shadows expand and you see a “dark glow” around shadows.

**HazeCutter** effects add a warming color correction to sharpening that can particularly help images where aerial haze causes both softening and cooling color balance in distant scenes. This group includes an Auto function which generally produces the best results.

**Depth of Field** effects have the ability to add additional edge sharpening above and beyond traditional sharpening. While it's impossible to make an out of focus object appear to be “in-focus”, the DOF Effects add as much edge contrast as possible and can indeed considerably improve soft areas of an image. This group also includes an Auto function that generally produces the best results. One trick to making an area of an image appear sharper is to add a suggestion of softness elsewhere in the image. While applying a Sharpening effect to a person's eyes and lips, for example, you may add smoothing to skin or other areas you wish to de-emphasize using a Smoothing effect.

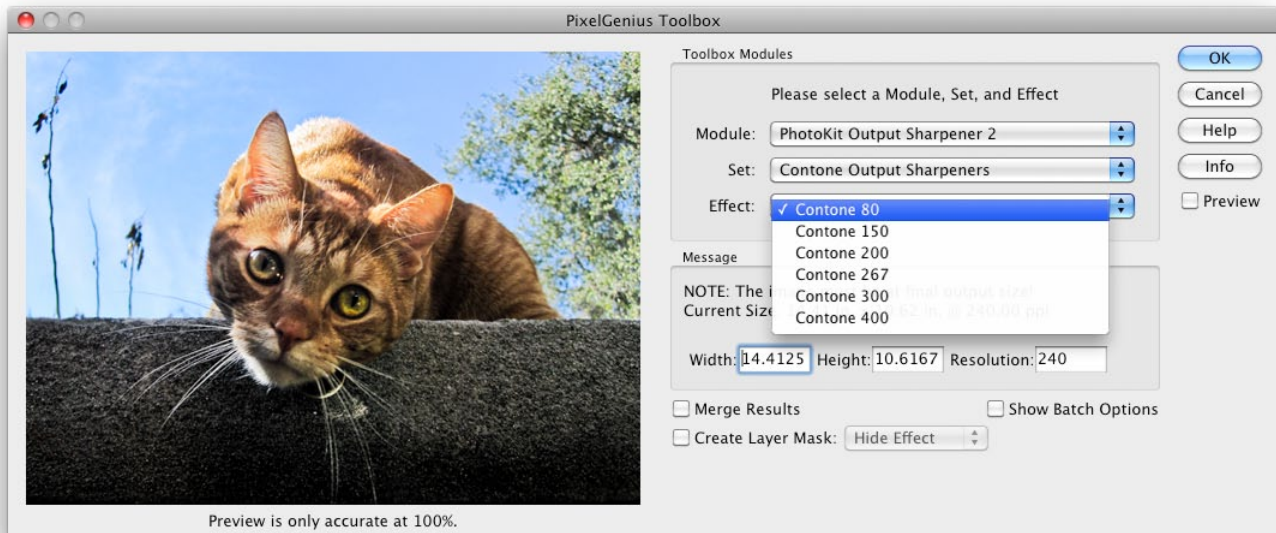
**Dimensional Noise** effect adds noise to an image filtered through an inverted luminosity mask. This allows increased noise in the shadows and reduced noise in the highlights and eliminates the visual “flattening” that can occur when adding a single, global noise layer.

**Super Grain** effects add a digital replication of photographic film grain while sharpening an image. These grain effects can be usefully applied over retouching to help integrate the overall textural appearance, and hide irregularities. Adding a low level of photographic grain to digital captures can also make the capture look more “film-like”. As with all of the Creative Sharpeners, you should use judgement and self-discipline to resist over-applying these effects. Remember, while the image is still in layer form, you can exercise enormous control over the flavor and strength of sharpening or smoothing, but once it's flattened, you can't undo the effects. Also remember to leave some headroom for the final stage of the sharpening workflow, the Output Sharpeners, which will handle destination-specific sharpening requirements.

## Output Sharpeners

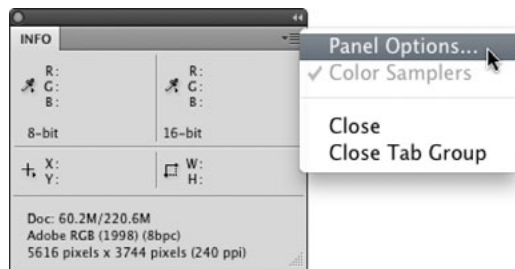
The Output Sharpeners are designed for images that have already had Capture and Creative Sharpeners applied. The last step of the sharpening sequence is to “crisp” up the image to help compensate for the dot-gain of the printing process. Dot gain is an increase in dot size over the original due to the spreading of the ink droplet in the printing process. Matte papers tend to exhibit more dot gain than photographic surface papers. Although we allow the user to “Preview” the sharpening amount it’s an inaccurate view at best.

Screens don’t show dot gain so the only accurate prediction is a proof print. The PixelGenius team has printed thousands of prints to test the output sharpening settings and we feel confident that they will produce optimal result in most cases. The Output Sharpeners are divided into four sets to address four different types of output; Contone Output Sharpeners, Halftone Output Sharpeners, Inkjet Output Sharpeners, and Web and Multimedia Output Sharpeners.

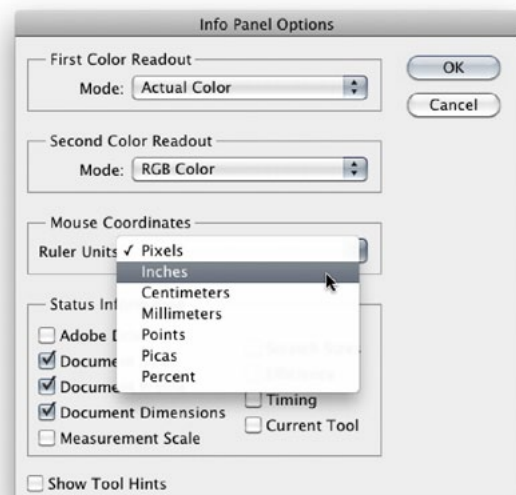


**The Contone Output Sharpeners** are designed for final output sharpening of images destined for continuous-tone printing processes such as dye-sublimation and photographic printers. The effects are organized by resolution in pixels per inch at final output size. Some continuous tone printers will downsample file resolution to match the device resolution, so if your image resolution is significantly

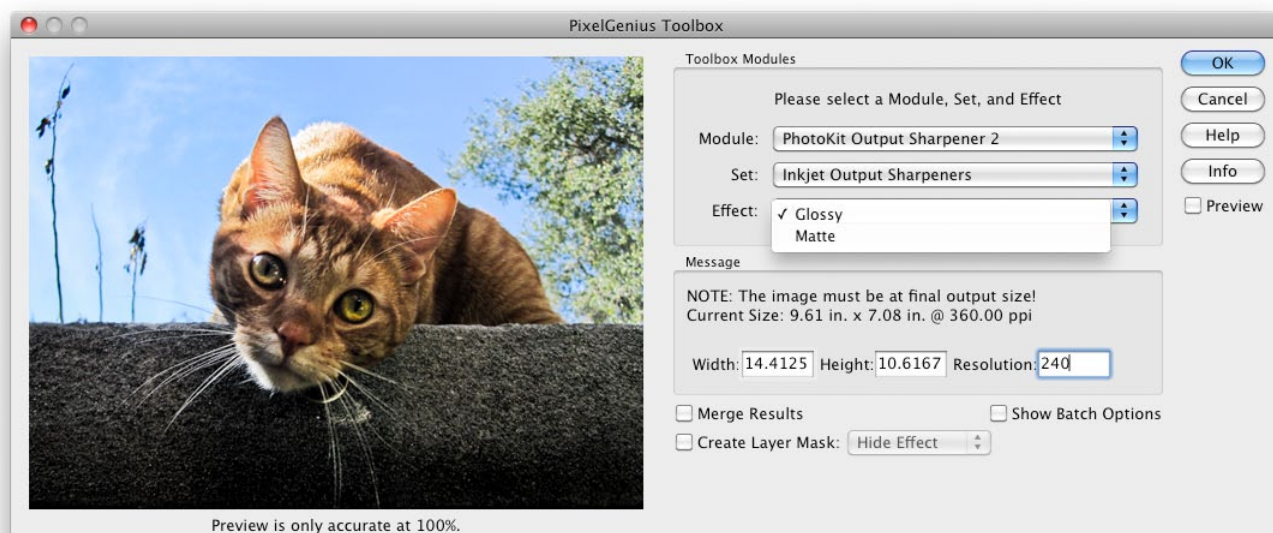
higher than the device resolution your sharpening may not be optimal. For best results, we recommend resampling images to the specific pixel resolution of the device, but if its only slightly off— 308 ppi for a 300-ppi device, for example, it’s probably OK to apply the 300-ppi sharpening and send the file without resampling. Simply choose the closest Output Sharpener to the file’s actual resolution.



**NOTE:** The Units shown in the Contone, Inkjet and Halftone Sharpeners reflect the Units currently set in Photoshop. As shown in the figure above, the Unit readouts are in pixels. To change the Unit Readout select Panel Options from the flyout menu and change it in the Ruler Units drop down menu as shown on the right.







**The Inkjet Output Sharpeners** are totally automatic requiring the user to select either Glossy or Matte in the Effect dropdown menu. The matte effect applies slightly stronger sharpening than the glossy effects. Our experience suggests that luster and semigloss papers behave more like glossy than matte, but it's a good idea to run some tests on any specific paper you use a lot. As with the other Output Sharpeners, the Inkjet Output Sharpeners allow for considerable post-effect tweaking to optimize for a specific paper stock. REMEMBER: You adjust the intensity of the effect by altering the opacity of the sharpen set or the individual Light Contour or Dark Contour layers.

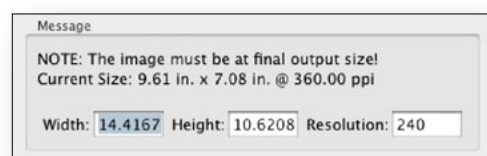
One of the new features of PKS 2 is the ability to resize your image without resampling directly in the Contone, Inkjet and Halftone Sharpeners. This allows more control over the final printed dimensions of your image while still automatically getting the optimal output sharpening.

In the figure above the original image was 9.61 x 7.08 at 360 ppi and 240 ppi had been entered into

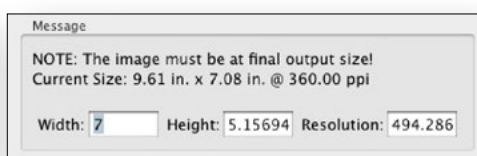
the Resolution. That would have resulted in an image whose dimensions were 14.4125 x 10.6167 at 240 ppi.

But what if you wanted a print that was 5 x 7 inches? In the figure on the lower left the Width has been highlighted. On the figure on the lower middle, the Width has been changed to 7 inches. This will change the Resolution to 494.286 ppi. This isn't a problem! The actual resolution of the image in pixels/unit doesn't matter for printing processes as long as it's within a certain range. It's far better to specify the dimensions and let the ppi fall where it may. Generally we suggest keeping the native resolution of your file and simply change the dimensions of the image to get the image dimensions you need. As long as the final image resolution is between 180-480 ppi (or above) you should get good results in your final print.

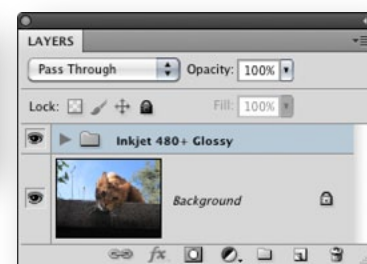
After running the output sharpener, your image will have the size specified in the Message area of the output sharpener and the sharpening will be applied at the final pixel/unit resolution.



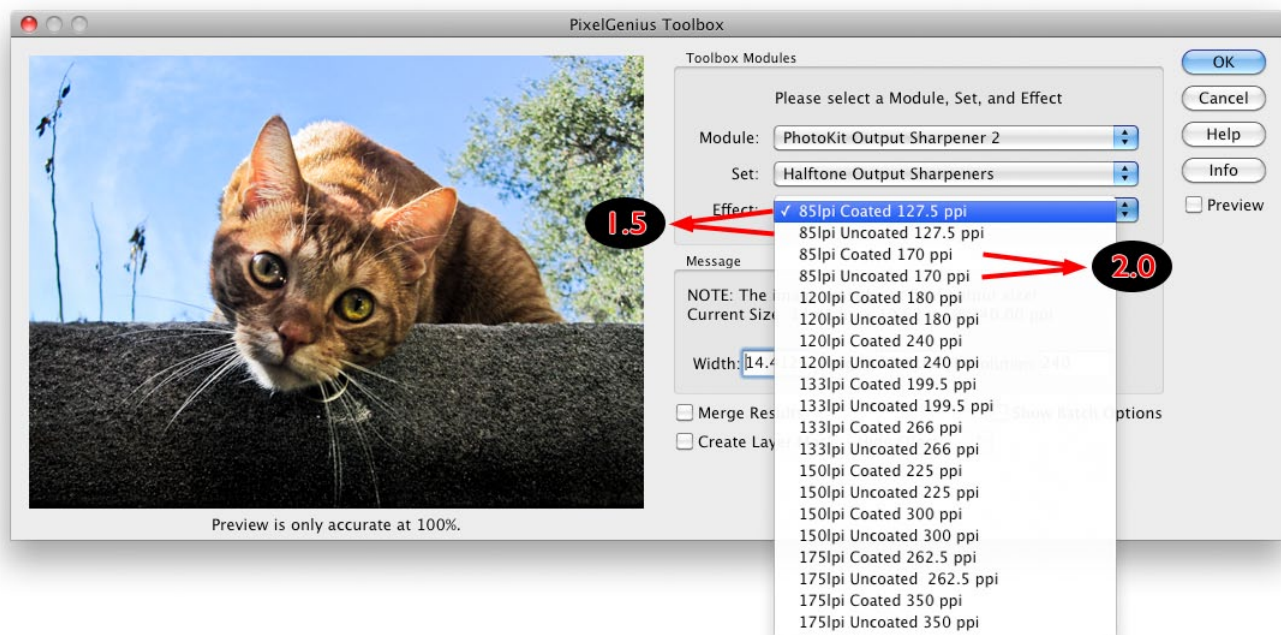
The Width text field is highlighted with the current dimension of 14.4167 showing.



The Width has been changed to 7 inches. The Height automatically changes to maintain the same image proportion as the original and the Resolution is now 494.286 ppi.



The final Inkjet Output Sharpener layer group shows the name and resolution—in this case it's 480+. The plus sign indicates the resolution is over 480 ppi.



The **Halftone Output Sharpeners** are designed for final output sharpening of images destined for output processes that use a conventional halftone rosette, such as the majority of printing presses as well as dot-based digital proofing systems such as the Kodak Approval. In addition, some color laser printers and some inkjet printers driven by RIPs use conventional halftone rosettes.

The key parameters for halftone output sharpening are: coated or uncoated paper stock, the frequency of the line screen expressed in lines per inch (lpi) and the pixel resolution at final output size in pixels per inch (ppi). Uncoated papers generally benefit from a slightly stronger sharpening than coated ones. The interaction between pixels and halftone dots, which is dictated by the Quality Factor—the relationship between pixel resolution and screen frequency—is key to sharpening the pixels that produce the desired halftone dots.

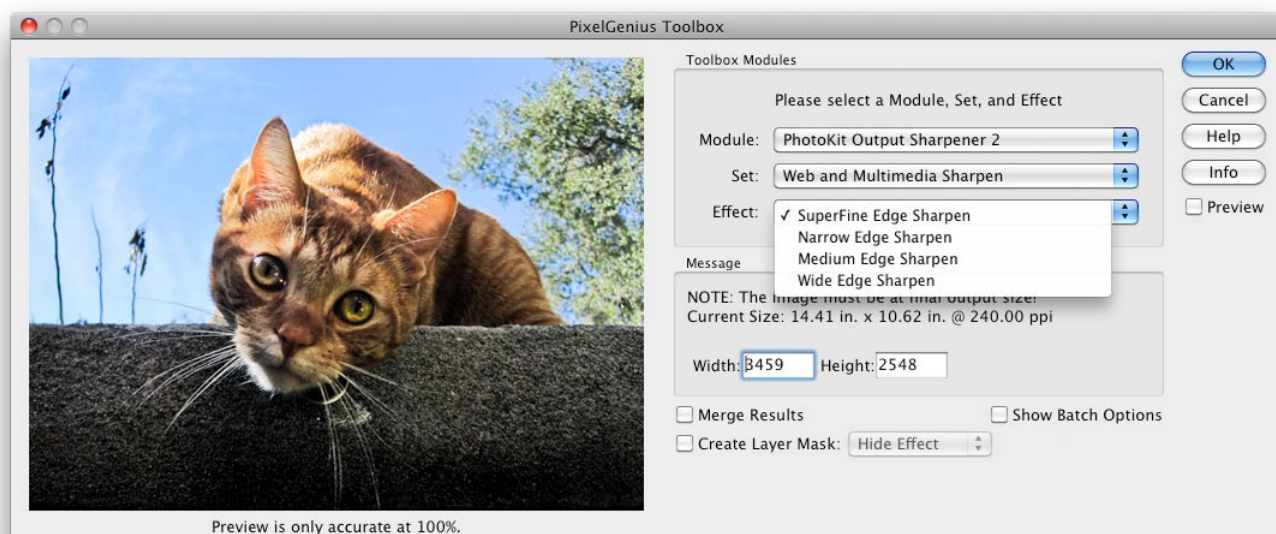
The Halftone Output Sharpeners are organized by screen frequency (lpi), coated vs uncoated stock, and resolution in ppi. For each supported screen frequency, we offer a set that corresponds to a Quality Factor of 2 - a resolution of double the line screen

- which is typically used for premium work, and a Quality Factor of 1.5 - a resolution of 1.5 times the line screen - which is often used to save storage space and transmission time on less-critical work. We don't recommend using a Quality Factor of less than 1.5 for halftone output. We recommend using a Quality Factor of 2 when the image contains fine diagonal lines or contains many important small details, but a Quality Factor of 1.5 is sufficient for most work.

If figuring out what 1.5 times the line screen is for a 133-line screen makes your brain hurt, note that we've done the math for you. For each line screen, the lower ppi value corresponds to a Quality Factor of 1.5, and the higher one corresponds to a Quality Factor of 2.

While we advocate maintaining the native resolution of your image for Contone or Inkjet printing the same can't be said for Halftone printing. While getting the EXACT resolution still isn't mission critical, you should at least be close to the typical range of 1.5-2.5 the lpi of the halftone screen. Sending too much resolution to halftone will result in soft images even if sharpened. That is the reason we suggest 2X the lpi.

**Note:** The Output Sharpeners for print processes— Contone, Halftone, and Inkjet are likely to produce results that can appear quite ugly on screen when viewed at zoom levels of Actual Pixels or higher. They will, however, produce excellent results in the final print. Bear in mind that, depending on the print process and the pixel density, it may take up to four pixels to produce a single dot of ink, so the Actual Pixels view can be very misleading. You can get a better idea of the final appearance by viewing the image at 50% or even 25% view (avoid the “odd” zoom percentages such as 66.7% and 33.3% because Photoshop applies heavy anti-aliasing to those views), but the only way to really see the result is by viewing the final print.



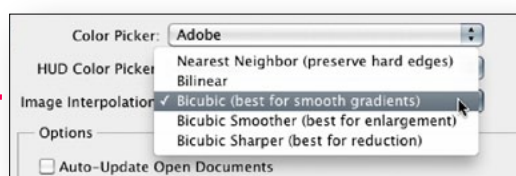
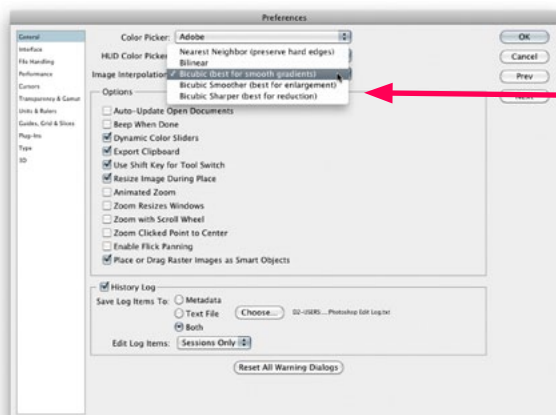
**The Web and Multimedia Output Sharpeners** are designed to apply a final sharpening to images destined for on-screen viewing on the Internet, CD-ROM, multimedia kiosks, or for any other situation where the display is the final output.

The Web and Multimedia Output Sharpeners resemble the Capture Sharpeners more than they do the other Output Sharpeners in that they are organized in terms of pixel dimensions and SuperFine, Narrow, Medium, or Wide Edges.

The pixel dimension refers to the width of the image in pixels. The criteria for choosing SuperFine, Narrow, Medium, and Wide Edge Sharpen are the same as for the Capture Sharpeners. In the vast majority of cases, you'll want to use the same choice of edge width on both the Capture and the Web and

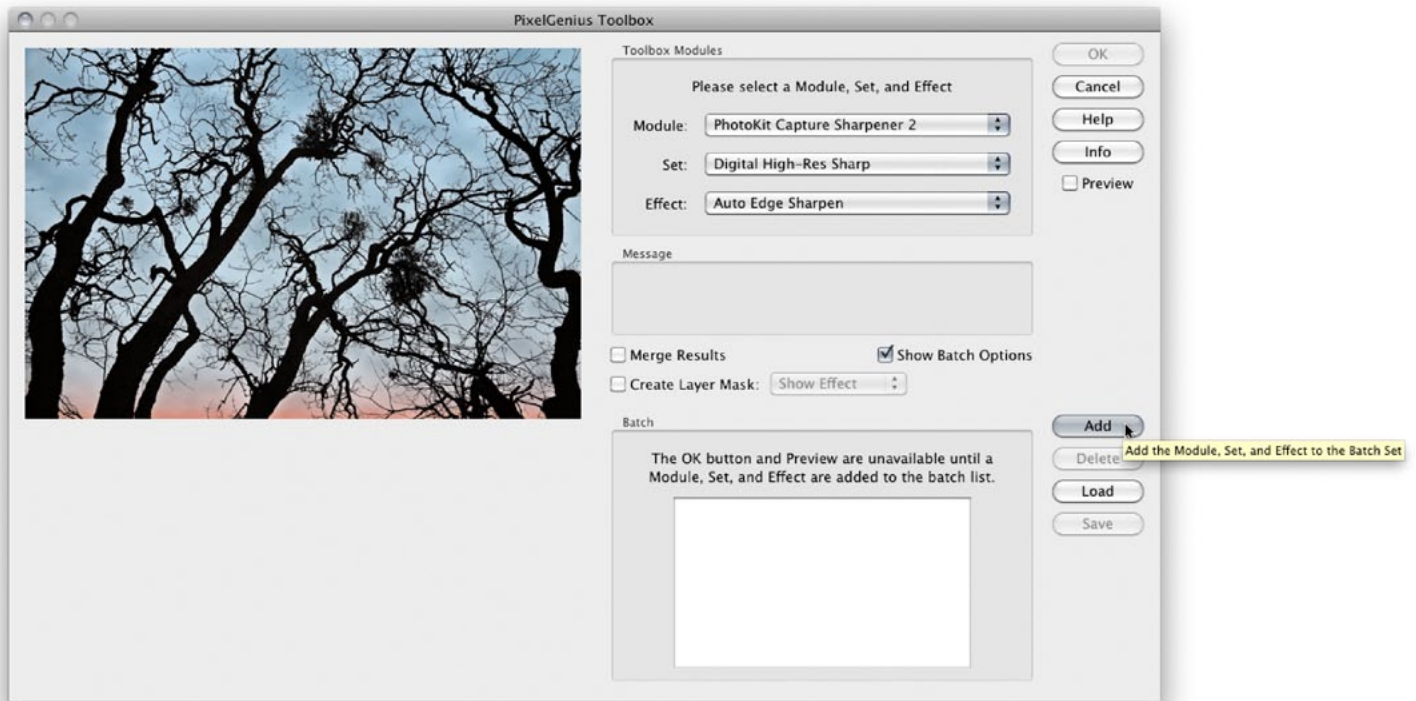
Multimedia Output Sharpeners.

Unlike the Contone, Inkjet and Halftone sharpeners that can resize without resampling, the Web and Multimedia Output Sharpeners can actually resample your image. The type of resampling or image interpolation will depend on your Photoshop's Preferences as shown in the figures below. Simply enter in the desired pixel dimension you want for the final output. The resampling will be done and then the image will be sharpened. Note: we suggest using Save for Web and Multimedia in Photoshop when saving images intended for the web. The actual ppi of your image won't matter after using Save For Web. We also suggest converting to sRGB before changing the image mode from 16 bits/channel to 8 bits.



The Web and Multimedia Output Sharpeners use whatever image interpolation that is currently set in Photoshop's Preferences. If you are doing a large downsample, we suggest using Bicubic Sharper which is designed for down-sampling. If the amount of resampling is a relatively low percent, we suggest the regular Bicubic.



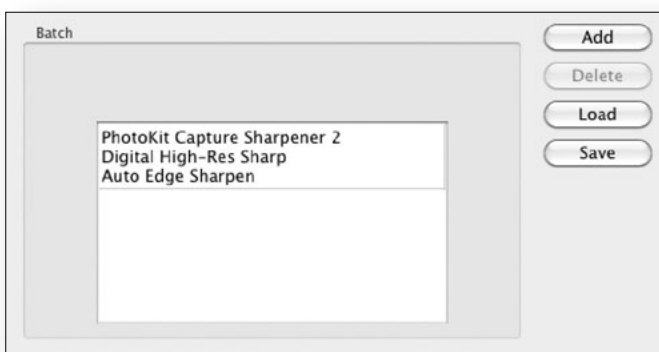


## Photokit Sharpener 2.0 Workflow Using the Show Batch Options

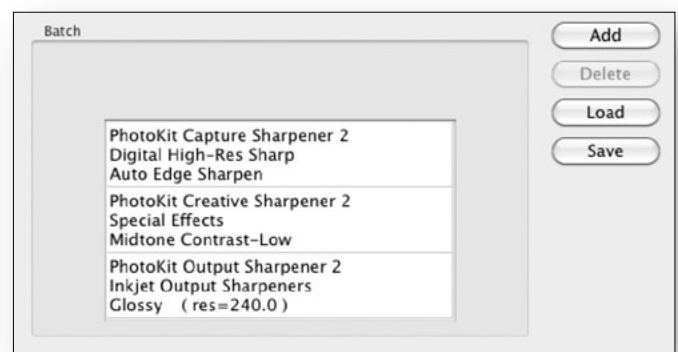
The Show Batch Options in PKS2 provides a solution for applying the entire sharpening workflow from Capture-> Creative-> Output from a single dialog. It also allows one to save preset workflows including PhotoKit Color 2 and PkotoKit 2 effects and easily apply them to similar images.

The Batch Dialog Options become available once the Show Batch Options checkbox is checked. After the first effect is chosen in the Module, Set and Effect, the effect is added to the Batch Window by clicking

the Add button. NOTE: the OK and Preview buttons are greyed out (not active) until you add at least one Effect. The selected effect will then appear in the Batch Window. Additional effects are then added and will appear in the Batch Window. When all desired effects are added, clicking the OK button will run the batch. The combined effects can be Previewed by checking the Preview Button. To insure a more accurate Preview click on the Preview window to view a selected portion of the image at 100%.

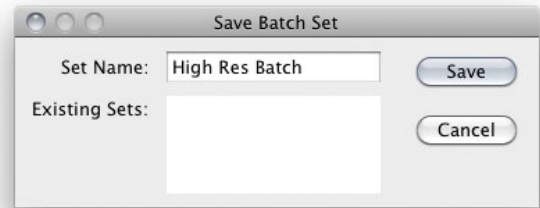
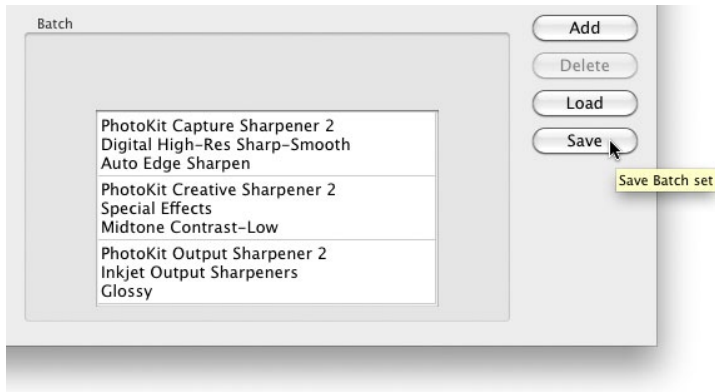


After selecting the Module, Set and Effect, click the Add button and that effect is added to the batch list. If you wish to delete an effect, highlight the effect and click on the Delete button.



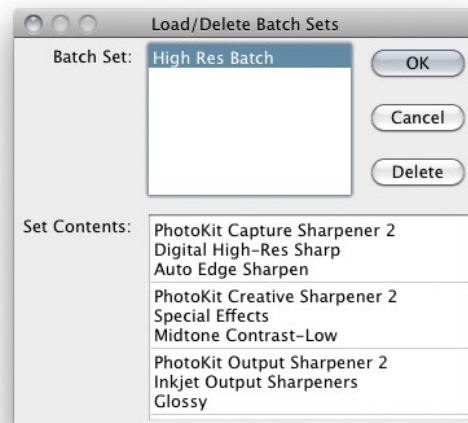
You can continue adding additional Effects by selecting an additional Module, Set and Effect. Note that you'll want to start with capture sharpening and will usually finish with output sharpening.

**NOTE:** The Batch Option checkbox is "sticky" and once checked it will remain checked until unchecked. To return the single effect functionality simply uncheck the "Show Batch Options" checkbox.



The Save Batch Set dialog allows you to name the Batch list for future use. Note: if you don't save the Batch list, the next time you launch PhotoKit SHARPENER 2, the effects will no longer be in the list. You must actually save the list to be able to access the saved Batch list.

Once you have added the various Effects to the Batch list, you can save the Batch list for future use. Click on the Save button and you will be presented with the Save Batch Set dialog.



In the above example the following effects were added to the batch list set:

1. Photokit Capture Sharpener 2 - Digital High Rez Sharp using Auto Edge Sharpen
2. Photokit Creative Sharpener 2 - Special Effects - Midtone Contrast - Low
3. Photokit Output Sharpener 2 - Inkjet Output Sharpeners - Glossy (res-240)

Using this batch, the user has the option to Merge the result of all effects into a single layer by selecting the Merge Results checkbox. Additionally a layer mask to hide or reveal the results can be added by selecting Create Layer Mask. Note that you must select the Merge Results checkbox in order to enable the Create Layer Mask option. Any batch can be saved and reused later by using the Save and Load buttons.

After sharpening and major corrections, you may

wish to either merge some layers or downsample to 8 bits per channel to avoid working with huge files. The question of when to merge or downsample is largely a matter of personal preference and the capability of your hardware. It's generally true that you'll get better results working in high-bit mode than in 8-bit mode, but after the big initial edits the advantages get smaller. We all have different pain points, so we recommend staying in high-bit mode until it starts to hurt.

## Using PhotoKit SHARPENER 2 with Camera Raw or Lightroom and Photoshop

We at PixelGenius know that many of our users are using either Camera Raw (ACR) or Lightroom or both, and we wanted to give PKS 2 users the optimal workflow to combine the best parts of all the potential applications. That said, it's really an either/or proposition. Either you use the capture sharpening in ACR or Lightroom and *not* in PKS 2 or you use the capture sharpening in PKS 2, not in ACR or Lightroom. You really can't use both successfully. However, there is a way of using all the products successfully and that's what this section is all about.

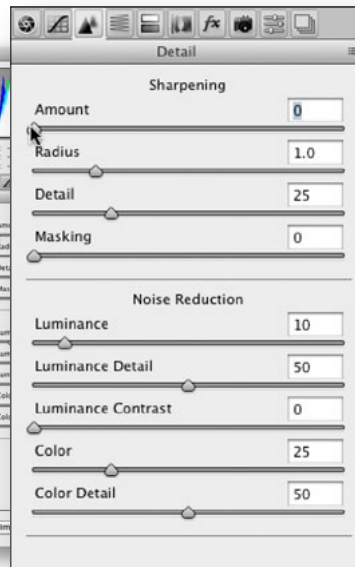
Regardless of whether you use ACR/Lightroom or PKS 2, the odds are real good that you'll be going through Photoshop at some point. Even though

Lightroom (and to a certain extent ACR) has minimized the necessity of running all your images through Photoshop, there is still a present need to process at least your best images in Photoshop. So here are the steps for creating a raw processing workflow which includes PKS 2.

There are really two basic options; either use ACR/Lightroom for capture sharpening or use PKS 2. In either case we strongly recommend doing the vast majority of your image adjustments at the raw processing stage. You always want to do major tone & color correction before sharpening and you'll want to do most if not all of your noise reduction as well. You should also take advantage of ACR/Lightroom's lens corrections prior to capture sharpening.



The Camera Raw main dialog.



The Camera Raw Detail panel showing the Amount set to zero.



The Camera Raw Lens Correction panel with the Enable Lens Correction option checked with the correct lens selected.

**Using PKS 2 & Camera Raw.** After adjusting the tone and color correction, the first step is to turn the Amount of the sharpening in the ACR Detail panel to zero. Regardless of the other sharpening controls, it is the Amount setting that applies the actual sharpening. In the figures above, we've set the Amount to zero. You will note that we have applied a small amount of Noise Reduction (even though this is a well exposed, low ISO image). We've found

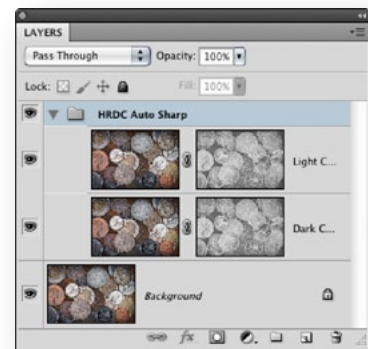
that nearly all images can benefit from at least a tiny amount of noise reduction and we feel that ACR/Lightroom's noise reduction is very good. You'll also see that we've enabled the Lens Profile Correction for the lens we used to shoot the original capture.

Once these settings have been applied, the next step is to open the image into Photoshop for additional processing using PKS 2 prior to printing. Our next step will be to apply some capture sharpening.





Selecting the PKS 2 Capture Sharpening.



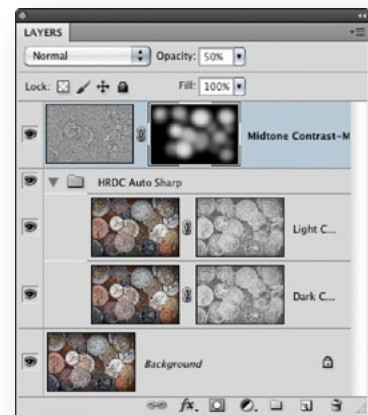
The layers, masks and layer groups created by PKS 2.

**Capture Sharpening.** Since we turned off capture sharpening inside of Camera Raw, the first step is to apply the PKS 2 Capture Sharpening. We've selected the Digital High-Res Sharp Set and the Auto Edge

Sharpen effect. The resulting layers and group are shown above right. If needed, we could modify either the layer masks or the overall layer opacity. The next step is to add some creative sharpening.



Selecting Midtone Contrast-Middle from Special Effects.



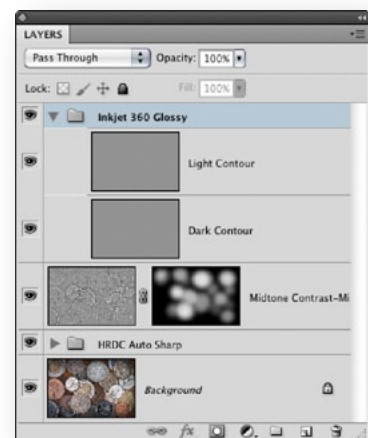
The Midtone Contrast-Middle layer with layer mask painted.

**Creative Sharpening.** While we are a fan of Camera Raw's Clarity tool, we using prefer using the PKS 2's version—the Midtone Contrast effects. In

the figure above we've selected the Middle version. The figure above right shows the final layer mask. The final step will be to do output sharpening.

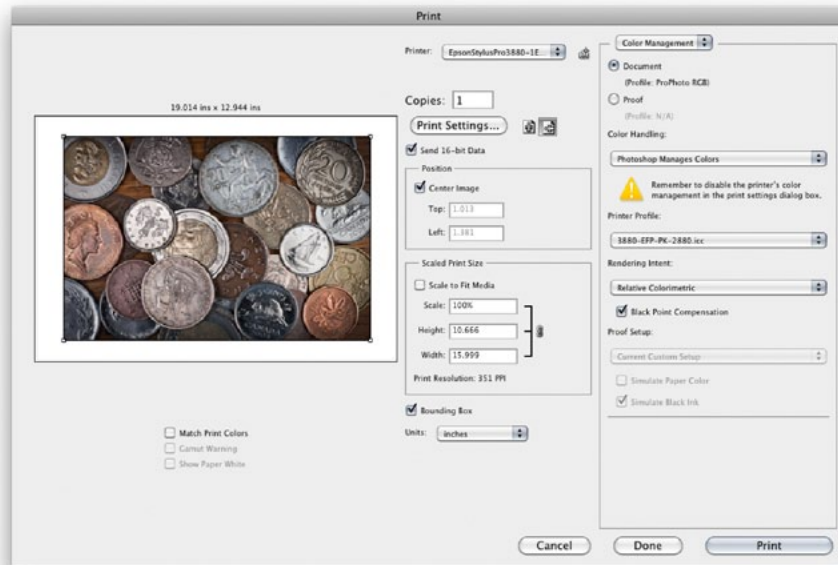


Selecting Inkjet Output Sharpeners Set and Glossy in the Effect menu. We've also set the Width to 16 inches.



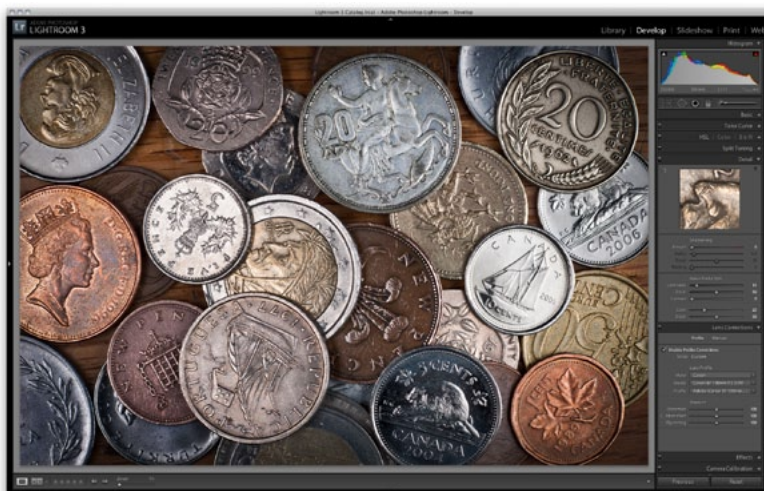
The final layer stack.

**Output Sharpening.** The final step in the sharpening workflow is to apply output sharpening. The figures on the bottom of page 34 show selecting the Inkjet Output Sharpeners Set and the and the Glossy Effect (lower left). You'll also note that we used PKS 2 to change the final print dimensions so the Width would be an exact 16 inches. The final layer stack is shown on the lower right figure on page 34. Although we haven't mentioned using Photoshop's soft proofing capability found under the View menu, Proof Setup we highly suggest using it prior to actually making a print from Photoshop (or even Lightroom if you are round tripping through Photoshop).

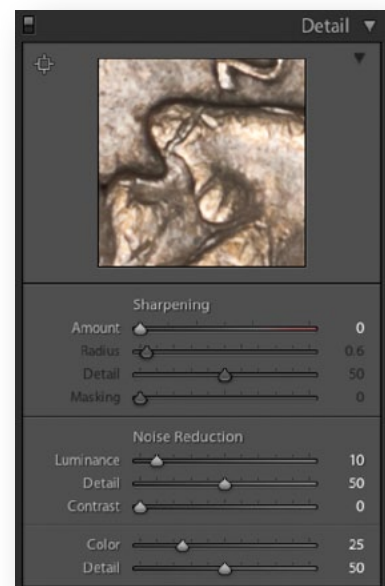


Printing the final image in Photoshop CS5's Print window.

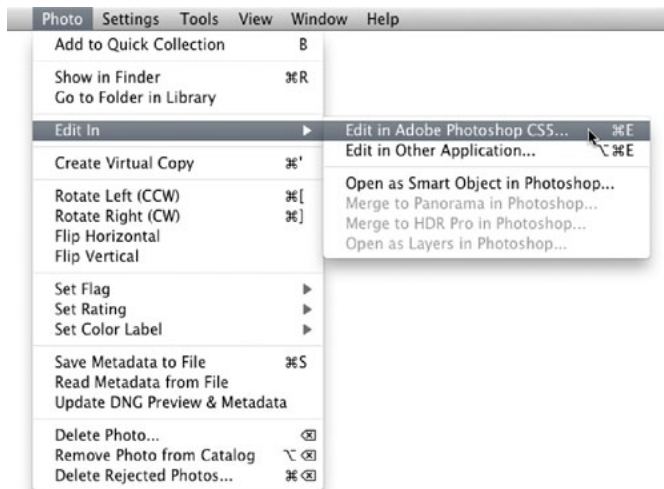
**Using PKS 2 & Lightroom.** The steps for using Lightroom and PKS 2 inside of Photoshop for capture, creative and output sharpening would be the same once you opened the image into Photoshop. You would start in Lightroom in the Develop module and turn the Amount slider in the Detail panel to zero. The figures below show the same image inside of Lightroom's Develop module. The lower right figure shows a close-up of the Detail panel. We used the same settings are we did for Camera Raw; zero in the Amount slider and 10 in the Noise Reduction.



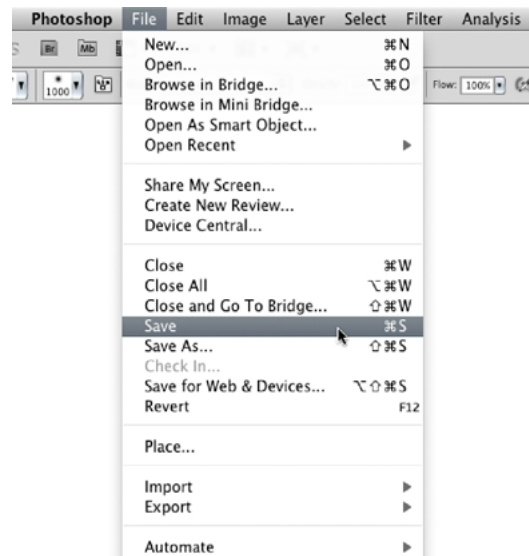
The image in the Lightroom Develop module.



Close-up of the Detail panel.



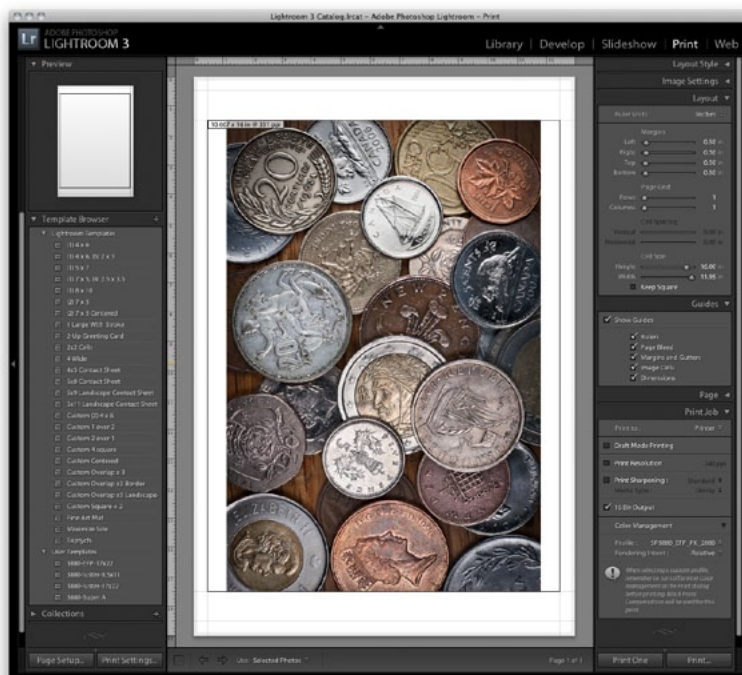
Opening the image from Lightroom to Photoshop.



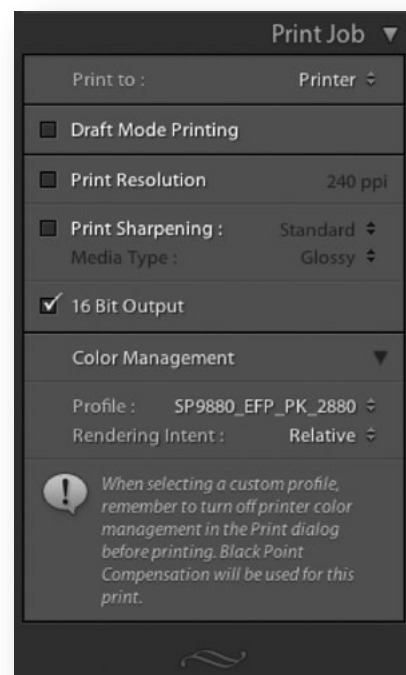
Saving the image from Photoshop adds the image back into the Lightroom catalog.

**From Lightroom to Photoshop to Lightroom** for Printing. Once you've done the tone and color corrections in Lightroom (and set the sharpening Amount to zero) the next step is to open the image from Lightroom into Photoshop as shown in the figure above left. In the Photo menu in Lightroom, select Edit in Photoshop. Depending on your version of Lightroom and Photoshop (and ACR), you may get a message about having Lightroom render the image. This is expected if the Lightroom and Camera Raw versions are mismatched. In

our case, Lightroom 3.3 and Camera Raw 6.3 (in Photoshop CS5) are matched. The steps required are the exact same steps shown previously on page 34. However, to use Lightroom to print, you'll need to save the image first so the processed tiff file is added back into the Lightroom catalog (above right). After saving the image, you can print from Lightroom. The key is to make sure you turn *off* output sharpening in Lightroom as shown on the lower right figure. Otherwise, you'll double sharpen for output (which is a bad thing).



The image in the Lightroom Print module after saving.



After output sharpening in PKS 2 you must be sure to uncheck the Print Sharpening checkbox.



## Lightroom Capture Sharpening & PKS 2.

What do you do if you do want to use Lightroom's capture sharpening functionality but still use PKS 2 for creative sharpening followed by Lightroom's output sharpening for printing? You adjust the image in the Detail panel of Lightroom's Develop module to get the best visual appearance at 1:1 (100% zoom) and then open the image from Lightroom to Photoshop to add PKS 2 creative sharpening.

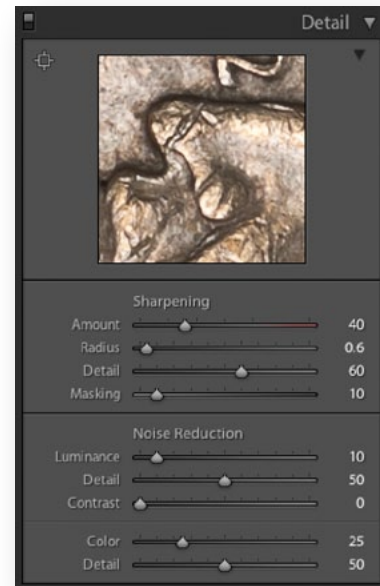
For this image, the prime difference is having to figure out the optimal capture sharpening in

Lightroom manually. As shown below right, we adjusted the image to get an optimal sharpening setting. The Amount is 40, the Radius is .6, the Detail is 60 and the Masking is set to 10. How do you determine the settings? Setting visually is the only option.

In PKS 2, the only sharpening effect we used was the single Midtone Contrast-Middle as shown in the center figures on page 34. Since we'll be doing output sharpening in Lightroom we bypassed the output sharpening in PKS 2 as well.



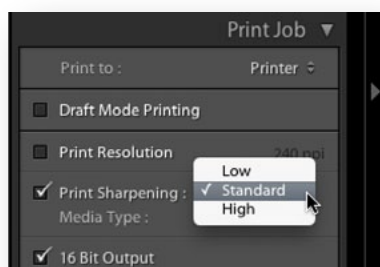
The image in the Lightroom Develop module.



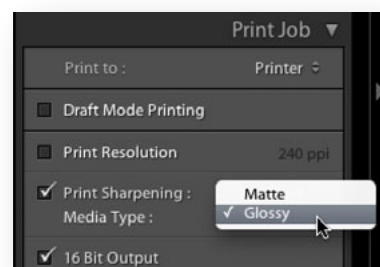
Close-up of the Detail panel.

**Printing from Lightroom.** The big difference in this situation is rather than doing output sharpening in PKS 2 you'll make use of Lightroom excellent output sharpening. Why do we say Lightroom's output sharpening is excellent? Because PixelGenius worked with Adobe and the Lightroom team to bring PhotoKit Sharpener's output sharpening routines to Lightroom. From our point of view, you'll get optimal output sharpening whether you do it in PKS 2 or Lightroom—it's kind of like having the best of both worlds. To print from Lightroom

you'll need to check the option for Print Sharpening. As shown below, you'll need to set the amount: Low, Standard or High. Then set the Media Type to either Matte or Glossy. The same rules for PKS 2 output sharpening apply to the media settings. In general, if you've done a good job of capture sharpening in Lightroom then we suggest Standard but test all three amounts on your own images. You could also choose to do output sharpening in PKS 2 but you would need to turn off output sharpening in Lightroom as shown on page 36.



Setting the Print Sharpening amount to Standard.



Setting the Media Type to Glossy.

## About PhotoKit SHARPENER 2.

To see your serial number for PKS 2 or to deactivate your install of PKS 2, you can access the About PhotoKit SHARPENER 2 splash screen from within Photoshop.

On Mac you'll find it under the Photoshop menu in the About Plug-in submenu. On Windows it's under the Help menu About Plug-in submenu. The splash screen is shown below.



The PKS 2 splash screen  
(Note: the actual serial number has been obscured).

## Thanks to You from the PixelGenius Team.

We hope this manual is helpful to you. We want to thank our users for all their help and support over the years—the pleasure has truly been ours. We started PixelGenius with the goal of making useful products that we would like to use. We did and we do.

But, it is because of the strong support of our user base that we created PhotoKit SHARPENER 2 so to you, we say thanks. We would also like to thank and remember two former members of PixelGenius

who sadly are no longer with us. Mike Skurski was the engineer that originally got this merry band of brothers together. His insight and dedication allowed us to create simple tools that we wanted to use. We also wish thank and remember Bruce Fraser who was the original inspiration, designer and product manager for PhotoKit SHARPENER. We miss both—as does the entire industry. We also want to thank both John and Thomas Knoll for creating Photoshop in the first place (otherwise we couldn't develop plug-ins). Thanks guys!.

## Additional Info and Resources:

In addition to this manual, be sure to check out the PKS 2 product page for additional information:  
[www.pixelgenius.com/sharpener2](http://www.pixelgenius.com/sharpener2)

For product updates and downloads:  
[www.pixelgenius.com/downloads.html](http://www.pixelgenius.com/downloads.html)

For Tech Support please use the web form found at:  
[www.pixelgenius.com/support.html](http://www.pixelgenius.com/support.html)

For information about your order from eSellerate, our on-line fulfillment provider, please visit:  
[www.store.esellerate.net/store/support](http://www.store.esellerate.net/store/support)

## Credits for PKS 2:

**Product Design:** Martin Evening, Bruce Fraser, Mac Holbert, Seth Resnick, Andrew Rodney, Jeff Schewe & Mike Skurski

**Product Manager:** Mac Holbert

**Specification Manager:** Jeff Schewe

**Software Architecture:** Mike Skurski

**Software Engineering:** Michael Keppel