

# Preparing Images for Delivery

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So, you've done a great job for your client. You've created a nice image that you both agree meets the requirements of the layout. Now what do you do? You deliver it (so you can bill it!). But, in this digital age, how you prepare an image for delivery can make or break the final reproduction. Guess who will get the blame if the image's reproduction is less than satisfactory? Do you even need to guess?

What should photographers do to ensure that their images reproduce well in print? Take some precautions and learn the lingo so you can communicate, because a lack of crystal-clear communication is at the root of most every problem on press.

It should be no surprise that knowing what the client needs is a requirement of professional photographers. But does that mean a photographer in the digital age must become a prepress expert? Kind of—if only to know exactly what to supply your clients.

There are two perfectly legitimate approaches to the problem of supplying digital files for reproduction. One approach is to supply RGB files, and the other is to take responsibility for supplying CMYK files. Either approach is valid, each with positives and negatives.

If you supply RGB images, somebody, somewhere down the line will have to separate those RGB files to CMYK. Why? Simply because photomechanical, halftone reproduction is based on printing dots on paper with cyan, magenta, yellow, and black (the K in CMYK) inks. Aside from exotic (read really expensive) alternative printing processes, CMYK is the standard method of reproduction. So, to print your RGB file, it must be separated to CMYK.

Many photographers choose not to do the CMYK part and deliver only RGB files. If you prepare the files correctly and engage in successful communications with the downstream production people involved, this can work well. Digital Image Submission Criteria (DISC, for more information see [www.disc-info.org](http://www.disc-info.org)) is a working group of the Idea Alliance, an industry group made up of many of the top publishers and printers in the U.S. The DISC standards are reasonably useful, particularly for editorial photographers submitting digital images for editorial use.

However, submitting RGB images to your client means somebody other than you, the photographer, will be making the final decisions about how the images reproduce. For that reason, many photographers choose to supply separated CMYK files, often along with RGB files, to their clients. With a little solid experience and knowledge, this process can help photographers ensure accurate final reproductions. Done wrong, it can be a disaster, which might be why some photographers shy away from the challenge. Making RGB-to-CMYK separations is not rocket science. If you're off a little bit, you won't go spinning off into space. With good communication between you, your client, and the prepress operator or printer, you should be able to do an excellent job if you prepare the files correctly.

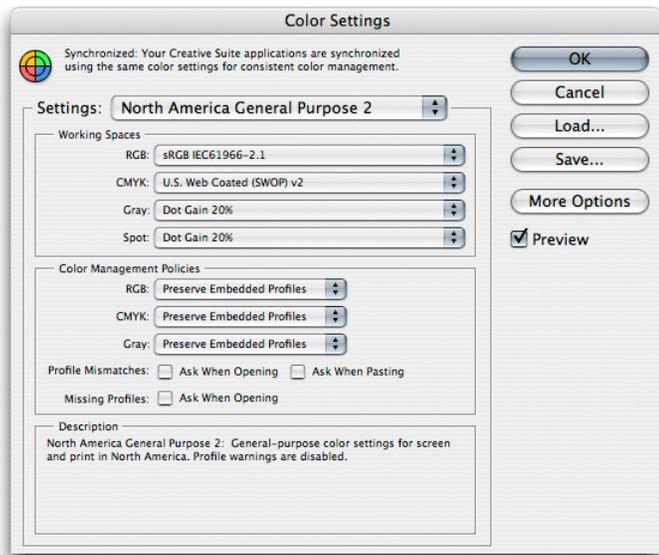
## How to prepare RGB files for CMYK

Obviously, good reproduction in CMYK requires good photography and good RGB files in the first place. You also need to understand enough color management to enable the proper settings in Adobe® Photoshop®, and you need to make sure you have an accurately calibrated and profiled display. Anyone working professionally really should invest in a decent hardware and software display-profiling package. You'll need it even if you don't supply CMYK and deliver RGB files.



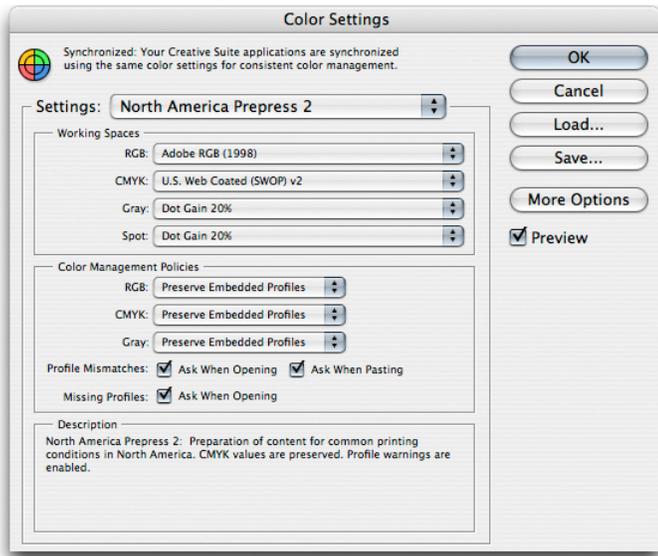
An image in Photoshop CS2. The image is a scan from a 6 x 7 chrome.

The practice outlined below will work just as well with digital captures as it will with scans.



Photoshop Color Management settings

By default, the color settings in Photoshop CS2 are set to North American General Purpose 2 (NAGP2), which, for separating RGB files to CMYK is less than optimal. I would strongly suggest changing the default to North America Prepress 2 (NAPP2), or the setting that best reflects your country's standards if you are outside of the U.S.

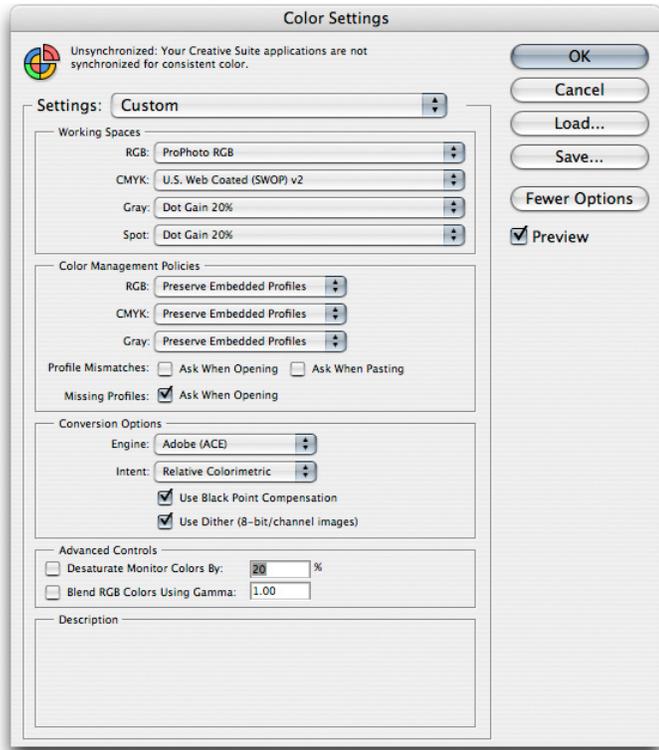


*NAPP2 color settings in Photoshop CS2*



*You can customize any of the default color settings.*

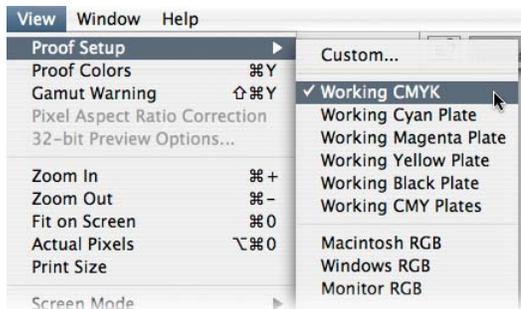
I would suggest two additional changes to the NAPP2 settings. First, deselect Ask When Opening and Ask When Pasting. Since you already have the policies set to Always Preserve Embedded Profiles, you don't need to worry about seeing these warnings; Photoshop will always preserve the embedded profile when opening and pasting image data. The only time it's useful to see a warning is when there is no profile in the image.



I personally go even further and generally work with ProPhoto RGB as my RGB color space, but leave the rest of the settings the same.

**Note:** To load ProPhoto RGB as a working space, click More Options. If you have the entire Adobe Creative Suite installed and change your Photoshop CS2 color settings, the Color Settings dialog box will indicate that your Adobe Creative Suite color settings are no longer synchronized. If you save your custom settings, you can synchronize your Adobe Creative Suite applications in Adobe Bridge by using your named custom settings.

## Soft proofing and gamut warning

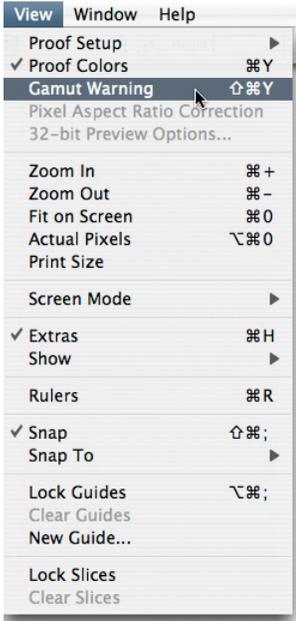


Choose View > Proof Setup > Working CMYK to see a soft proof of your RGB image.

When you have an RGB image open, particularly one in a wide gamut such as ProPhoto RGB, you'll see many colors that simply cannot be photomechanically reproduced in CMYK. The gamut, or the total colors that can be reproduced, is much smaller in CMYK than it is in RGB. As a result, you need to deal with the reduction of the gamut, either by compressing or clipping the colors that won't reproduce. If you choose View > Proof Setup > Working CMYK, you can

view your RGB image through the soft proof of your working CMYK, which in this case is U.S. Web Coated (SWOP) v2. SWOP, which is a fancy way of stating standard web offset printing, is the standard method of printing for magazine work in the U.S. If you are supplying what is called sheet fed, the job can get a little more complicated, since many printers tweak their presses and use alternative inks and paper when printing sheet fed. In the case of sheet fed, it's optimal to obtain an ICC profile directly from the printer, something that, because of politics more than technical reasons, is often not available.

Once you turn on soft proofing you'll often notice some colors change, either in saturation or in density. An RGB file has to go through some pretty extensive changes to end up as CMYK and vivid, saturated colors are always a challenge to reproduce.



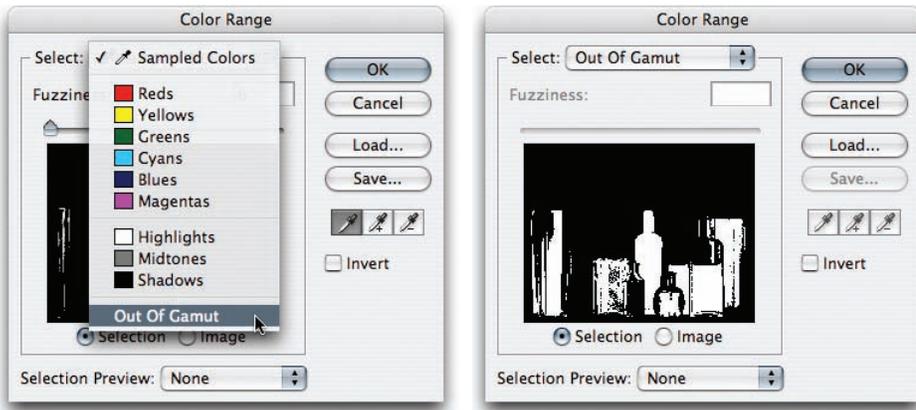
Choose View > Gamut warning to see which colors in your image won't reproduce well.

One method of checking what colors will and won't reproduce is to turn on Gamut Warning in Photoshop. When Gamut Warning is turned on, the colors that are out of gamut or not reproducible are shown in a gray overlay, as shown below.



Gray overlays indicate which colors in an image won't reproduce well.

In this image, the out-of-gamut warning pretty much covers all of the vivid colors. There are steps you can take to alter the colors to bring them into gamut. One of the more direct methods is to use the Color Range selection tool in Photoshop.



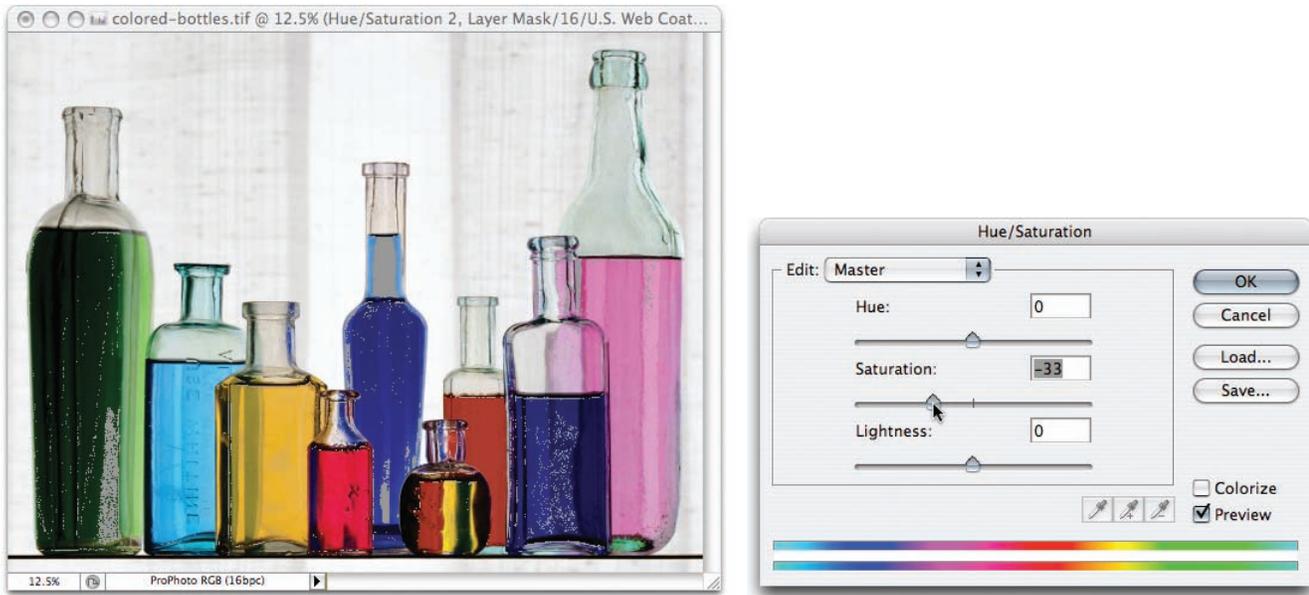
Choose Out Of Gamut from the Select pop-up menu in the Color Range dialog box to select all out-of-gamut colors in the image.

One of the options in the Select pop-up menu is to select Out Of Gamut colors. The resulting selection will represent all out-of-gamut colors in your image, as shown below.



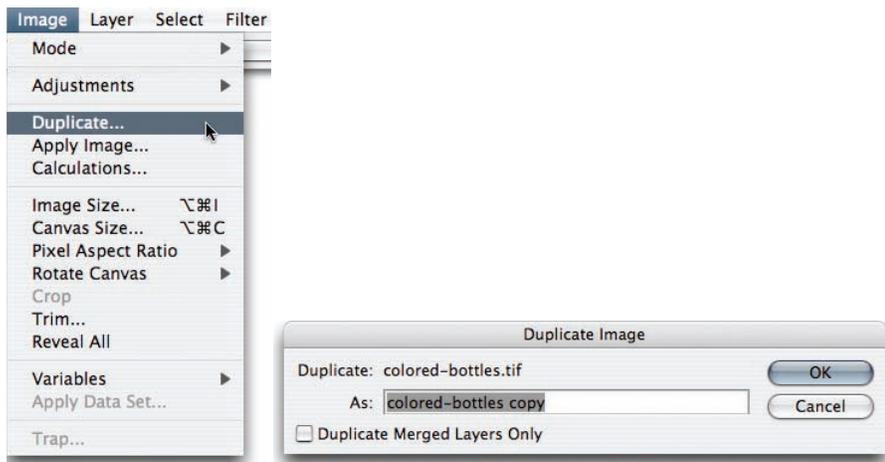
Out-of-gamut color selected in an image in Photoshop

You can adjust the amount of out-of-gamut areas by reducing the saturation in the image. However, a reduction of 33% is a pretty major move and may not really help your image. The one rather severe limitation with the Out Of Gamut warning is that it doesn't tell you how *far* out of gamut your colors are. It can only show what colors are out of gamut, even if by the tiniest amounts. So, to completely remove the gamut warning gray areas is not really a useful goal. A far more useful method is to look at how your image will appear when reproduced and see what happens to the colors directly on the computer display.



Reducing the saturation of the image reduces the amount of out-of-gamut areas.

To really make use of soft proofing takes a bit more effort than just turning on the working space soft proof.



To make the best use of soft proofing, work with both the original image and a duplicate.

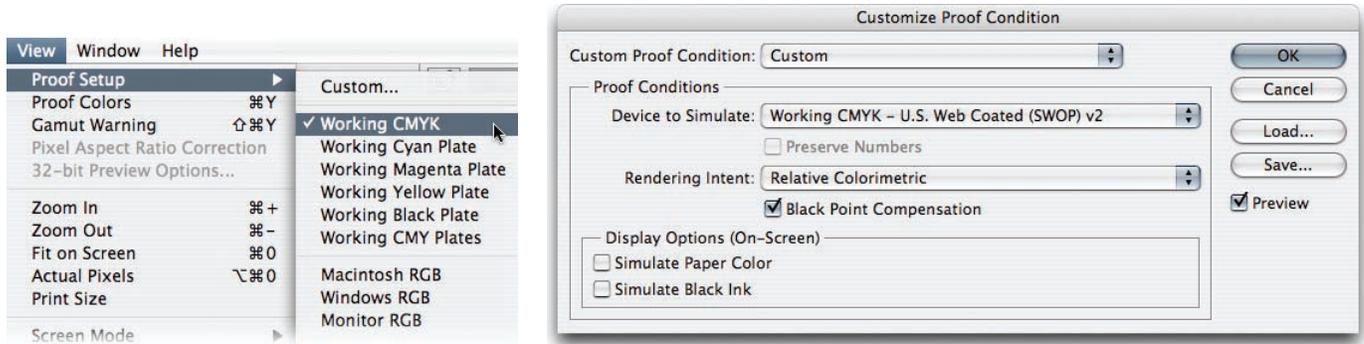
The trick is to work with both your original image as well as a duplicate. Choose Image > Duplicate to make a copy of your working file. You'll end up with two images, side-by-side.



The original image (left) and the duplicate (right)

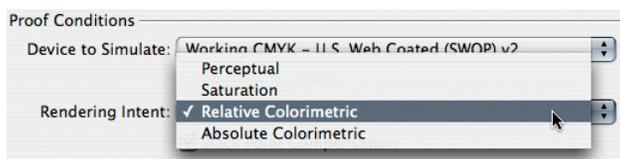
Place your original image on the left and the duplicate on the right. Click the window containing the original image to make it active.

Instead of simply using the Working CMYK option, choose Custom to open the Customize Proof Condition dialog box. Ensure that Device To Simulate is set to your correct CMYK profile (or in this case, the Working CMYK).



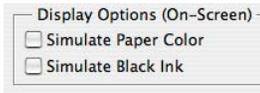
Proof Setup is on the View menu (left). But I prefer to control the proof condition by choosing Custom (right).

Additionally, you'll need to set the Rendering Intent. The rendering intent is the method by which the colors in the image will be compressed or clipped when separated to CMYK. In general, Relative Colorimetric is often the best intent, but that will depend entirely on your specific image and output profile. So, it's useful to actually see which intent is optimal. For photographic images, either Perceptual or Relative Colorimetric is considered to be the best.



Choose the rendering intent from the pop-up menu in the Proof Conditions dialog box.

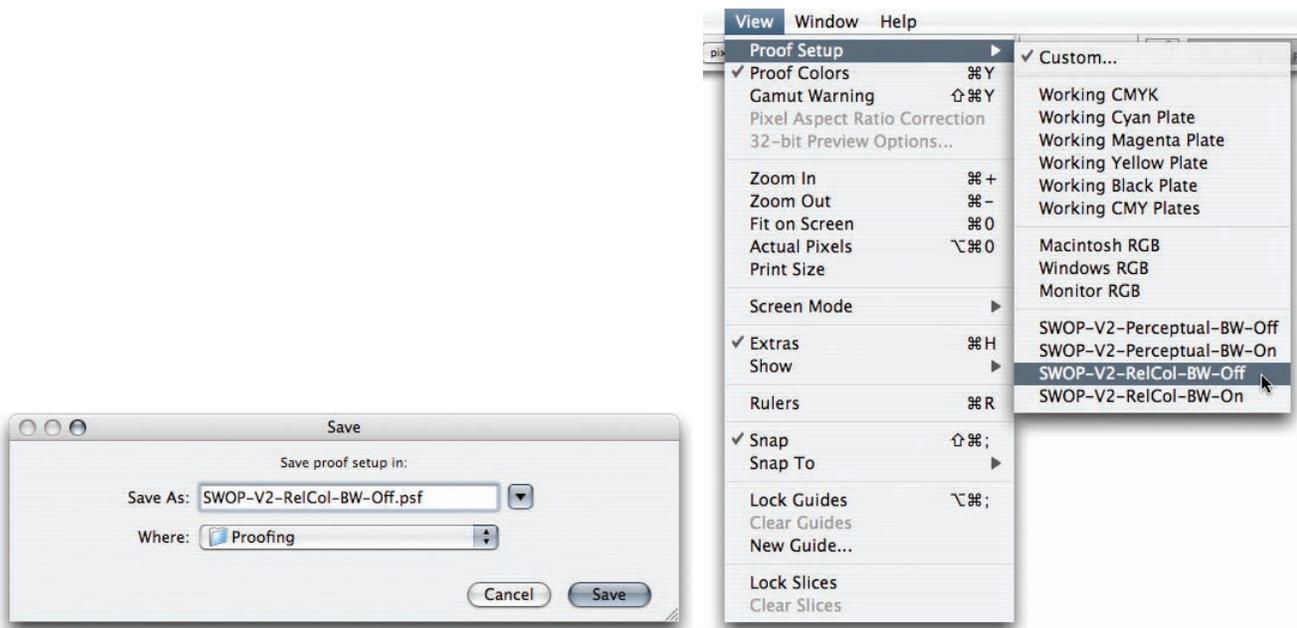
The Perceptual intent tries to compress the out-of-gamut colors to fit within the maximum colors contained in the output profile. The method of compression is to try to maintain a perceptual uniformity to the relationships of the colors. The Relative Colorimetric intent will, in essence, clip or chop off those colors that cannot be reproduced. The usefulness of Relative Colorimetric is that while colors can be reduced, the luminance values of the image won't change much.



The Display Options radio buttons are shown above.

One other important setting for soft proofing is whether or not to use Display Options (On-Screen). If you haven't used soft proofing extensively, I would not suggest starting with the Simulate options (Simulate Paper Color and Simulate Black Ink) on. These options are useful to see the effects of the reduction of the dynamic range (or contrast ratio) of the final printed reproduction. However, you'll need to practice to learn how to adjust for the reduced contrast range of the final paper.

If you save your soft proof setting, you can choose the named setting from the Proof Setup menu and you'll be able to use it later if you want to use it to produce a printed proof of the image.



Save your soft proof settings (left), so that you can choose them quickly from the Proof Setup menu (right).

In the image below, the magenta is less saturated and the two blue bottles have lost a lot of color and saturation. Blues often turn too purple (too much magenta); that can be helped a bit by making adjustments. However, there is nothing that can be done to make up for the loss of a deep saturated royal blue color. Deep blues and purples are particularly limited in the CMYK color gamut because cyan and magenta simply cannot produce a super vibrant blue—this is a fact of life that you must deal with. I just never show my clients the original RGB file.



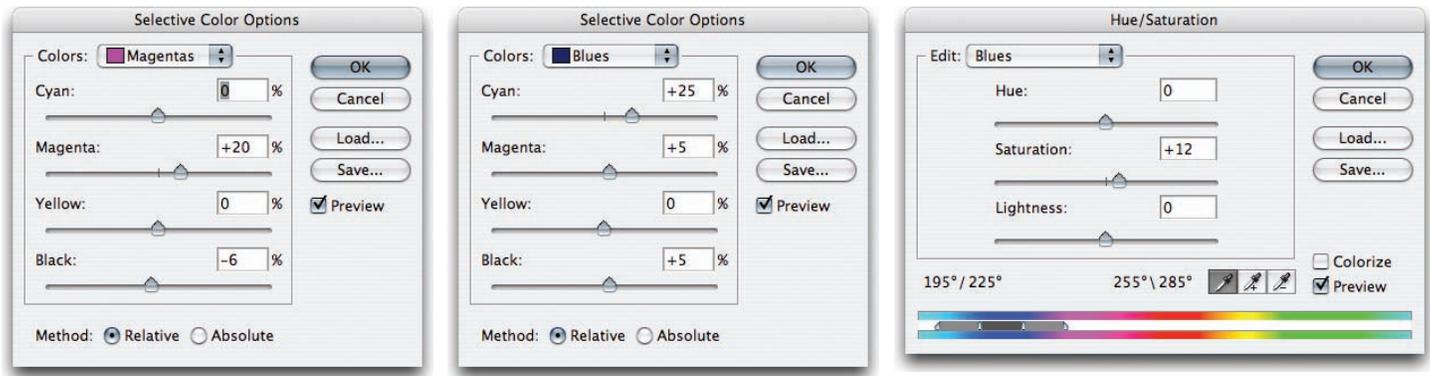
The image on the left shows the result of soft proofing.

When a client is looking over my shoulder to examine an RGB image, I turn on CMYK soft proofing before he ever gets to see the RGB version. Why show him something he can never attain in reproduction? That RGB > CMYK conversion not only will depress you, but your client will see the colors change when going to CMYK and who will he blame? Probably not the limitation of the photomechanical process. So, my clients really never see anything they can't get in print.



On the left, two adjustment layers have been added to try to get the CMYK soft proof to look as close as possible to the original image on the right.

While not perfect, I've improved the result through using a couple of adjustment layers: a Selective Color and a Hue/Saturation adjustment.

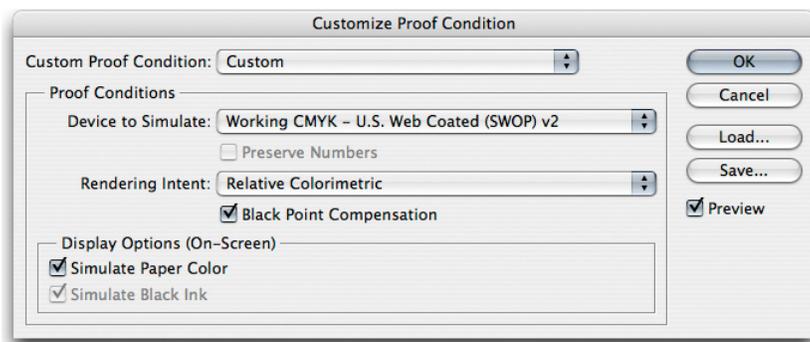


The actual adjustments made to the image above. The left and middle images show two separate Selective Color Options adjustments and the right image shows the Hue/Saturation adjustment.

In Selective Color, I adjusted the magenta to have a relative percentage boost as well as boosts to the Cyan, Magenta, and Black in the blue color. The Saturation adjustment increased the blue saturation as much as possible without breaking the colors.

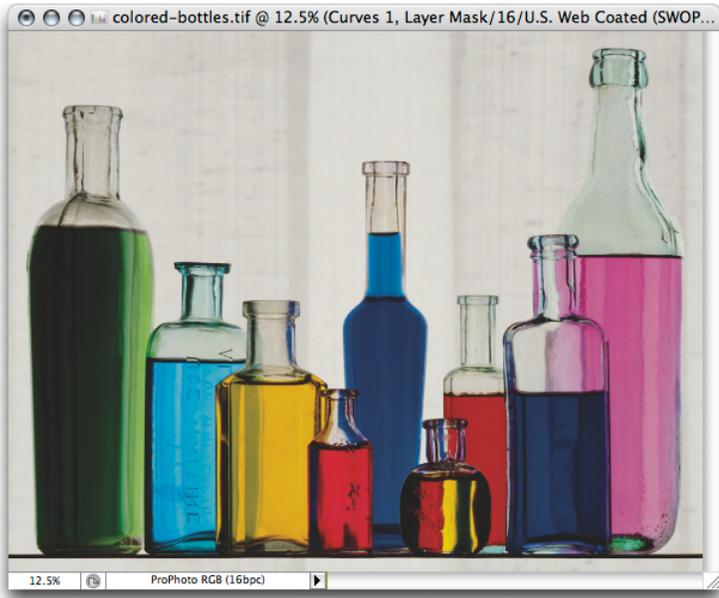
While it doesn't have the same brilliance of the ProPhoto RGB original, the soft proof is an accurate preview of what the colors will look like on press. Adding the tweaks will help the color as much as you can with traditional CMYK separations.

Another factor that is going to happen when your image hits the printed page is a severe reduction in the dynamic range of the image, meaning the blacks will be a lot less black and the whites a lot less white. There is a way of previewing this loss of dynamic range, but a warning: it will make your image look even worse. Why? Because the printed page simply can't compete with today's bright CRT or LCD displays for dynamic range.



When soft proofing, select the Simulate options to soft proof the dynamic range of the printed reproduction.

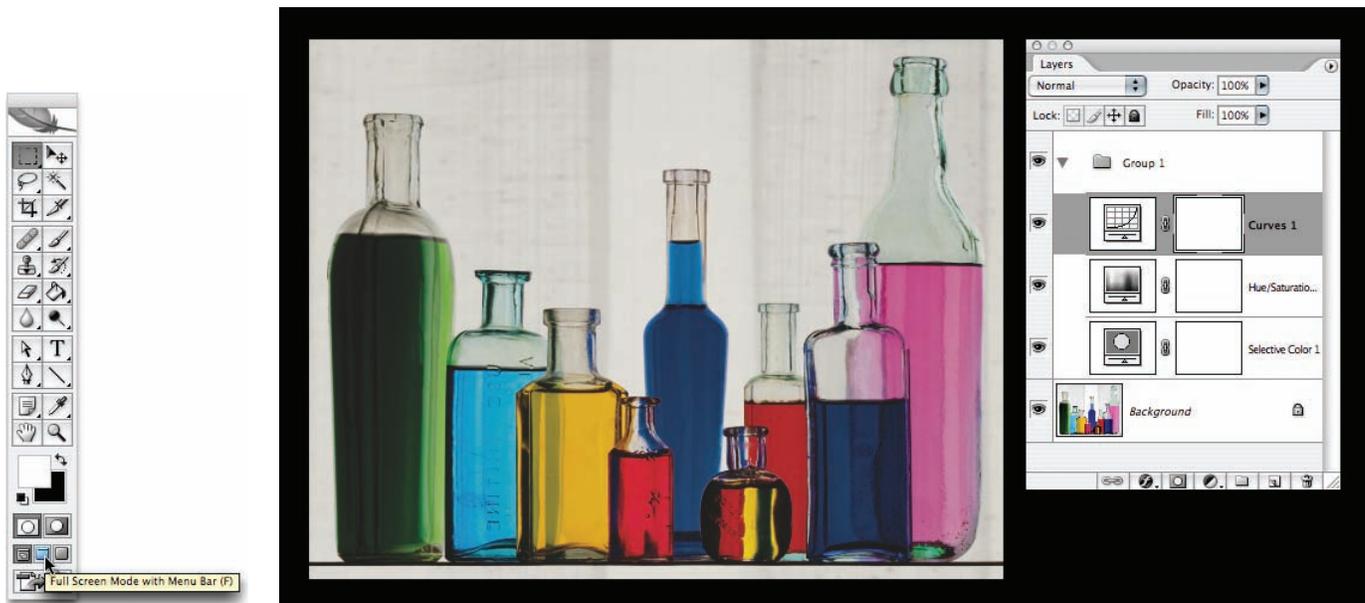
To soft proof the dynamic range of the printed reproduction, go into the Customize Proof Condition dialog box again and select both Simulate Paper Color and Simulate Black Ink. Selecting these options will make an Absolute Colorimetric rendering from the image to your screen matching both the dimness and yellowed looking color of standard commercial printing paper as well as the reduced black attainable with CMYK inks.



A soft proof with Simulate Paper Color and Simulate Black Ink selected

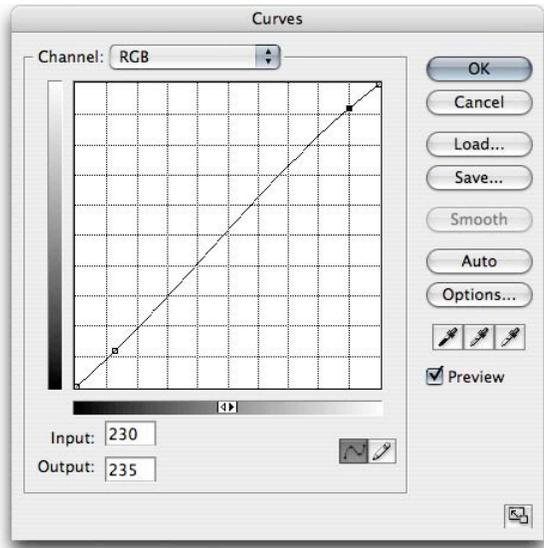
Well, I told you it would look bad. And it does. But the soft proof is pretty darn accurate in its prediction of what the image will look like reproduced on press. Sad huh? But that's life. However, it really won't look this bad. Because the eye adapts to the whitest portion of your field of vision, your eyes are not using the white of the paper as the identifier of the white point of a scene. When looking at an actual printed piece, the eye will identify the brightest and whitest portion of what you see as white and adjust all the other colors and luminosity accordingly. So, you need to eliminate as much white before your eyes as possible when soft proofing to adjust the effects of the reduction of dynamic range and the yellowing of the whites.

By switching your viewing mode in Photoshop to full screen mode, either with the dark gray or better yet, the black canvas background, you can cut down on the amount of the surrounding white elements on screen so the image will look a little less bad (but only a little).



Change the screen mode by using the toolbar or pressing the F key. On the right the image is shown against a black background.

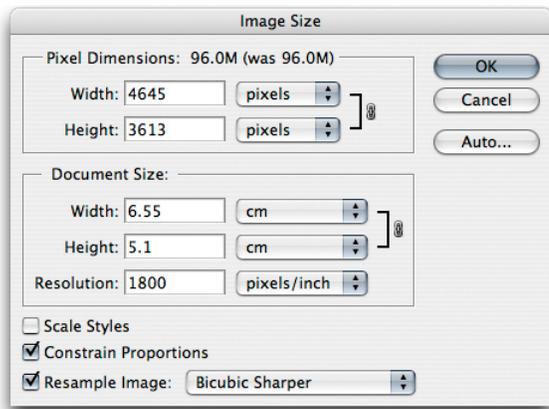
Often a slight tweak in the contrast of an image will help punch the image back toward the way it looked before the CMYK process soft proof made it look so bad.



A Curve dialog showing a slight increase in contrast to adjust the image for the reduced dynamic range of the printed image.

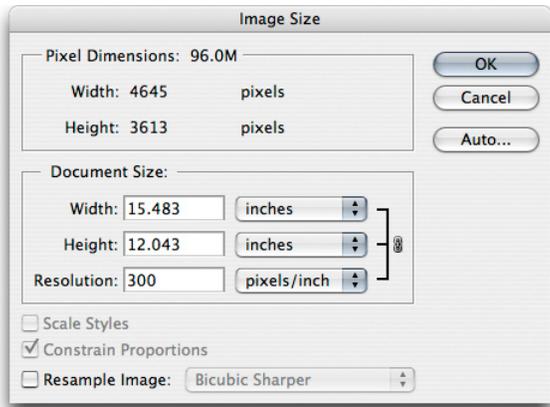
## Final image sizing

Once your RGB image is prepped for CMYK separation, you should do final image sizing. Obviously, if you do not know the exact final reproduction size, you can't do any final exacting resizing, but you can make sure the image is in the correct resolution realm.



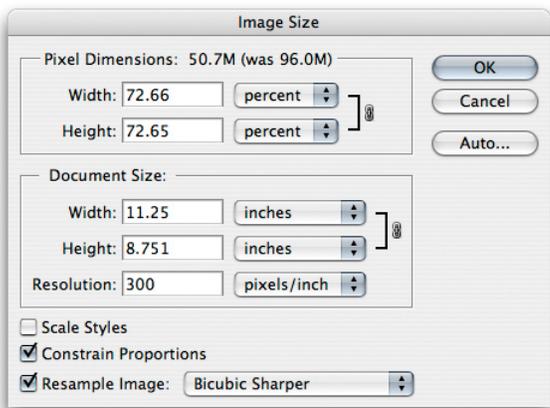
The image size and resolution of the original scan. Both the resolution and image size need to be corrected.

For this particular image scan, it's important to set the units to match the final usage. In this case, the scan was done at 1,800 pixels/inch (ppi), while the dimensions were in centimeters. Photoshop doesn't particularly care what the units are; you can change the ratio of the units and dimensions by deselecting Resample Image and changing the units of the image. You don't need to resample the image, just change the units and dimension. The actual pixel count remains the same. However, for page layout applications the dimensions and units do matter.



The Resample Image option is deselected and the Resolution has been changed to 300 pixels/inch. There is no resampling involved, only the ratio of the pixel density has changed.

Here the pixel dimensions have been changed to inches. The image dimension of 15.48" x 12.04" is too large for the intended 8.5" x 11" paper. If delivered at this dimension, somebody downstream will need to resample the image. Also note that only images sized to their final dimensions can be accurately and properly sharpened for reproduction.

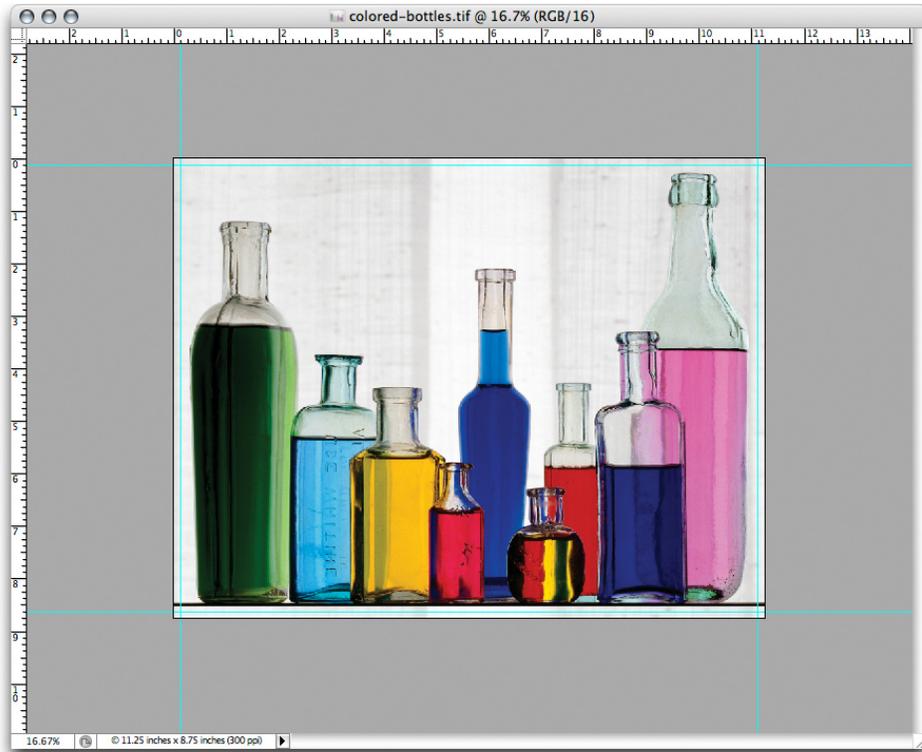


The image size and resolution have been resampled for the final reproduction size.

The image has been set to the correct units and the resample option is selected. The image will be sized correctly for 8.5" x 11" full-bleed reproduction (the outer dimensions have been set to 11.25" x 8.75" to allow for a 1/8" bleed). If the image were to be placed in an image box in a page layout application, the image could have been sized to that of the image box. But allowing for bleed is yet another small service that the photographer can provide, setting the final image crop.

*Note: For downsizing, the Bicubic Sharper option improves resampling.*

Once set to the final image dimension, you can use guides in Photoshop to double-check where the image will be cropped. While these guides will not be used by a page layout application, it's still useful to indicate the guides in the event that somebody downstream opens the image in Photoshop. Guides are saved in Photoshop files as metadata and can be preserved for later use.



*Use guides in Photoshop to double-check where the image will be cropped.*

## Image sharpening

Once an image is set to the final size and resolution, one additional step is required for optimal reproduction—image sharpening for output. There is a lot of mystery surrounding image sharpening. While Photoshop has many tools to apply sharpening routines, knowing how to sharpen and by how much can be a problem, since viewing an image on a computer display is a rather poor indicator of the requirements needed for halftone reproduction.

There are some generalities. Bruce Fraser, co-author of *Real World Photoshop* has indicated that the required sharpening should produce an edge halo of between 1/50 – 1/100 of an image. The halo is an increase of the apparent edge contrast of an image. At between 1/50 – 1/100 of an image, the halo should be invisible to the naked eye and yet produce a crisp edge in reproduction.

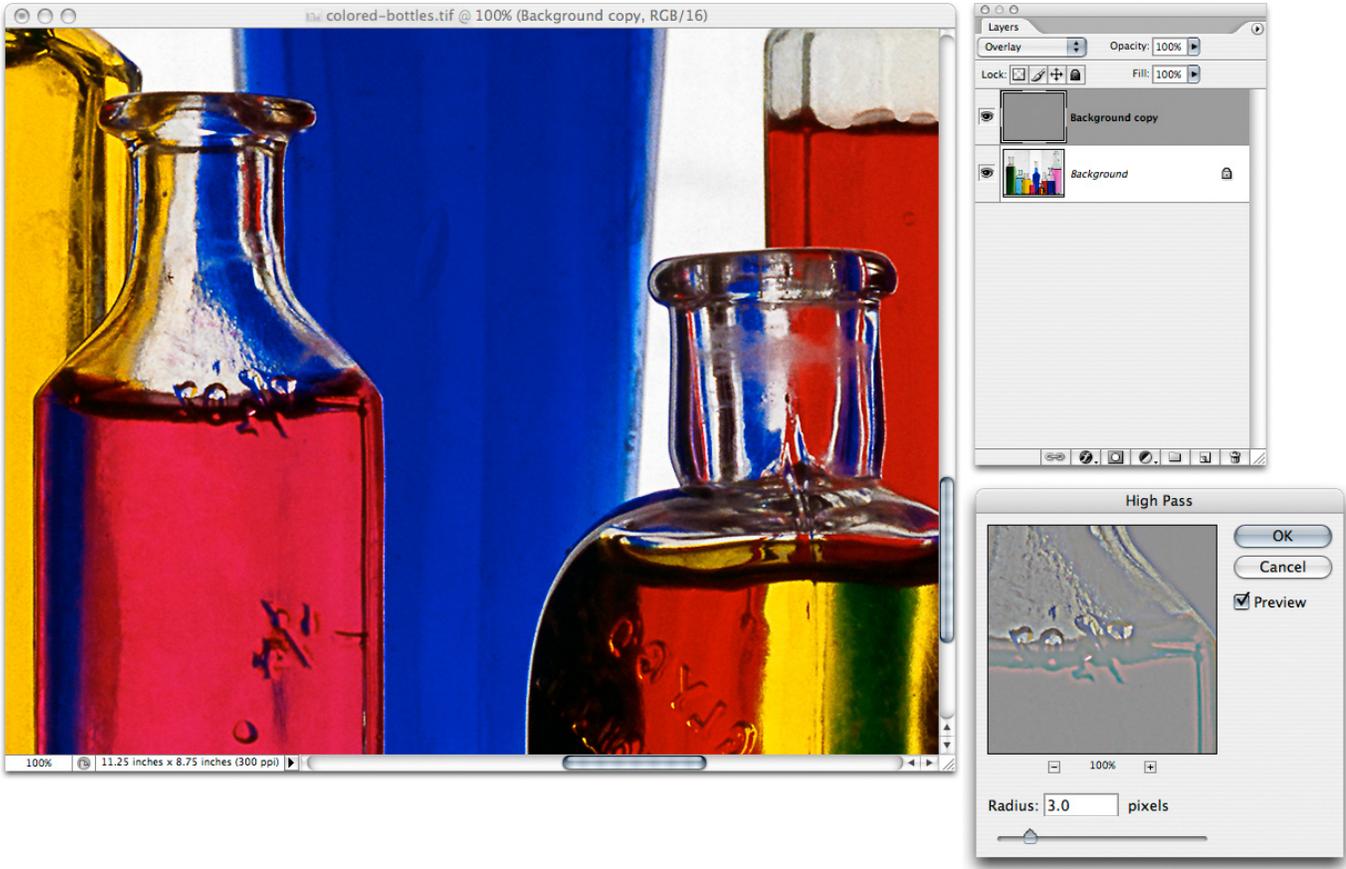
The other problem inherent with determining image sharpening is the fact that a computer display is a poor tool to evaluate image sharpening. If you deliver an image whose pixel resolution is twice that of the halftone line screen ruling, four image pixels will be dithered to produce one halftone dot. However, many “experts” tell people to view their images at a 100% zoom inside Photoshop to evaluate the effects of sharpening. Yes, you need to view your images at 100% or larger to see the actual effects of sharpening on the pixels, yet the resulting image in Photoshop will be too large to evaluate the amount of sharpening required. To more accurately predict the amount of sharpening required, a more useful screen zoom of 50% will simulate the effect of the halftone screening. At 50%, four image pixels are dithered to produce one screen display pixel.



*An image without output sharpening. When printed, the image won't be crisp.*

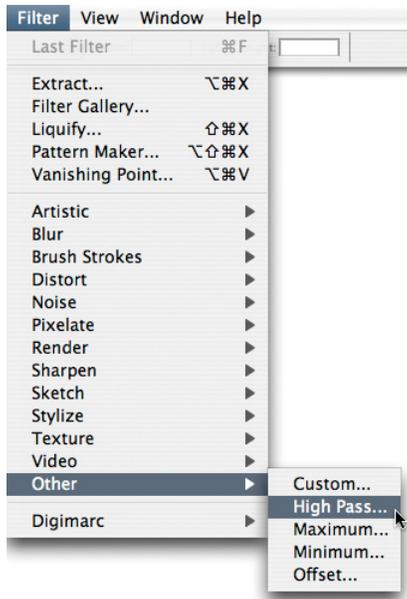
The image above, at a zoom of 50%, has no additional output sharpening applied. If delivered like this, the resultant halftone reproduction will be less than crisp. The dithering of the halftone dots will introduce a softening effect further softening the image. So, output sharpening needs to be applied even for what may appear in Photoshop to be a sharp image.

While the Unsharp Mask filter in Photoshop is a useful sharpening tool, there is an alternative that provides a bit more control while reducing some of the undesirable artifacts of Unsharp Mask.



Use the High Pass filter to sharpen an image.

By duplicating the image's background layer and setting the blending mode to Overlay, you can use the High Pass filter (choose Filter > Other >High Pass).



The High Pass filter is rather hidden away under "Other" in the Filter menu.

This High Pass filter produces an apparent edge enhancement based on a pixel radius that allows the Overlay blend mode to increase the light edge while darkening the dark edge of image edges. Setting the radius to 3 for a 300ppi image will enhance the edge halo approximately 1/100 of an inch, which happens to match the recommendations of Bruce Fraser.



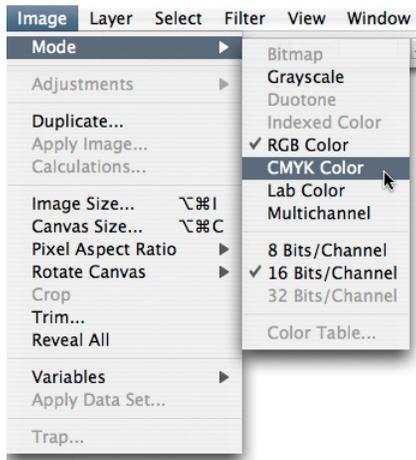
*The results of using High Pass on an overlay blend mode layer. The image edges snap at 50% zoom.*

There are third-party solutions specially designed for doing image sharpening that can increase the accuracy and predictability of output sharpening. Nik Sharpener Pro by Nik Software, Inc and PhotoKit Sharpener by PixelGenius are two such products. Bruce Fraser was the primary product designer of PhotoKit Sharpener and for disclosure purposes, I must also indicate my involvement with PixelGenius. Both products are designed to provide optimal output sharpening.

But, the caveat again, final output sharpening can only be done on images whose final reproduction size has been set. Any resizing on the part of a downstream process will reintroduce softening, and thus mitigate the output sharpening. Resharpening an already sharpened image that has been resized is not optimal.

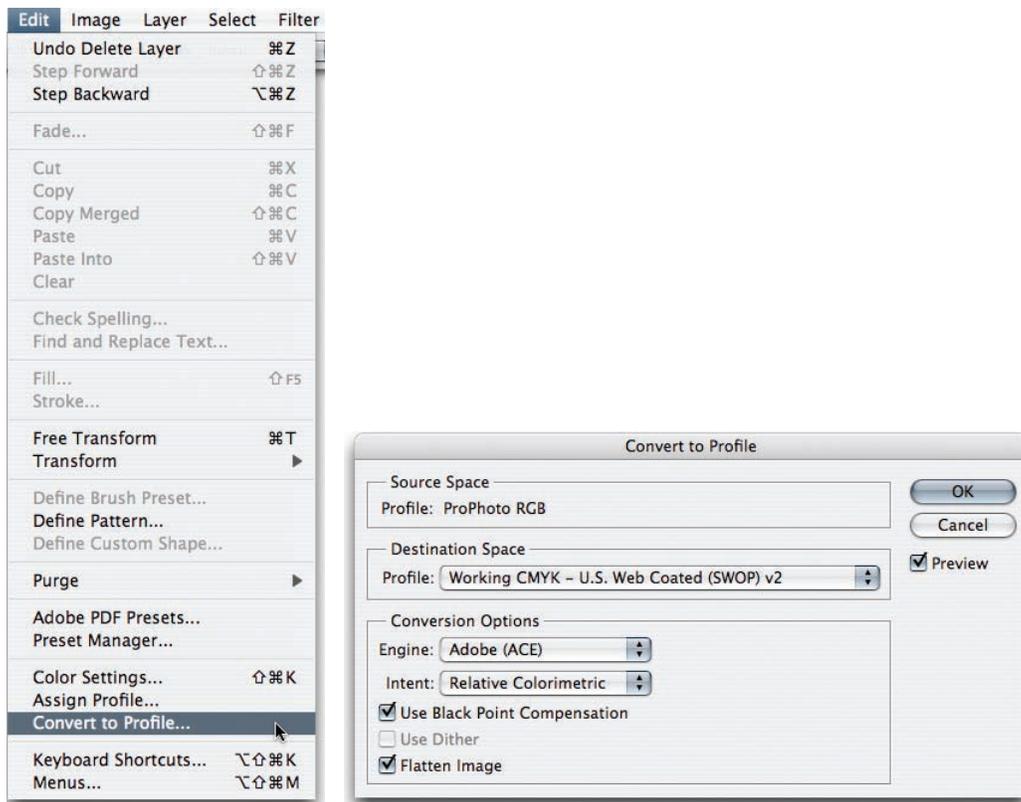
## Converting to CMYK

Once the image has been optimized for the reproduction process in terms of tone, color, resolution, and image sharpness, the final processing step is to convert the RGB image to CMYK. This step can be as simple as doing a mode change from RGB to CMYK (assuming your Photoshop Color Settings are properly set up), or can involve a Convert To Profile transform.

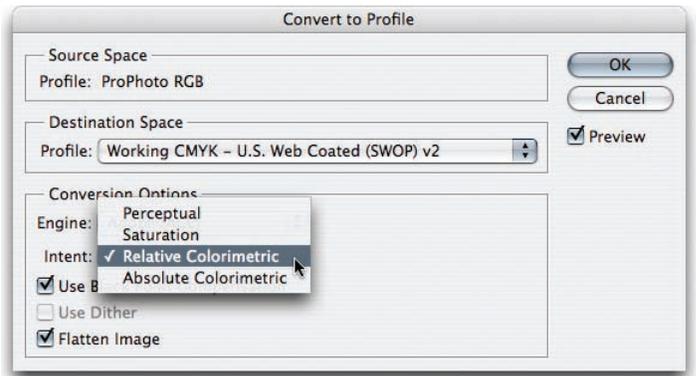
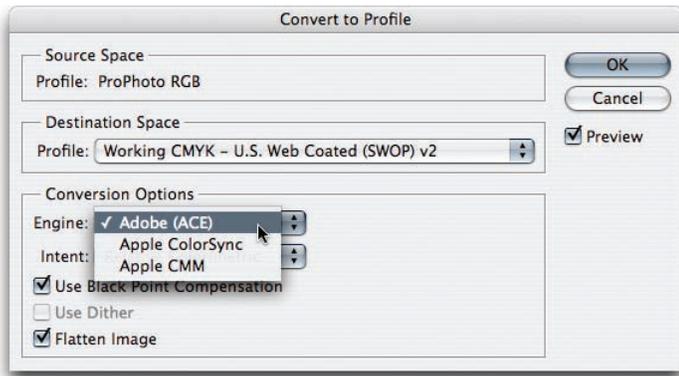


This figure shows the Mode change to CMYK. I prefer to use the Convert to Profile command.

Changing the mode from RGB to CMYK (by choosing Edit > Mode > CMYK Color) results in an image conversion from RGB to CMYK based on the current color settings in Photoshop. While fine to do, it contains a slight risk that the color settings may not be exactly what you expect. When there are multiple users of Photoshop, or if you haven't produced a CMYK separation recently, using the Convert To Profile command in the Edit menu allows for total control and clarity in the settings.



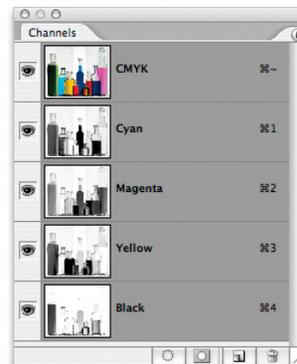
In the Convert To Profile dialog box, you can confirm the source space, the destination space, and the parameters on which the conversion will take place.



In the Convert to Profile dialog, you must set the correct options. I suggest using the Adobe (Ace) CMM (left) and use the same rendering intent I used to soft proof (right).

In the Convert To Profile dialog box, you can set the CMM transform engine as well as confirm the rendering intent. In general, with Photoshop CS or CS2, you can always be assured of getting proper results when selecting Use Black Compensation to map image black to output black. It's also generally a good idea to flatten all adjustment layers during conversion, since some adjustment layers either will not work on CMYK layered files or will produce different results than their RGB counterparts.

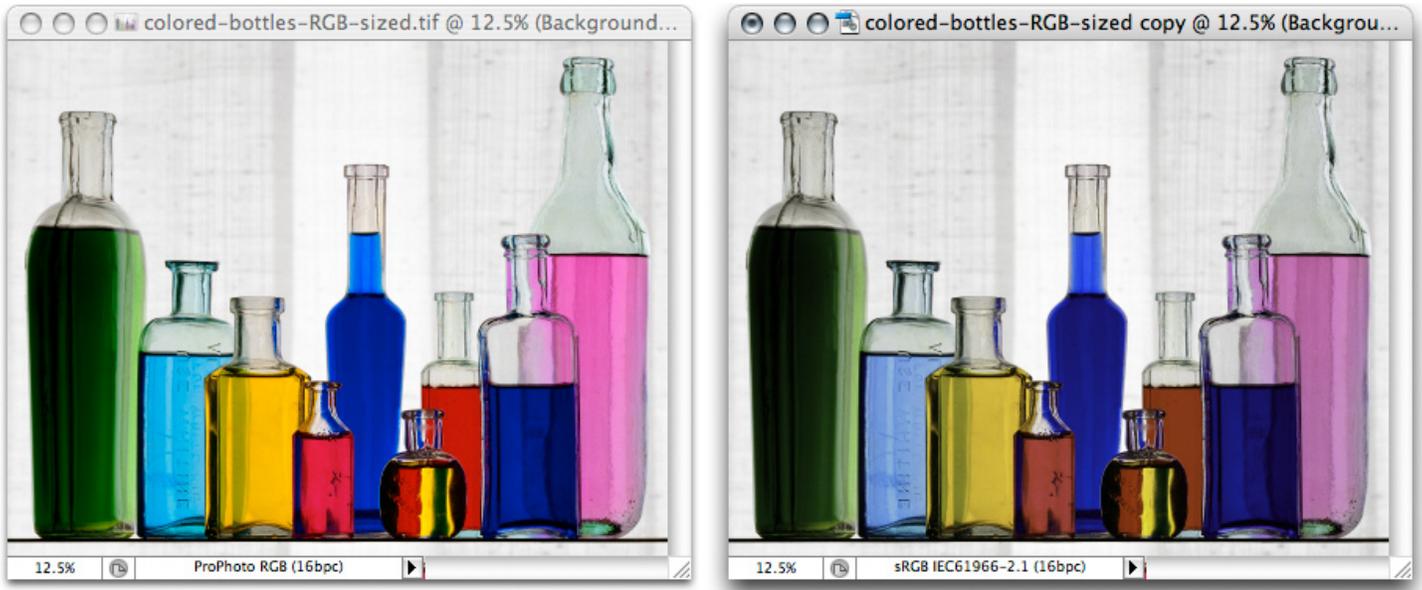
Another point to note if you are working in 16-bit-per-channel depth, is that you should not only flatten while in 16 bit to make sure your adjustments are being completed in 16 bit, but also transform from RGB to CMYK while still in 16 bit to receive the benefit of the higher bit depth during conversion.



The final CMYK-separated and optimized file

## What about providing RGB files?

To offer greater flexibility to your clients, you can also consider providing RGB files in addition to the CMYK files you've separated. However, providing RGB files can be a problem. If you've used a large color space such as ProPhoto RGB, delivering your RGB file to somebody who is not well versed in color management can result in some pretty ugly interpretations of your image.

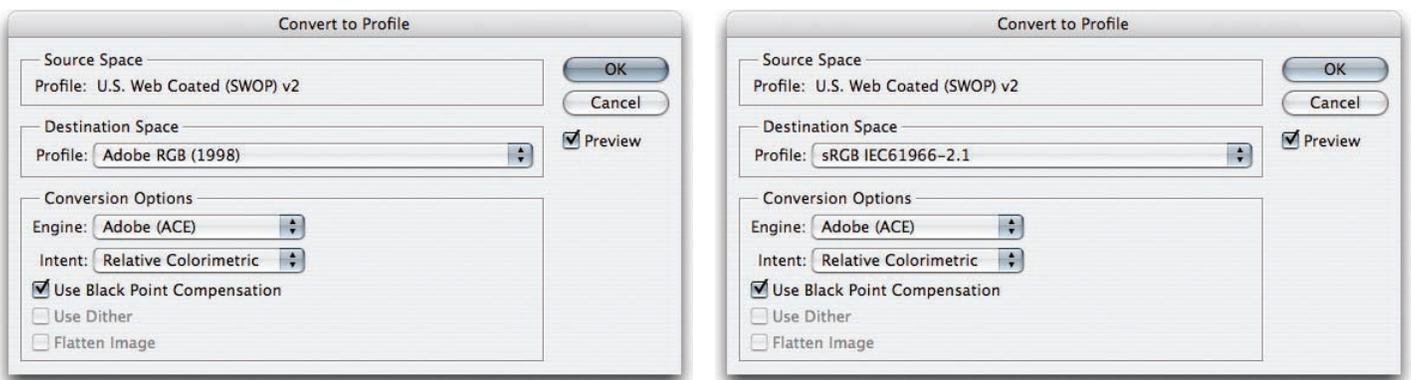


An image in ProPhoto RGB (left) and a duplicate of the image with sRGB assigned as the embedded profile (right)

The improper use of Photoshop Color Settings and policies can result in a misunderstanding of the use of profiles. If the client or printer did not honor the embedded profile and merely assumed the image to be in sRGB, the resulting display would be less than desirable.

So, if you want to work with your originals in a large gamut color space and deliver files to your clients that run a lower risk of miscommunication of color, what do you do? Well, I can only tell you what I do and suggest you test it yourself for your own work.

I take the final CMYK file and reconvert it to RGB. Why? Once the file's colors have been reduced to the gamut of CMYK, converting the file back to RGB will not do any additional harm—particularly if you are working in 16 bit. But it will result in an RGB file that would be pretty hard to misinterpret.

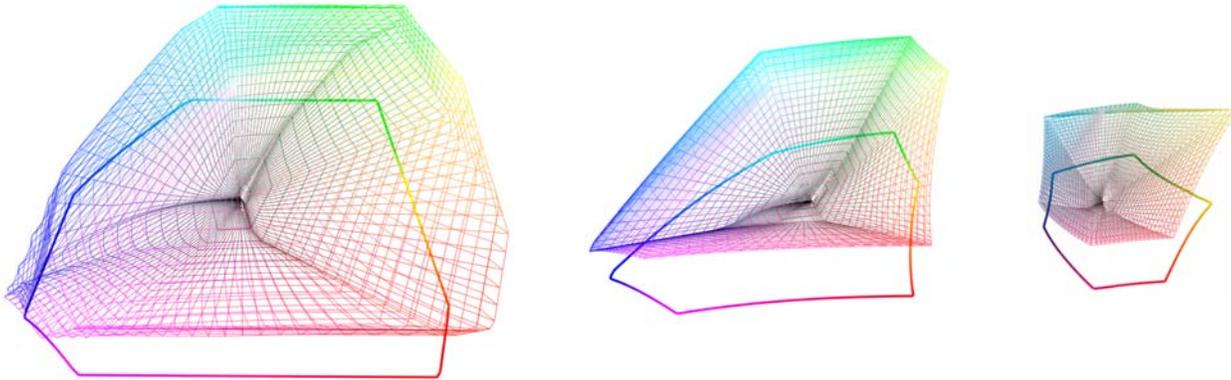


Using Convert to Profile you select the RGB color space you want to convert the CMYK file to. Adobe RGB on the left or I suggest sRGB shown on the right.

You can either convert to Adobe RGB or sRGB. The advantage of providing an sRGB version of the file is that in the event the usage of the image also includes the Web, you'll have an image converted from CMYK to sRGB so the web image will match the CMYK rendering of the file.

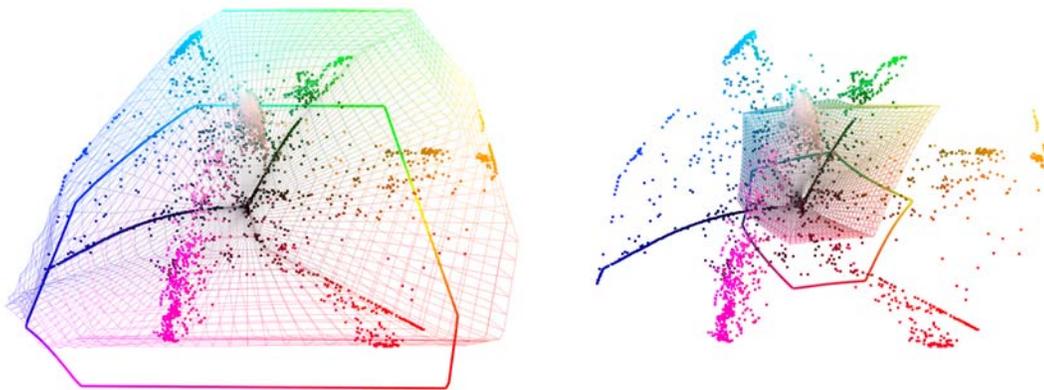
To better illustrate the process of converting from ProPhoto RGB to SWOP CMYK and back to sRGB, I've done screen shots of both the color space gamuts as well as plotted actual colors of the images in a program called ColorThink by CHROMIX ([www.chromix.com](http://www.chromix.com)).

The gamuts and image plots have been done by plotting in Lab coordinates and in 3D. It should be noted that the best way to see color space gamuts and image plots is in motion. ColorThink allows you rotate the graph to better evaluate the relationships between color spaces and image plots.



*The gamut map on the left is ProPhoto RGB. In the middle is sRGB and on the right is SWOP as contained in the Photoshop CS2 CMYK profile named U.S. Web Coated (SWOP) v2. Note: the screen shots are to scale.*

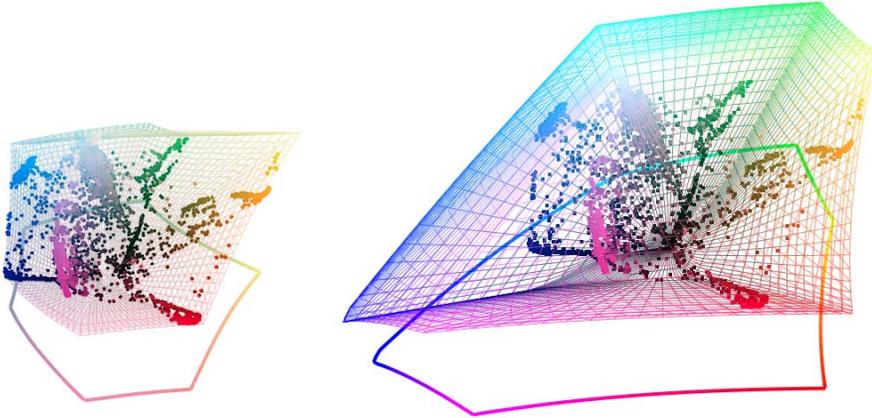
The figures above show the relative size and volume of the three color spaces. ProPhoto RGB is huge and SWOP is tiny. The challenge is to get the colors of the image to look good in the color space of the final output.



*On the left is the original Colored Bottle image mapped into the ProPhoto RGB color space. The dots represent actual color samples from the image. On the right is the image mapped into the SWOP color space. As you can see, a lot of the colors in the image are well outside of the printable range of the CMYK press.*

Somehow, the colors of the image must be mapped into the color space of the output. The method of either compression or clipping will be dictated by the process you use to make the color conversion. In the preceding mode change and convert to profile examples, I showed two methods; using Color Range to desaturate the image and using soft proofing to adjust for the resulting color transform.

But why go from a super-huge color space such as ProPhoto RGB to SWOP and then back to sRGB? It's really a matter of exercising *your* color control over the way delivered files are prepared for reproduction. By using your eyes to evaluate the way in which colors will be reproduced, you are able to dictate how your images reproduce on paper.

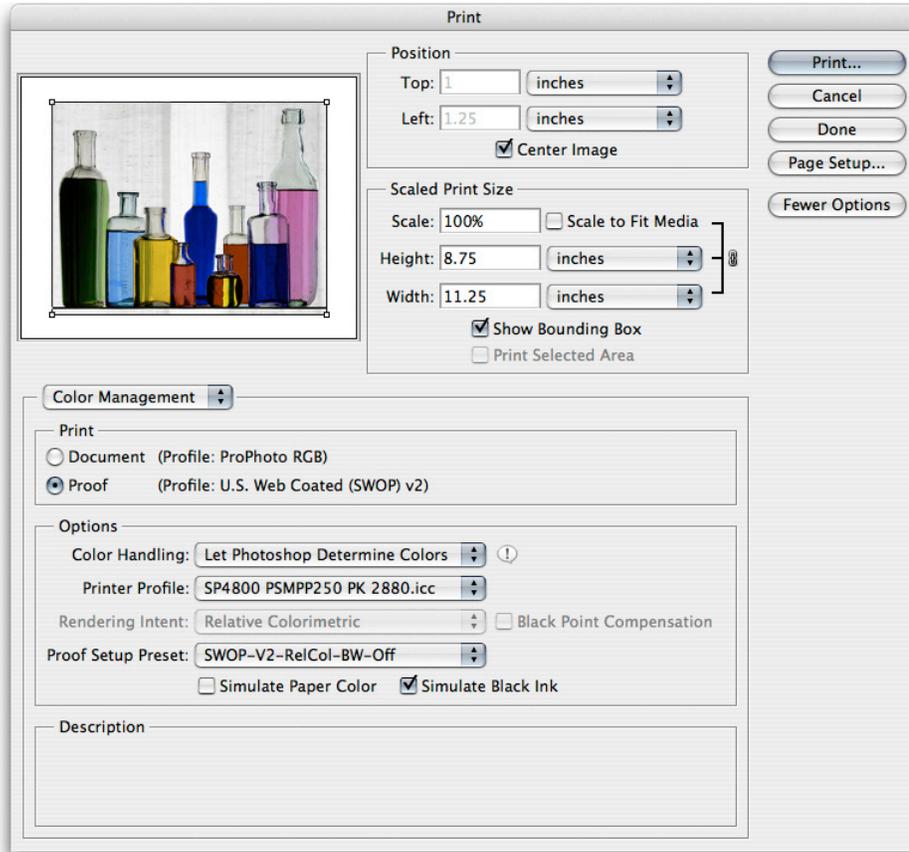


*On the left the final CMYK image colors are shown mapped in the SWOP color space; notice the colors are now within the gamut of CMYK. On the right, the image has been converted back to sRGB from CMYK. All of the CMYK colors (with the possible exception of a tiny amount of cyan) will fit within the sRGB color space.*

Going from ProPhoto RGB to CMYK and then back to sRGB gives you the control over how the image colors will look not only in CMYK, but also when you are delivering RGB images. Since the converted sRGB image has already had its total volume of colors clamped to the gamut of CMYK, there is less chance that somebody down the “prepress road” from you will mess up the colors of the image.

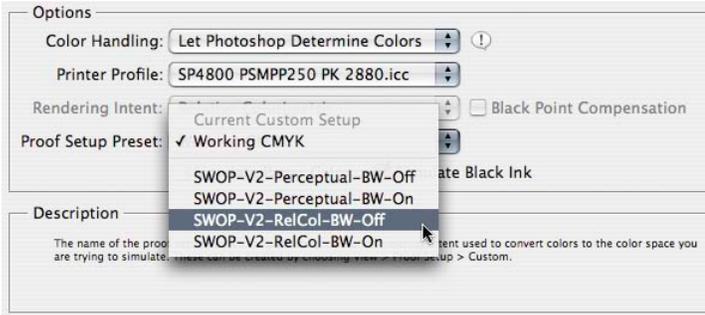
## The proof

When supplying digital files, it's important to also provide an aim print or actual proof that confirms, on paper, what the image should look like when reproduced. In the past, I've resorted to actually sending the CMYK file to a service bureau for expensive contract proofs. While the result is an unequivocal proof of the CMYK file, it can be both costly and time consuming. If you have a quality ink jet printer and accurate profiles for the printer, you can print out from Photoshop and produce a cross-rendered proof. A cross-rendered proof is made by using both the original CMYK profile as well as the printer profile to render, in the print, the accurate results of proofing to the final output device. Again, this presupposes that you have an accurate display and printer profile and that you follow the cross-rendering recipe for printing from Photoshop.



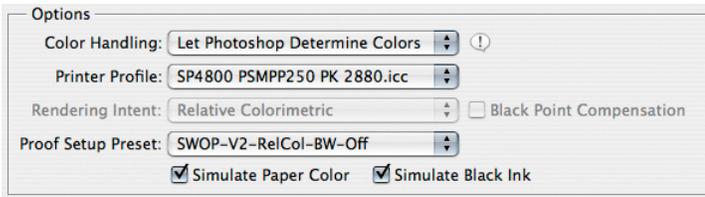
*This figure shows the Photoshop Print dialog box with a preview of the image. I've selected Let Photoshop Determine Colors from the Color Handling pop-up menu and selected the correct printer profile.*

In the Print dialog box in Photoshop, you'll need to alter the settings you may normally use. Rather than setting the Print space to your RGB or CMYK space, you use the Proof option instead. Under Options, choose Let Photoshop Determine Colors from the Color Handling pop-up menu and select your particular printer's profile. However, selecting the proof option in print allows the use of the Proof Setup Preset (shown below), which, if you've saved your soft proofing setups, makes doing cross-rendered proofs a bit more efficient.



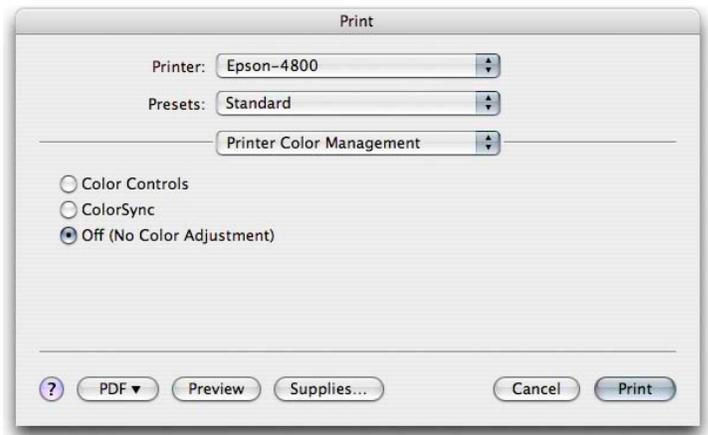
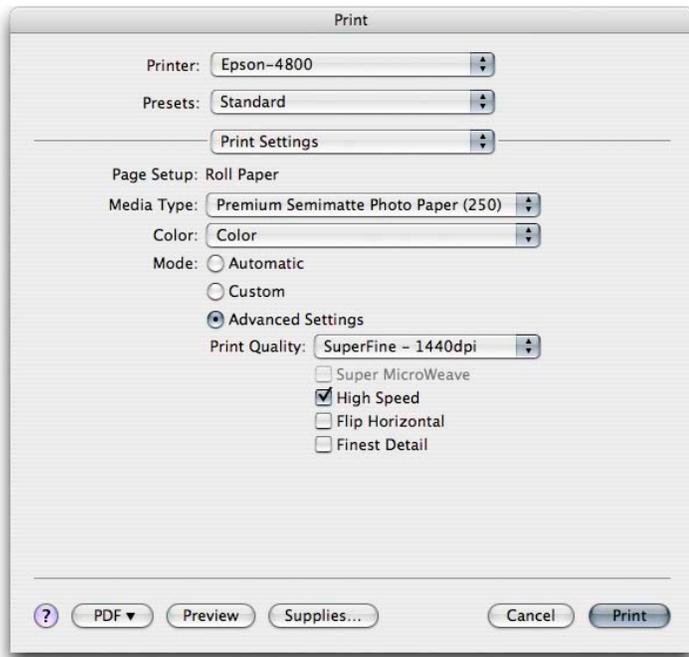
To produce a cross-rendered proof, select the saved soft proof settings. Here, I've selected the SWOP-V2-BW-Off proof setup.

You will definitely want to select the Simulate Black Ink option. Whether you select Simulate Paper Color depends on your intent for the resulting print. If you merely want to provide an aim print, you may choose not to use this option.



To produce an accurate cross-rendered proof, select the Simulate Paper Color and the Simulate Black Ink options.

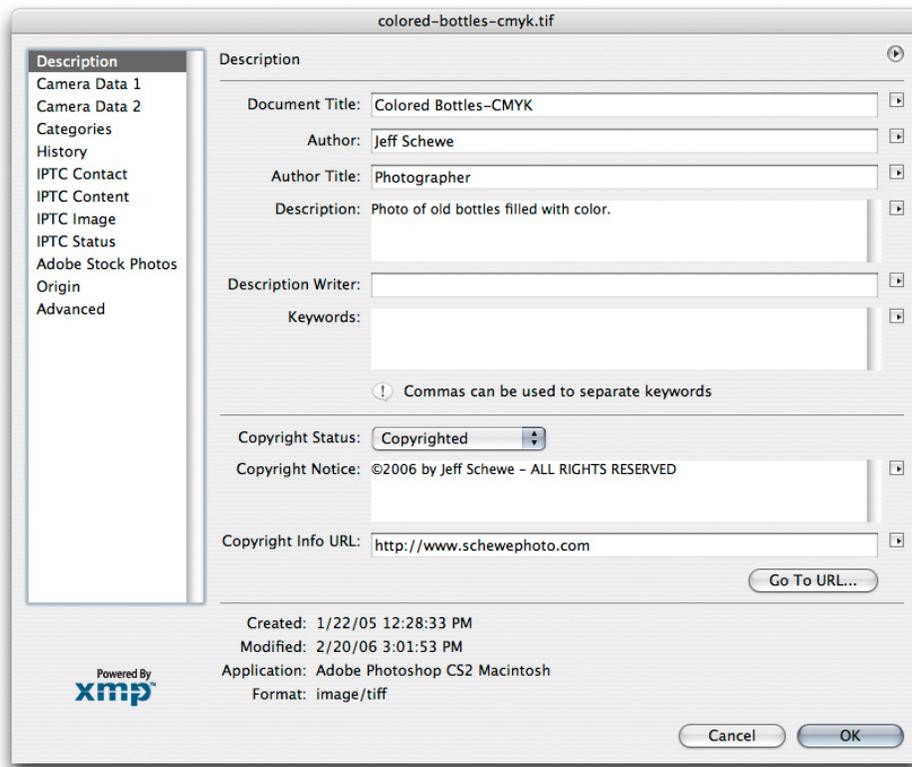
However, if you wish to provide a very accurate cross-rendered proof that could act as a contract proof for color, you should select Simulate Paper Color. It should be noted that just as the on-screen results will show a marked reduction in dynamic range, so will a cross-rendered proof with this option turned on. When reviewing the final print, the paper white of the actual CMYK output profile will produce a scum tone over the image. This preview will be a rather accurate reproduction of the final printed piece, but it won't look very good, which is actually what you want in an accurate proof. Photographers should really only concern themselves with proofing the image, not the final design of the page layout. Note that even a highly accurate cross-rendered proof from an inkjet will not show the results of the halftone screening process, so only the color can essentially be proofed.



Here I've set the media settings (left) and the Printer Color Management settings (right).

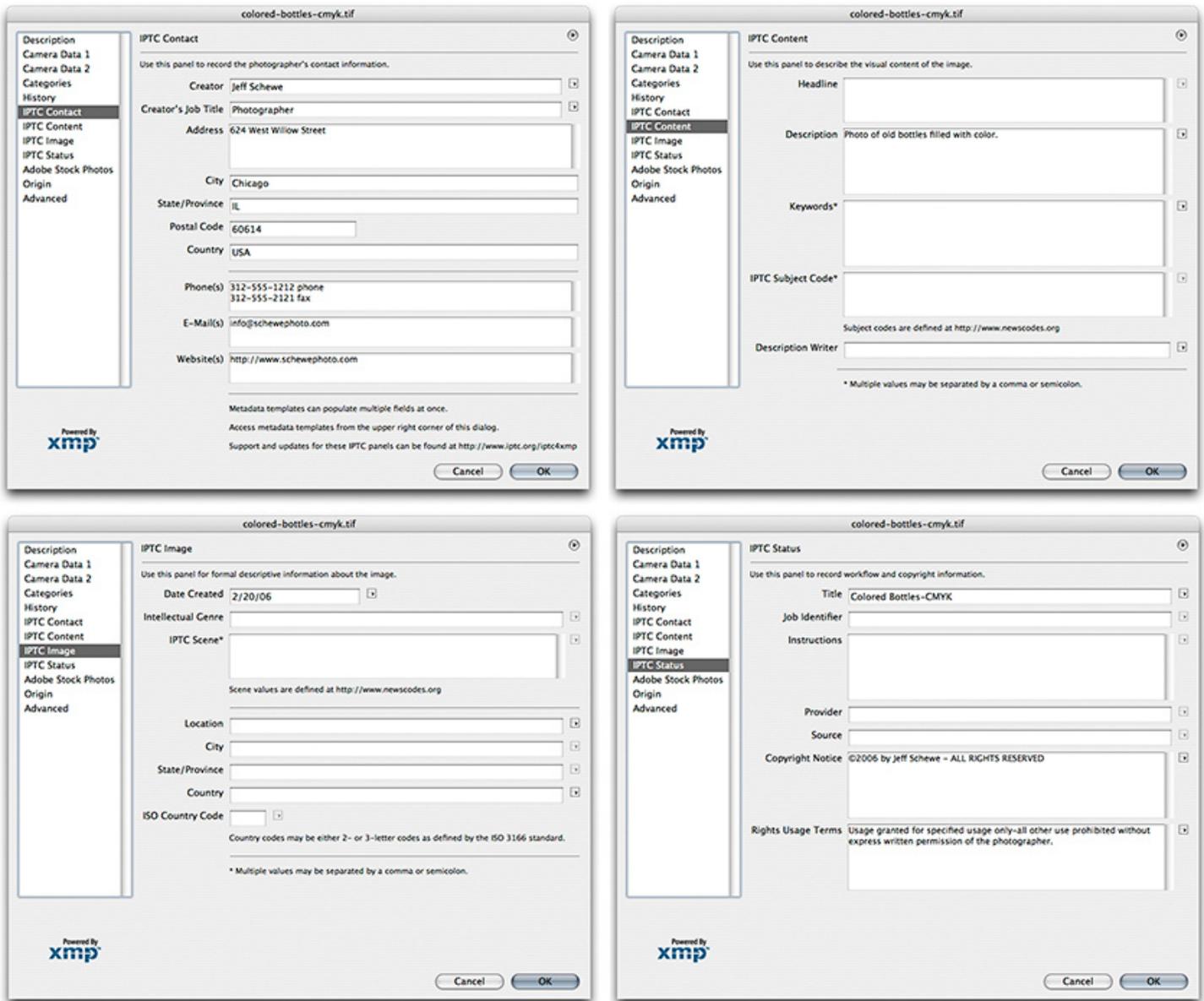
## Marking your territory

Before actually saving your files for client delivery, there is one additional step that is important to fulfill properly: marking your images with proper metadata—marking your territory, if you will. Most professional photographers would never send film to their clients without some sort of identification, and the importance of marking your images is no less in the digital age. Arguably, it's even more important now.



Enter metadata about your image in the File Info dialog box in Photoshop or Adobe Bridge.

In Photoshop (or Bridge), you should complete the relevant metadata fields in the File Info dialog box. All editable fields that are useful for downstream organization and identification should be employed.



The four main IPTC metadata panels.

New to Photoshop CS2 are the XMP for IPTC panels for expanded metadata support. It's relatively simple to complete all the general fields with standard information such as contact, copyright status, and usage, and save the completed forms as a template that can be applied to all images destined for delivery to third parties. Communicate with your clients to get all the necessary information. There really is no excuse not to do this critical step in preparing files for delivery.

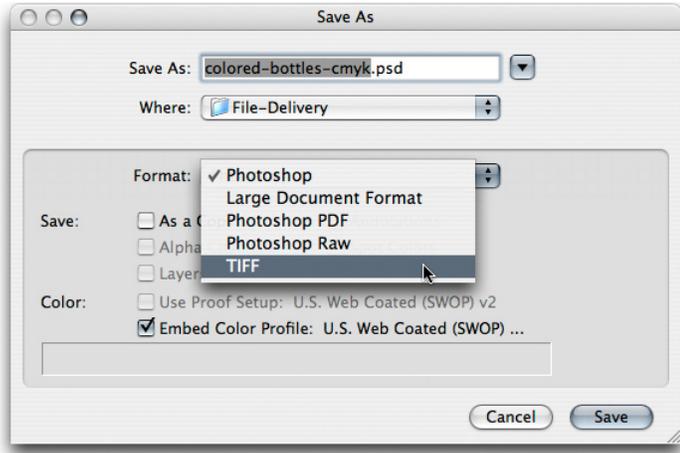
## File formats for delivery

So, you are ready to save the files for delivery. However, you aren't quite done yet in making some important decisions. The choice of file format and the final image naming is still a critical step.

When delivering files to clients, it's important to adhere to proper naming conventions. When naming files, it's critical to stick to an alphanumeric series of letters and numbers and use only approved special characters such as underscores or dashes for spaces. You should not use any of the special symbols such as ! @ # \$ % ^ & \* ( ) + in a file name. Depending on the final output device and the operating system, it runs under, special symbols can lead to unpredictable results.

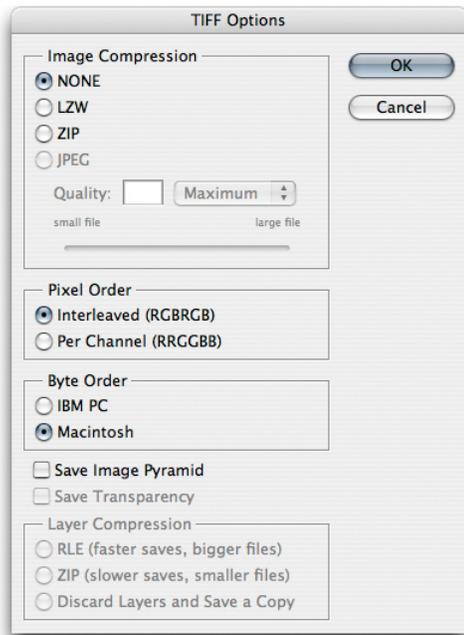
Additionally, even though recent operating systems such as Mac OS X and Windows XP may allow extended characters in a file name, there are enough systems in use in the industry that cannot understand long file names. Therefore, you should use only a safe length: for Mac OS, 31 characters plus a period separating the file name and extension, or 11 characters plus period and extension for MS DOS machines.

The file format you supply is also an important consideration.



*File format options in Photoshop*

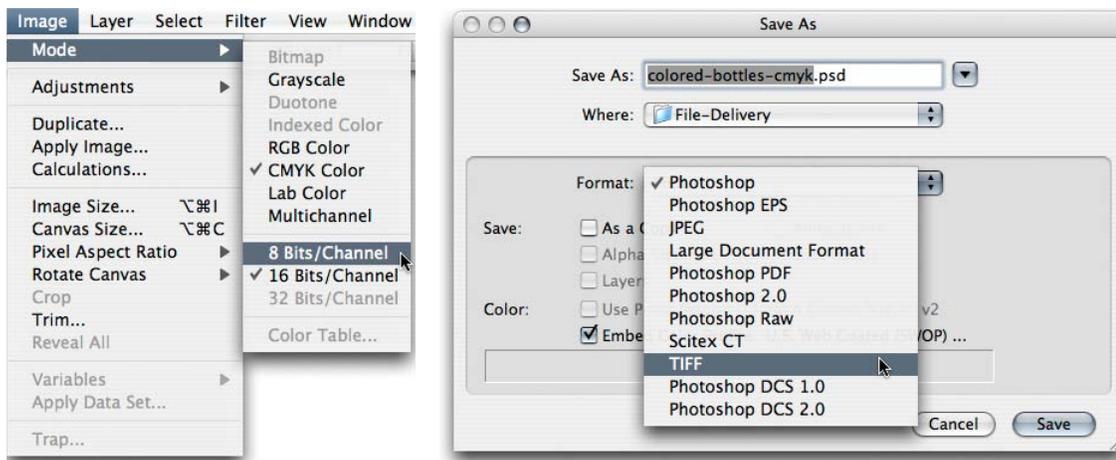
If you are supplying 16-bit-per-channel CMYK files, there is only a single optimal file format to use: TIFF.



*TIFF file options when working with a 16-bit-per-channel image*

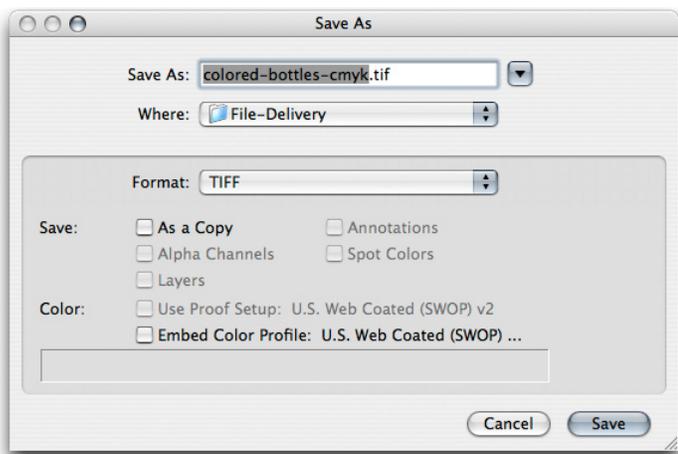
When selecting the format options for a TIFF file, it should be noted that some output devices cannot handle TIFF files with any compression such as LZW or ZIP. Also, when delivering for clients, it's generally not a good idea to supply layered files. Unless you can be assured that the client will treat the layered files properly, flattening is always the safest option.

If you are supplying 8-bit-per-channel CMYK files, the format options grow.



By changing the bit depth to 8 Bits/Channel (left) you can select more file formats for delivery (right).

Mode changing to 8 bits and saving as a CMYK file will offer a variety of additional file formats. However, unless you have instructions to the contrary, the safest file format is still TIFF.



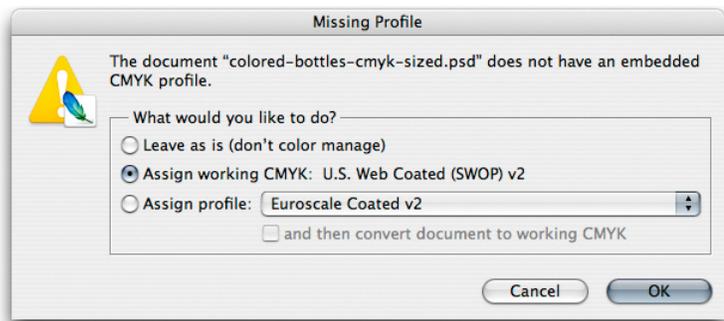
The Save As dialog box with the Embed Color Profile option deselected.

There is an additional consideration when saving files intended for CMYK reproduction. Unless you've had direct and successful communications with the prepress personnel, saving a CMYK file with an embedded profile might not be such a good idea. While saving RGB files with embedded profiles is pretty much a universal good idea to avoid ambiguous color, in graphic arts and printing, embedded profiles can sometimes lead to problems for both technical and political reasons.

Until the political realities change and RIPs can be updated to ensure they won't choke on embedded profiles—this is actually rare, but can happen—I provide CMYK files with no profiles. I do note, in the accompanying Read Me text files, an indication of how the files were prepared. If I have been fortunate enough to be working with a color management savvy prepress supplier, I would be happy to embed the profile in the CMYK file—ideally the profile they supplied me. But until color management gets wider adoption in the graphic arts, it's easier and safer to strip the CMYK profile.

If you need to transmit files instead of delivering them on a CD or DVD, you can use either a zipped TIFF file or use JPG compression for the final file delivery. In either case, the file should be opened by the recipient and resaved as a standard TIFF file for final use. Saving a final CMYK file as a JPEG file with Maximum Quality will rarely, if ever, produce any visible changes to the file. However, your client should be warned not to open the file, or make changes and resave the file while in the JPEG format. Multiple resaving in JPEG format is to be avoided.

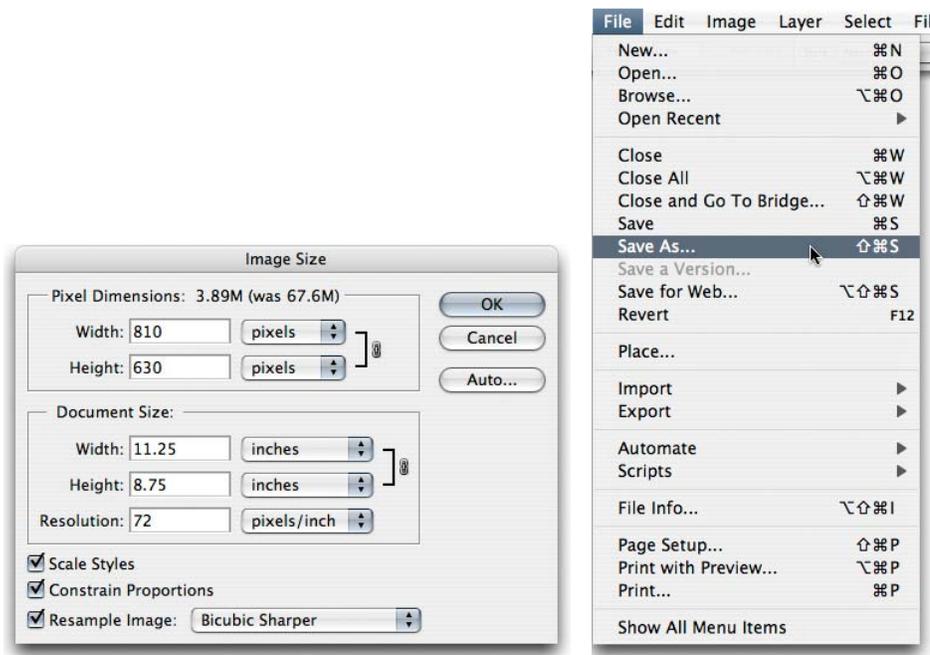
Also, you should alert your client if you have chosen not to embed a profile in the CMYK file that opening the image in Photoshop might prompt a warning dialog box.



Photoshop returns a warning dialog box when you open a file that doesn't have an embedded profile.

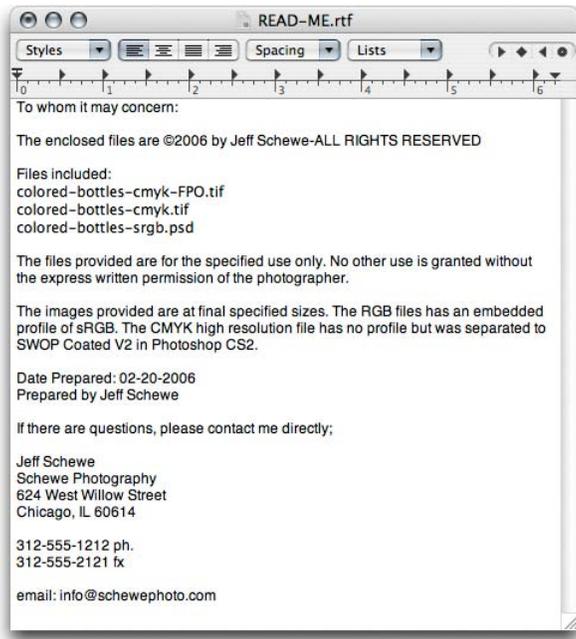
Depending on the color management settings in your client's Photoshop setup, they may see a warning when they open a file without an embedded profile. If so, you can tell them to assign the profile you've used to convert the file—if it's a profile included in Photoshop, that is a simple solution. If you've stripped the profile and used a custom CMYK profile, you should consider supplying the profile separately on disk or in the file transmission.

If you are asked to supply files that are sized For Position Only (FPO), you'll need to make sure the final image dimensions match the final high-resolution files exactly. Only the pixel resolution should be downsampled. Be sure to save the FPO version with an unambiguous file name that relates, but would not be confused with the high-resolution file.



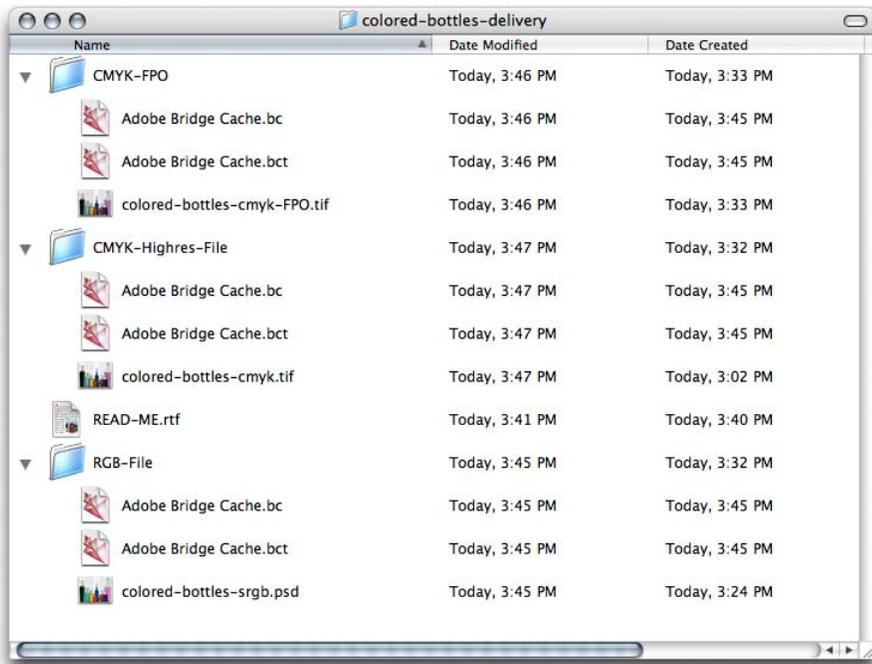
The Image Size dialog showing a reduced resolution version of the original CMYK file (left) and selecting Save As (right). In the FPO version, be sure to give it a noticeable designation.

While it may seem that nobody actually reads Read Me files, it is still an important practice to provide documentation and identification of images delivered to clients. If nothing else, you can point to the text file they failed to read as explaining any miscommunication on their part.



*It's good practice to include a Read Me file when you deliver your images to your clients.*

Regardless of whether you are burning to disk or transmitting over the net, it's important to include an organized file folder structure to help avoid confusion. I place files inside named folders that help explain their contents and segregate high-resolution CMYK files from FPOs from RGB files. Particularly if you are burning to CD or DVD, it's useful to export the browsed cache from Adobe Bridge to make browsing from the CD or DVD quicker.



*When delivering files, it helps to put them in an organized file folder structure.*

My personal preference, even if you supply files initially via transmission, is to burn the delivered files to CD or DVD. I do this for several reasons: to give the client a tangible result from the project that they can store, and to burn a read-only version of the final delivered files that cannot be altered. If at some point, something happens to the file (for example, somebody changes it poorly), there's always the original starting point image burned into the disc that cannot be changed. While it doesn't happen often, it has happened that somebody made a mistake downstream of my file delivery and it's useful to be able to point to a version of a file that represents the state of the delivered image before any additional changes were made.

## Checklist for file delivery

- Confirm final file specifications and requirements
- Open a secure line of communication with client and prepress provider
- Confirm final reproduction process (SWOP or Sheet Fed)
- Confirm final output color space, ideally with printer-supplied ICC profile
- Confirm delivery of: RGB, CMYK, or RGB plus CMYK
- Tone and color correct with soft proofing for the final output
- Confirm final file size and resolution
- Provide image sharpening for output
- Provide aim print or proof print for color
- Embed image metadata for identification
- Confirm final delivery file format
- Provide Read Me file with documentation, file list, and contact information
- Organize and segregate file types: separate high-resolution files, FPO, RGB and CMYK
- Provide read-only final files on CD or DVD

## Additional resources

Digital Image Submission Guidelines (DISC): [www.disc-info.org](http://www.disc-info.org)

Universal Photographic Digital Imaging Guidelines (UPDIG): [www.updig.org](http://www.updig.org)

*Real World Color Management* by Bruce Fraser, Chris Murphy, and Fred Bunting  
Published by Peachpit Press, ISBN: 0321267222

*Color Management for Photographers* by Andrew Rodney  
Published by Focal Press, ISBN: 0-240-80649-2

PixelGenius by PhotoKit Sharpener: [www.pixelgenius.com](http://www.pixelgenius.com)

Nik Software by Nik Sharpener Pro: [www.niksoftware.com](http://www.niksoftware.com)



### ABOUT THE AUTHOR

Jeff Schewe, a summa cum laude graduate of Rochester Institute of Technology, has been an advertising photographer in Chicago for over 25 years. He has been doing digital imaging for over 14 years and is widely known and respected in the digital imaging community as a leading pioneer in the field. Jeff is a feature consultant and alpha tester for Photoshop.

### FOR MORE INFORMATION

For a comprehensive overview of Photoshop CS2, please visit [www.adobe.com/products/photoshop/main.html](http://www.adobe.com/products/photoshop/main.html).



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