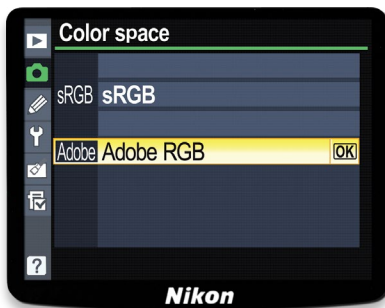# Setting Up Your Camera's Color Space

Although there are entire books written on the subject of color management, in this chapter we're going to focus on just one thing—getting what comes out of your color inkjet printer to match what you see onscreen. That's what it's all about, and if you follow the steps in this chapter, you'll get prints that match your screen. We're going to start by setting up your camera's color space, so you'll get the best results from screen to print. *Note:* You can skip this if you only shoot in RAW.

Step One:

If you shoot in JPEG or TIFF mode (or JPEG + Raw), you'll want to set your camera's color space to match what you're going to use in Photoshop for your color space (to get consistent color from your camera to Photoshop to your printer, you'll want everybody speaking the same language, right?). I recommend you change your camera's color space from its default sRGB to Adobe RGB (1998), which is a better color space for photographers whose final image will come from a color inkjet printer.
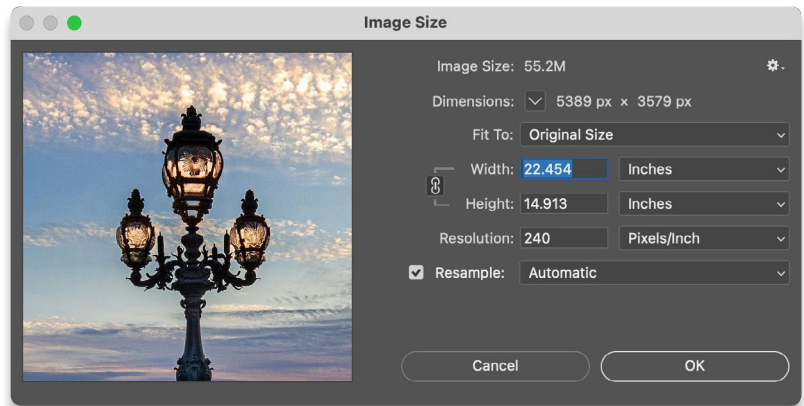

Step Two:

You'll usually find the Color Space control under your camera's shooting menu (as seen here). Change the space to Adobe RGB. If you're not sure where to find it on your camera, just dig up your owner's manual (or, ideally, download it in PDF format from the manufacturer's website) to find out how to make the switch to Adobe RGB (1998). Again, if you're shooting in RAW, you can skip this altogether.

Resolution for Printing

This is one of those topics that tend to make people crazy, and since there is no Official Board of Resolution Standards, this is the type of thing that gets argued endlessly in online discussion forums. That being said, I take the word of my friend and fellow photographer Dan Steinhardt from Epson (the man behind the popular Epson Print Academy), who lives this stuff day in and day out (Dan and I did an online training class on printing and this was just about the first topic we covered, because for so many, this is a real stumbling block). Here's what we do:

Step One:

To see what your current photo's resolution is, go under the Image menu and choose **Image Size** (or press **Command-Option-I [PC: Ctrl-Alt-I]**). Ideally, for printing to a color inkjet printer, I like to be at 240 ppi (pixels per inch), but I often print at 200 ppi, and will go as low as 180 ppi (but 180 ppi is absolutely the lowest I'll go. Anything below that and, depending on the image, you'll start to visibly lose print quality). So, I guess the good news here is: you don't need as much resolution as you might think (even for a printing press). Here's an image taken with a 30-megapixel camera and you can see that at 240 ppi, I can print an image that is around 22x15".


Step Two:

Here's the resolution from a 6-mega-pixel camera. At 240 ppi I can only print an 8x12.5" image. So, to make it larger, I'd turn off the **Resample Image check-box**, type in 200 as my new resolution, and then I'd have an image size of 10x15" (with no loss of quality). If I lower it to 180 ppi (as low as I would ever go), then I get the print up to a finished size of 11x16.75" (nearly that of a 12-megapixel camera), and I did it all without losing quality (because I turned off the Resample Image checkbox, but before you do this, you need to read about resizing in Chapter 8 in the book).
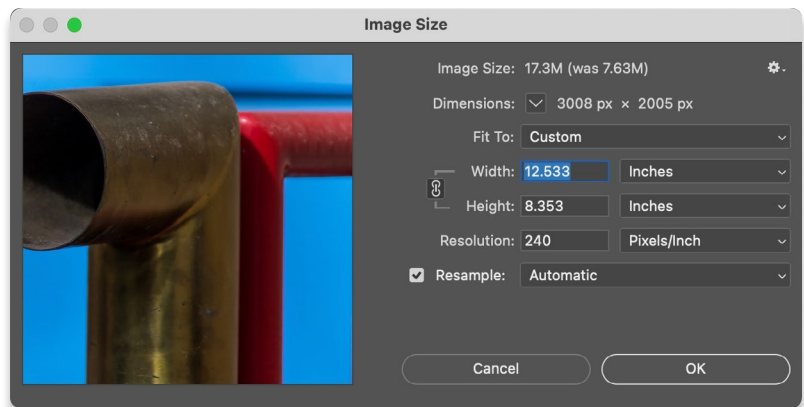
Setting Up Photoshop's Color Space

Photoshop's default color space is sRGB (some pros refer to it as "stupid RGB"), which is fine for photos going on the web, but your printer can print a wider range of colors than sRGB (particularly in the blues and greens). So, if you work in sRGB, you're essentially leaving out those rich, vivid colors you could be seeing. That's why we either change our color space to Adobe RGB (1998) if you're shooting in JPEG or TIFF, which is better for printing those images, or ProPhoto RGB if you shoot in RAW or work with Lightroom. Here's how to set up both:
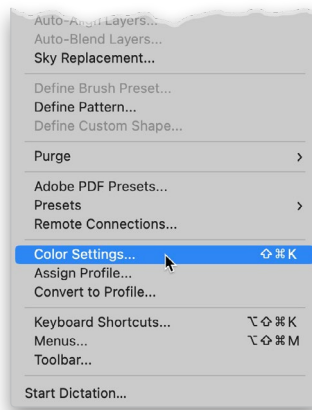
Step One:

Before we do this, I just want to reiterate that you only want to make this change if your final print will be output to your own color inkjet. If you're sending your images out to an outside lab for prints, you should probably stay in sRGB—both in the camera and in Photoshop—as most labs are set up to handle sRGB files. Your best bet: ask your lab which color space they prefer. Okay, now on to Photoshop: go under the Edit menu and choose **Color Settings** (as shown here).
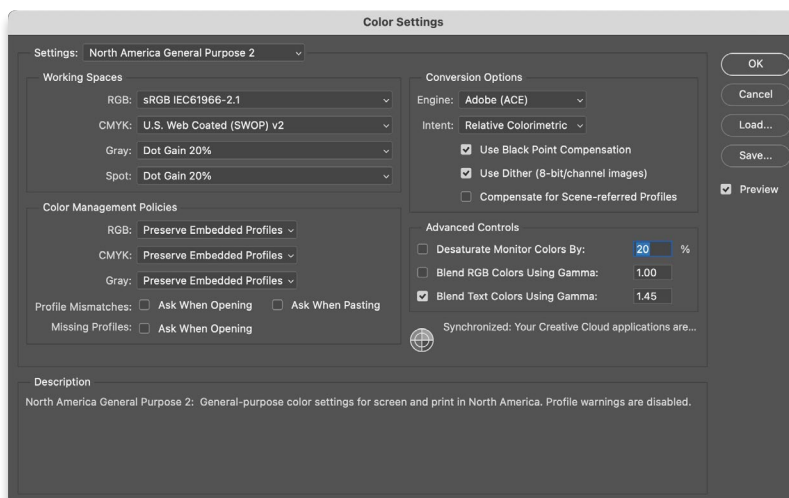
Step Two:

This brings up the Color Settings dialog. By default, it uses a group of settings called "North America General Purpose 2." Now, does anything about the phrase "General Purpose" sound like it would be a good space for pro photographers? Didn't think so. The tip-off is that under Working Spaces, the RGB space is set to sRGB IEC61966–2.1 (which is the long-hand technical name for what we simply call sRGB). In short, you don't want to use this group of settings. They're for goobers—not for you (unless of course, you are a goober, which I doubt because you bought this book, and they don't sell this book to goobers. It's in each bookstore's contract).
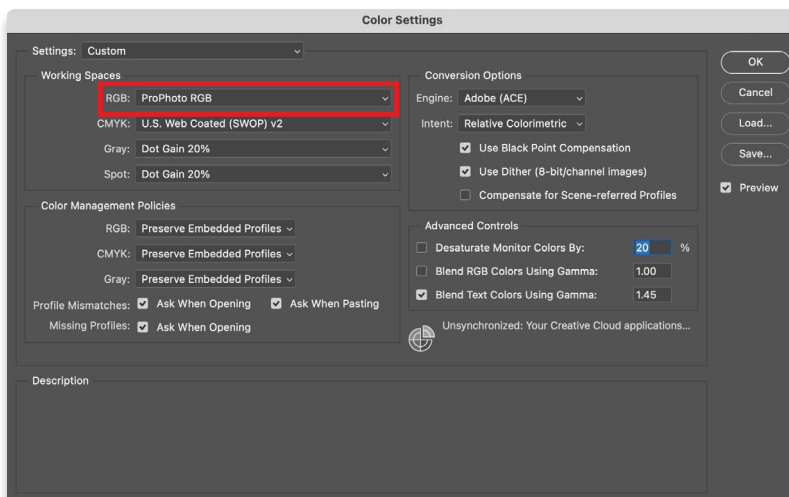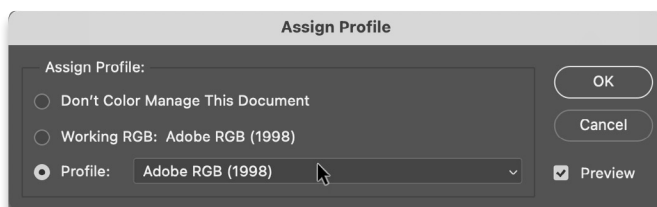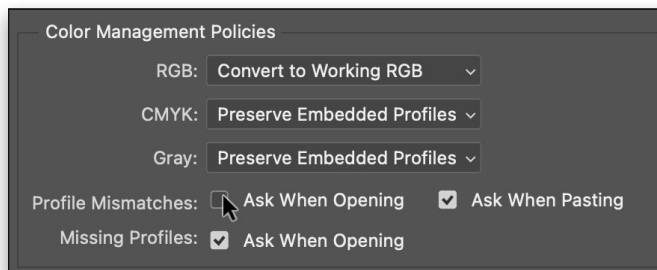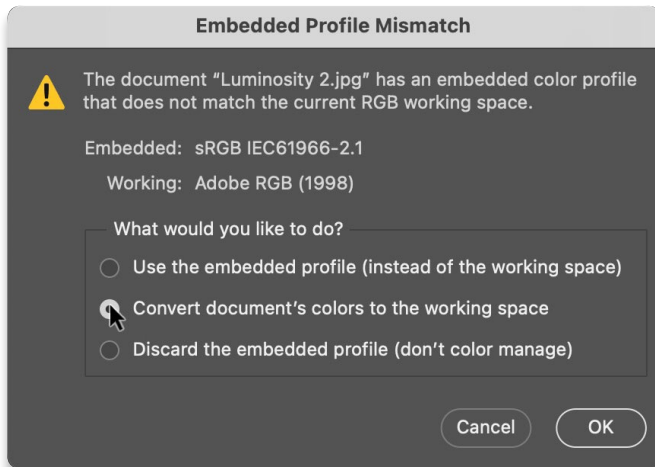
Step Three:

To get a preset group of settings that's better for photographers, from the Settings pop-up menu, choose **North America Prepress 2**. Don't let it throw you that we're using prepress settings here—they work great for color inkjet printing because it uses the Adobe RGB (1998) color space. It also sets up the appropriate warning dialogs to help you keep your color management plan in action when opening photos from outside sources or other cameras (more on this on the next page).
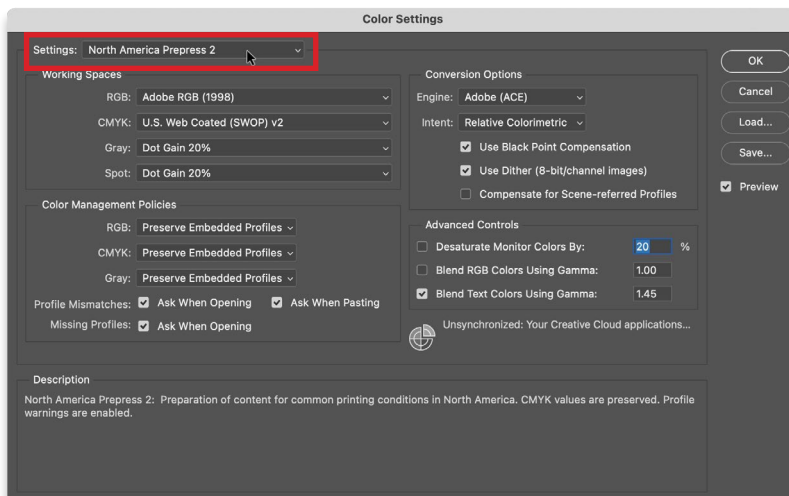
Step Four:

If you're shooting in RAW exclusively, or using Lightroom (Adobe's awesome application for photographers), then you'll want to change your color space in Photoshop to ProPhoto RGB to get the best prints from your RAW images (plus, if you use Lightroom, you'll wind up moving images back and forth between Lightroom and Photoshop from time to time, and since Lightroom's native color space is ProPhoto RGB, you'll want to keep everything consistent. While you might use Lightroom for your JPEG or TIFF images, there's really no advantage to choosing ProPhoto RGB for them). You change Photoshop's Color Space to **PhotoPro RGB** in the Color Settings dialog (just choose it from the RGB menu, as shown here). That way, when you open a RAW photo in Photoshop (or import a file from Lightroom), everything stays in the same consistent color space and if you wind up bringing an image from Lightroom over to Photoshop, and end up printing it in Photoshop (instead of jumping back to Lightroom for printing), you'll get better results.

Embedded Profile Mismatch

⚠ The document "Luminosity 2.jpg" has an embedded color profile that does not match the current RGB working space.

Embedded: sRGB IEC61966-2.1

Working: Adobe RGB (1998)

What would you like to do?

○ Use the embedded profile (instead of the working space)

◉ Convert document's colors to the working space

○ Discard the embedded profile (don't color manage)

(Cancel) (OK)

Color Management Policies

RGB: Convert to Working RGB ⌄

CMYK: Preserve Embedded Profiles ⌄

Gray: Preserve Embedded Profiles ⌄

Profile Mismatches: ☐ Ask When Opening ☑ Ask When Pasting

Missing Profiles: ☑ Ask When Opening

Assign Profile

Assign Profile:

○ Don't Color Manage This Document

○ Working RGB: Adobe RGB (1998)

◉ Profile: Adobe RGB (1998) ⌄

(OK)

(Cancel)

☑ Preview

Step Five:

About those warnings that help you keep your color management on track: Let's say you open a JPEG photo, and your camera was set to shoot in Adobe RGB (1998), and your Photoshop is set the same way. The two color spaces match, so no warnings appear. But, if you open a JPEG photo you took six months ago, it will probably still be in sRGB, which doesn't match your Photoshop working space. That's a mismatch, so you'd get the warning dialog shown here, telling you this. Luckily it gives you the choice of how to handle it. I recommend converting that document's colors to your current working space (as shown here).

Step Six:

You can have Photoshop do this conversion automatically anytime it finds a mismatch. Just reopen the Color Settings dialog, and under Color Management Policies, in the RGB pop-up menu, change your default setting to **Convert to Working RGB** (as seen here). For Profile Mismatches, turn off the **Ask When Opening checkbox**. Now when you open sRGB photos, they will automatically update to match your current working space. Nice!

Step Seven:

Okay, so what if a friend emails you a photo, you open it in Photoshop, and the photo doesn't have any color profile at all? Well, once that photo is open in Photoshop, you can convert that "untagged" image to Adobe RGB (1998) by going under the Edit menu and choosing **Assign Profile**. When the Assign Profile dialog appears, click on the Profile radio button, ensure Adobe RGB (1998) is selected in the pop-up menu, then click OK.

Sharpening for Printing

When we apply sharpening, we apply it so it looks good on our computer screen, right? But when you actually make a print, a lot of that sharpening that looks fine on a 72- or 96- dpi computer screen gets lost on a high-resolution print at 240 ppi. Because the sharpening gets reduced when we make a print, we have to sharpen so our photo looks a bit too sharp onscreen, but then looks perfect when it prints. Here's how I apply sharpening for images I'm going to print:

Step One:

Start by doing a trick my buddy Shelly Katz shared with me: duplicate the Background layer (by pressing **Command-J [PC: Ctrl-J]**) and do your print sharpening on this duplicate layer (that way, you don't mess with the already sharpened original image on the Background layer). Name this new layer "Sharpened for Print," then go under the Filter menu, under Sharpen, and choose **Unsharp Mask**. For most 240 ppi images, I apply these settings: Amount 120; Radius 1; Threshold 3. Click OK.

Step Two:

Next, reapply the Unsharp Mask filter with the same settings by pressing **Command-Option-F (PC: Ctrl-Alt-F)**. Then, at the top of the Layers panel, change the layer blend mode to **Luminosity** (so the sharpening is only applied to the detail of the photo, and not the color), then use the Opacity slider to control how much sharpening is applied. Start at 50% and see if it looks a little bit oversharpened. If it looks like a little bit too much, stop—you want it to look a little oversharpened. If you think it's way too much, lower the opacity to around 35% and re-evaluate. When it looks right (a little too sharp), make a test print. My guess is that you'll want to raise the opacity up a little higher, because it won't be as sharp as you thought.
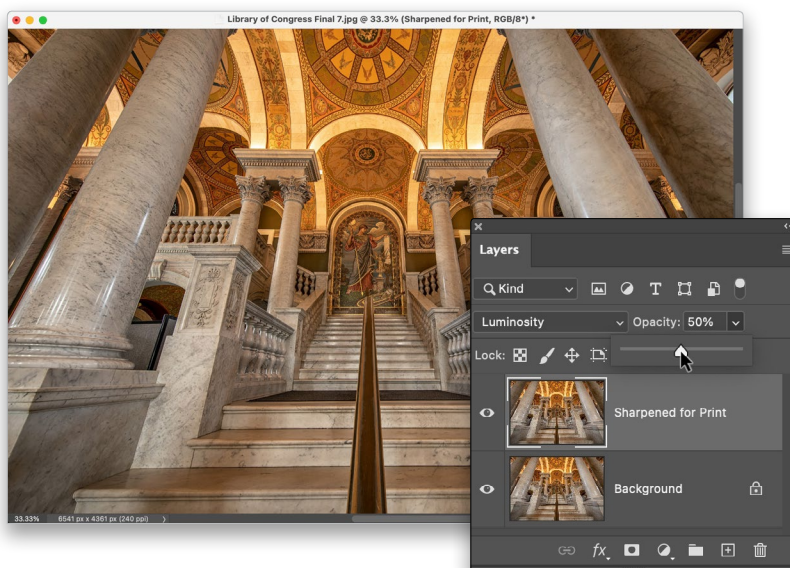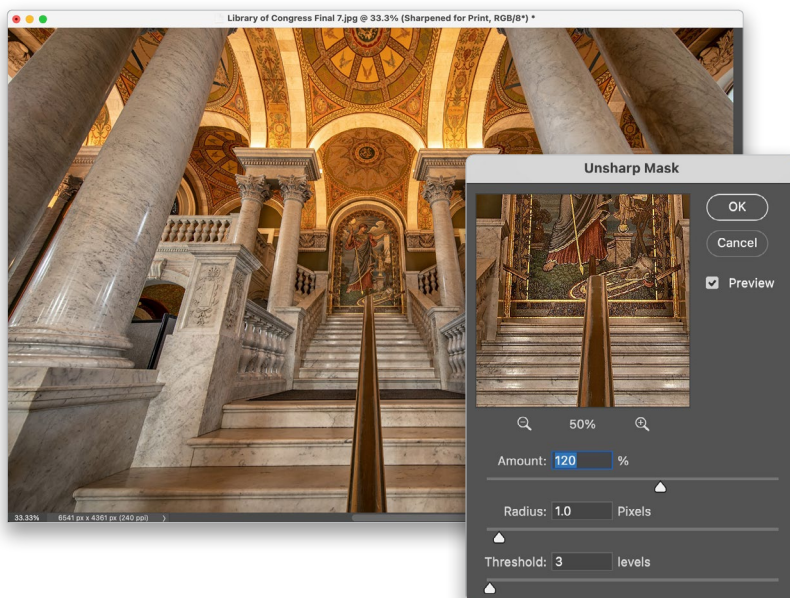
Sending Your Images to Be Printed at a Photo Lab

Besides printing images on my own color inkjet printer, I also send a decent amount of my print work out to a photo lab (I use Bay Photo, Miller's Professional Imaging, and Mpix.com) for a number of reasons—like if I want metallic prints, or I want the image mounted, matted, and/or framed with glass, or I want a print that's larger than I can print in-house. Here's how to prep your images for uploading to be printed at a photo lab:
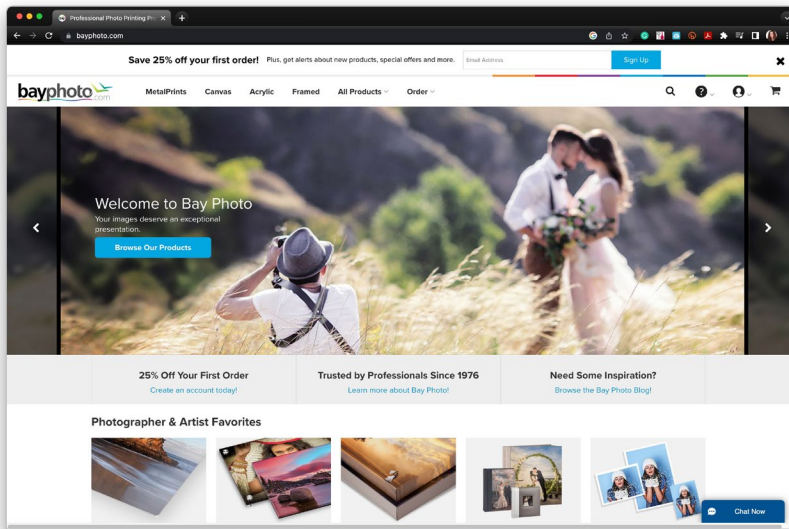
Step One:

First, contact the photo lab where you're sending your image, and ask what color profile they want you to use. Chances are they are going to want you to convert your image to sRGB color mode. I know this flies in the face of what we do when we print our own images, but I know a number of big, high-quality photo labs that all request that you convert your images to sRGB first, and for their workflow, it works. If they don't request you convert to sRGB, they may have you download a color profile they've created for you, and you'll use it the same way as you'll assign sRGB in the next step.
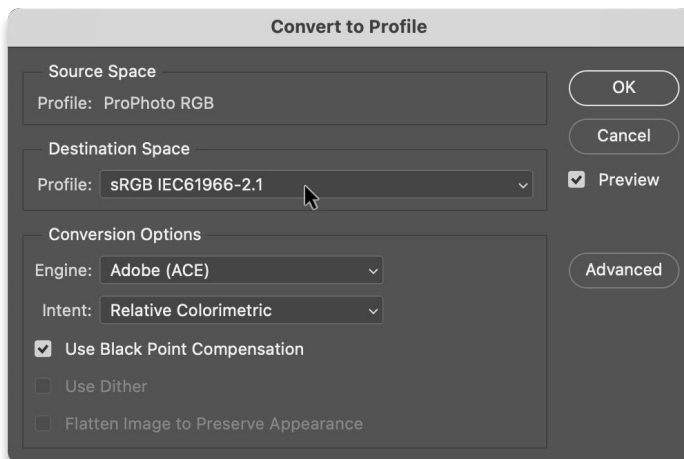
Step Two:

With your image open in Photoshop, go under the Edit menu, choose **Convert to Profile**, and you'll see the image's current color profile at the top of the dialog (here, my image is a RAW image, so it's set to ProPhoto RGB). Under Destination Space, from the Profile pop-up menu, choose **sRGB IEC61966-2.1**. If you downloaded a profile from your lab, you'll choose that instead (more on where to save downloads on page 11). Click OK, and don't be surprised if the image looks pretty much the same. In fact, be happy if it does, but at least now it's set up to get the best results from your photo lab.

# You Have to Calibrate Your Monitor Before You Go Any Further

If you really want what comes out of your printer to match what you see onscreen, then I don't want to have to be the one to tell you this, but…you absolutely, positively have to calibrate your monitor using a hardware calibrator. The good news is that today it's an absolutely simple, totally automated process. The bad news is that you have to buy a hardware calibrator. With hardware calibration, it's measuring your actual monitor and building an accurate profile for the exact monitor you're using, and yes—it makes that big a difference.

Step One:

I use Datacolor's Spyder hardware color calibrator (it's around $169 street price), because it's simple, affordable, and a lot of the pros I know have moved over to it. So, I'm going to use it as an example here, but it's not necessary to get this same one, because they all work fairly similarly. You start by installing the software that comes with the Spyder. Then, plug the sensor into your computer's USB port and launch the software, which brings up the main window (seen here). You follow the "wizard," which asks you a couple of simple questions (stuff like, "Is this the first time you've calibrated your monitor using Spyder?" Or, maybe, "What's the capital of Nebraska?"), and then it does the rest.


Step Two:

Start by clicking the Next button in the bottom right, and the window you see here will appear. If you're new to calibrating your monitor, I recommend using the Step-by-Step Assistant (which is already selected by default), so at this point just click the Next button again.
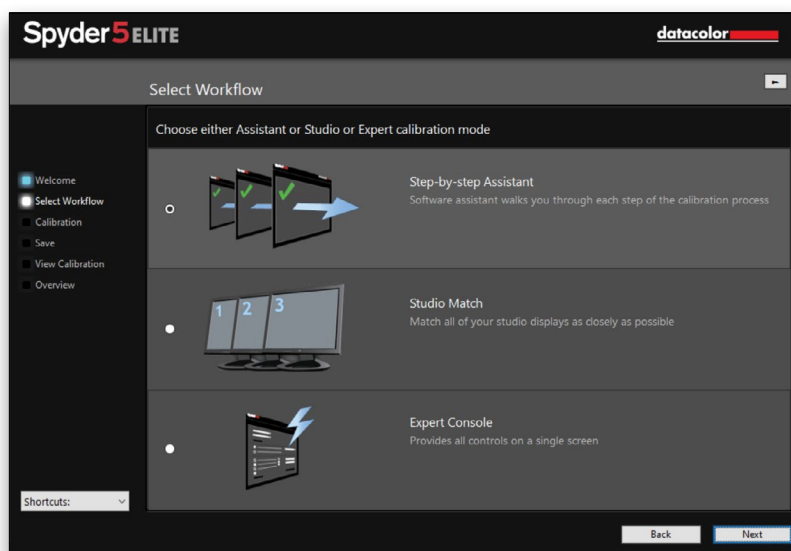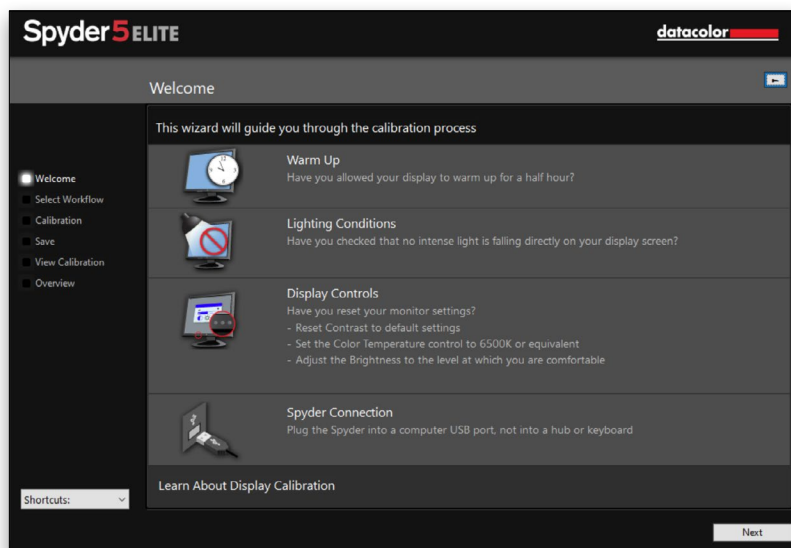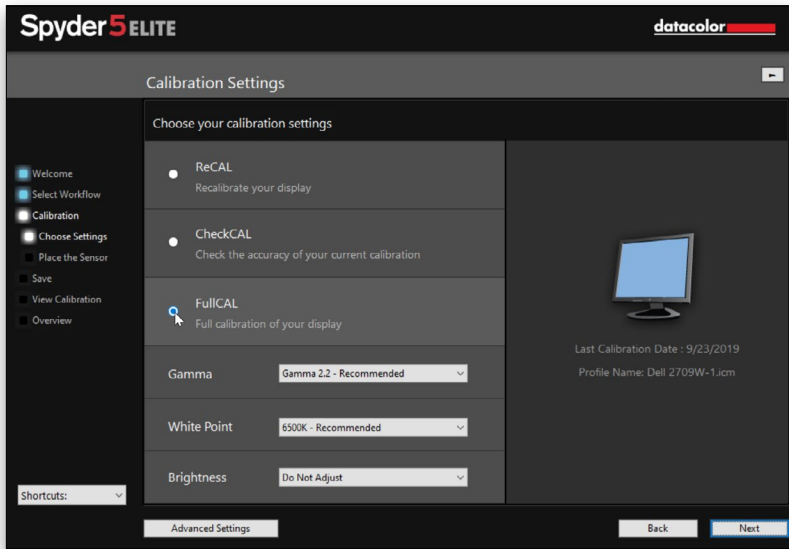
Step Three:

The next screen asks you which type of calibration you want to do. Are you going to just update an older calibration you did previously with the Spyder (then you would choose the ReCAL radio button), or do you just want to check to see how accurate your current calibration is (CheckCAL), or are you doing this for the first time (which you are, so you'd click the FullCAL radio button, as shown here)? Then, just click the Next button, because you're going to leave all the pop-up menus here at their default recommended settings.
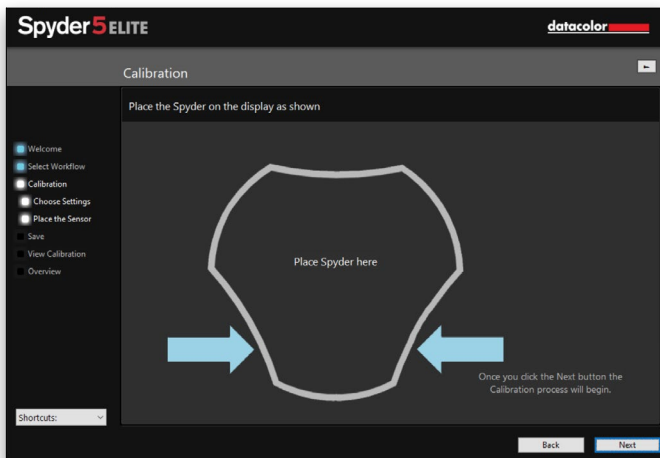
Step Four:

The next screen asks you to put the Spyder unit on your monitor, which means you drape the sensor over your monitor so it sits flat against it and the cord hangs over the back. It shows you exactly where to place it (the two blue arrows you see beside its outline actually flash on/off, so you can't possibly miss where it goes). The sensor comes with a counterweight you can attach to the cord, so you can position the sensor approximately in the center of your screen without it slipping down. Once the sensor is in position over your screen, click the Next button, sit back, and relax. You'll see the software conduct a series of onscreen tests, using gray, white, and various color swatches, as shown here.

Step Five:

This testing only goes on for a few minutes (at least, that's all it took for my laptop), and then it's done. It asks you to name your profile (it puts a default name in place for you), so enter a name, and then click the Save button. Below that is a pop-up menu where you can choose when you want an automatic reminder to "Recalibrate your monitor" to pop up on your screen. The default choice is 2 Weeks (so please don't tell anyone that I actually set mine to 1 Month). Make your choice and then click the Next button.
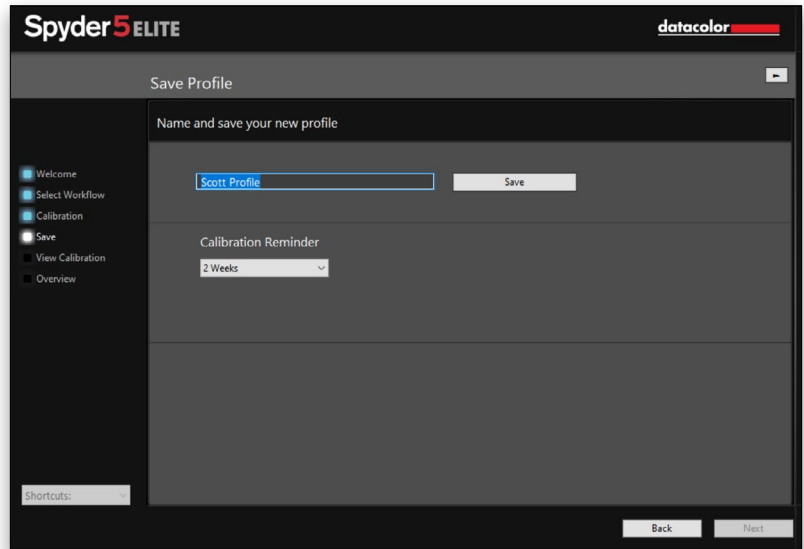
Step Six:

Now you get to see the usually shocking before/after. Click on the Switch button at the bottom right and you can switch back and forth between your now fully calibrated monitor and your uncalibrated monitor. It's at that moment you say, "Ohhhhhh…that's why my prints never match my screen." Well, it's certainly one part of the puzzle, but without this one critical piece in place, you don't have a chance with the rest, so you did the right thing. Click Next one last time, and then click the Quit button in the Profile Overview screen.
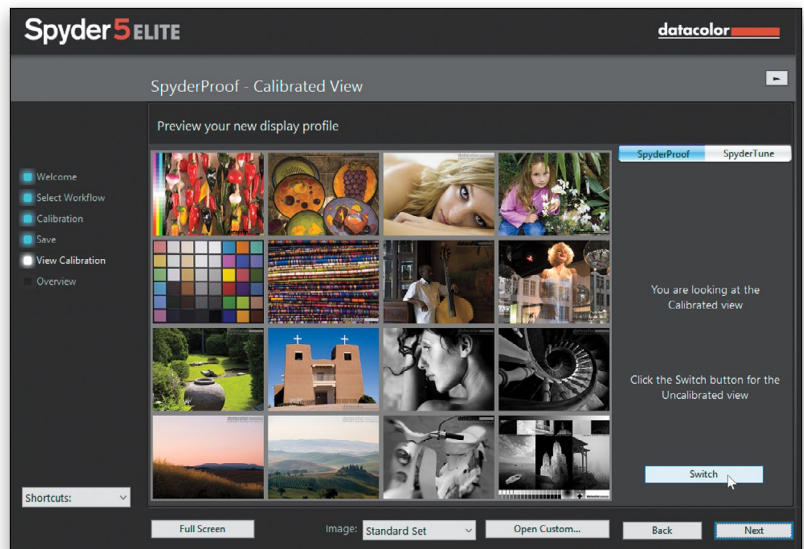
The Other Secret to Getting Pro-Quality Prints That Match Your Screen

When you buy a color inkjet printer and install the printer driver that comes with it, it basically lets Photoshop know what kind of printer is being used, and that's about it. But to get pro-quality results, you need a color profile for your printer based on the exact type of paper you'll be printing on. Most inkjet paper manufacturers now create custom profiles for their papers, and you can usually download them free from their websites. Does this really make that big a difference? Ask any pro. Here's how to find and install these profiles:
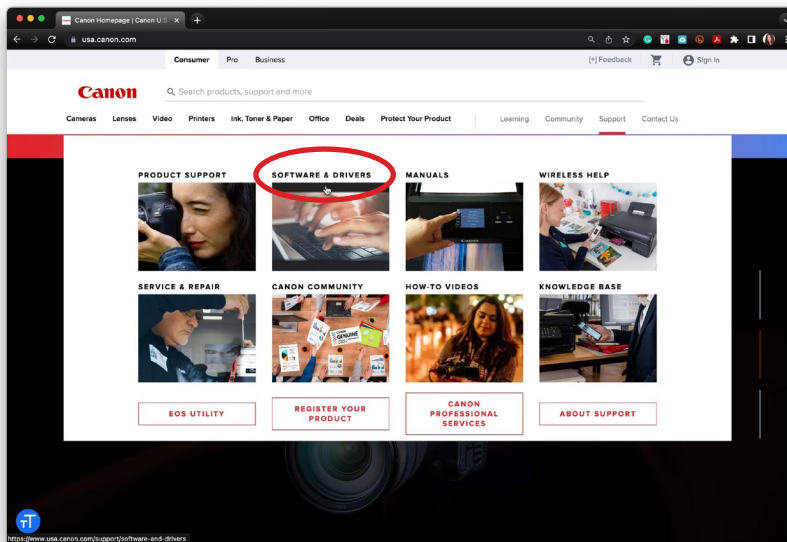
Step One:

Your first step is to go to the website of the company that makes the paper you're going to be printing on and search for their downloadable color profiles for your printer. I use the term "search" because they're usually not in a really obvious place. I use a Canon imagePROGRAF PRO-1000 printer and I generally print on Canon paper. When I installed the PRO-1000's printer driver, I was tickled to find that it also installed custom color profiles for all Canon papers, but some printers don't. So, if I needed to download them, the first stop would be Canon's website, where I'd go under Support and click on the **Software & Drivers link** (as shown here). *Note:* Even if you're not a Canon user, still follow along (you'll see why).
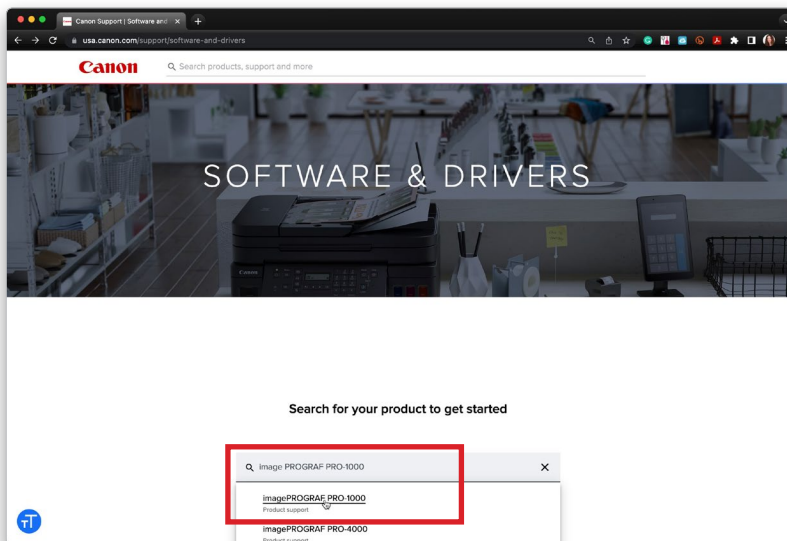

Step Two:

Once you get to the Software & Drivers page, enter your printer model name/number in the search field, and then choose it from the pop-up menu (as shown here).

Step Three:

On the printer's product page, beneath Downloads, you'll see that it recognizes if you're using a Mac or Windows, but you may need to choose your operating system. After that's set, scroll down and click the Load More button, scroll down a little more, and you'll then see imagePROGRAF PRO-1000 series ICC Profile for Supporting the Other Companies' Media. Click on the **Download button** to its right (as shown here). After it downloads onto your computer, on a Mac, the profile file should be placed in your Library/ColorSync/Profiles folder. To get to that folder (it's hidden), press-and-hold the Option key, then go under the Go menu, and choose Library. There, you'll find the ColorSync folder, and within that, you'll find the Profiles folder. Just drag-and-drop it in there. In Windows, just Right-click on the unzipped file and choose Install Profile. You don't even have to restart Photoshop—you download them, install them, and they'll be waiting for you in Photoshop's print dialog (I'll show how to choose them in the Print dialog a little later). Easy enough. But what if you're not using Canon paper? Or if you have a different printer, like an Epson or an HP?
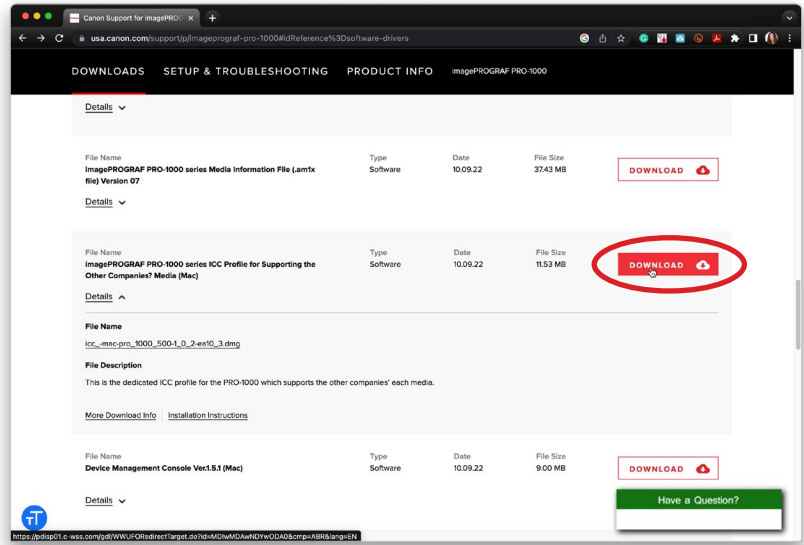

Step Four:

We'll tackle the different paper issue first (because they're tied together). Say I wanted to print from my PRO-1000 using a different brand of paper other than Canon. For example, say I wanted to use Hahnemühle Photo Rag® Ultra Smooth paper instead. So, even though I'm printing on a Canon printer, now I'd go to Hahnemühle's website to find their color profiles for my PRO-1000. (Remember, profiles come from the company that makes the paper.) On the Hahnemühle home page, click on the **Download Center link**, under ICC Profile, under Digital FineArt on the left side of the page (as shown here).
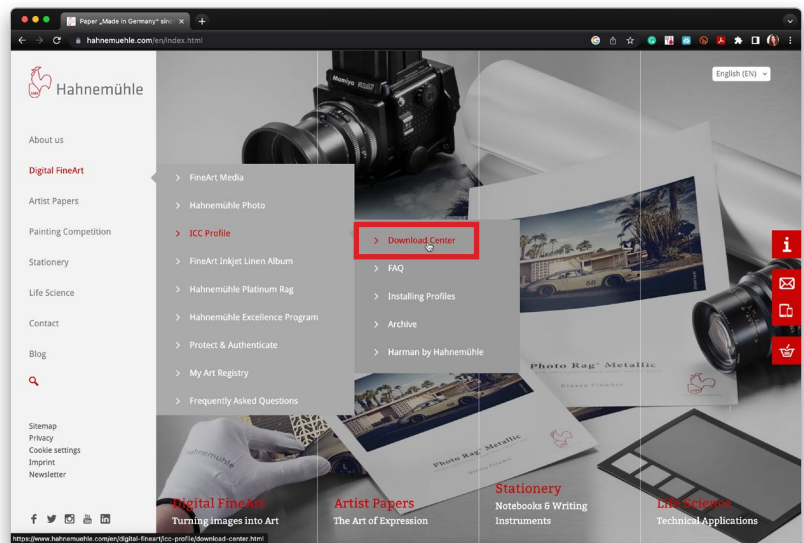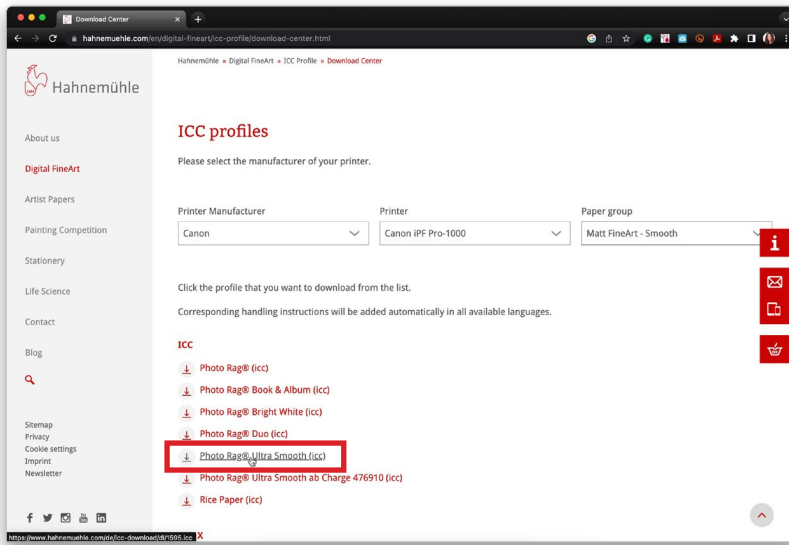
Step Five:

On the ICC Profiles page, choose your printer make and model, then the type of paper you want to print on from the pop-up menus. It will display a list of free paper profiles (as seen here), so just click on the one you want to download (as shown here, where I'm clicking on the Photo Rag® Ultra Smooth profile).
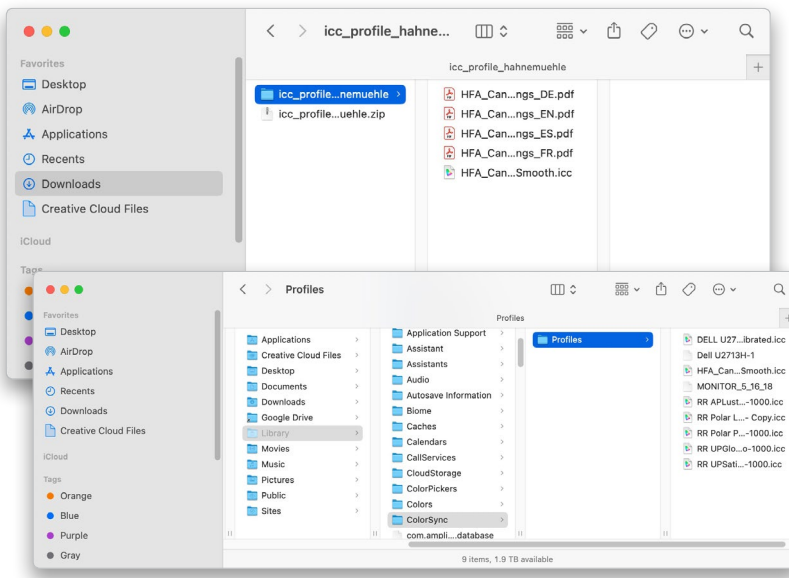
Step Six:

Now, just like we did in Step Three, on a Mac, the unzipped profile file should be placed in your Library/ColorSync/Profiles folder. Press-and-hold the Option key, then go under the Go menu, and choose Library. Within the ColorSync folder, you'll find the Profiles folder (seen here, at the bottom). Just drag-and-drop it in there. In Windows, just Right-click on the unzipped file and choose Install Profile.

Step Seven:

Now, you'll access your profile by choosing **Print** from Photoshop's File menu. In its dialog, change the Color Handling pop-up menu to **Photoshop Manages Color**. Then, click on the **Printer Profile pop-up menu**, and your new color profile(s) will appear. In our example here, I'm printing to a Canon PRO-1000 using Hahnemühle Photo Rag® Ultra Smooth paper, so that's what I'm choosing as my printer profile. More on using these color profiles later in this chapter.
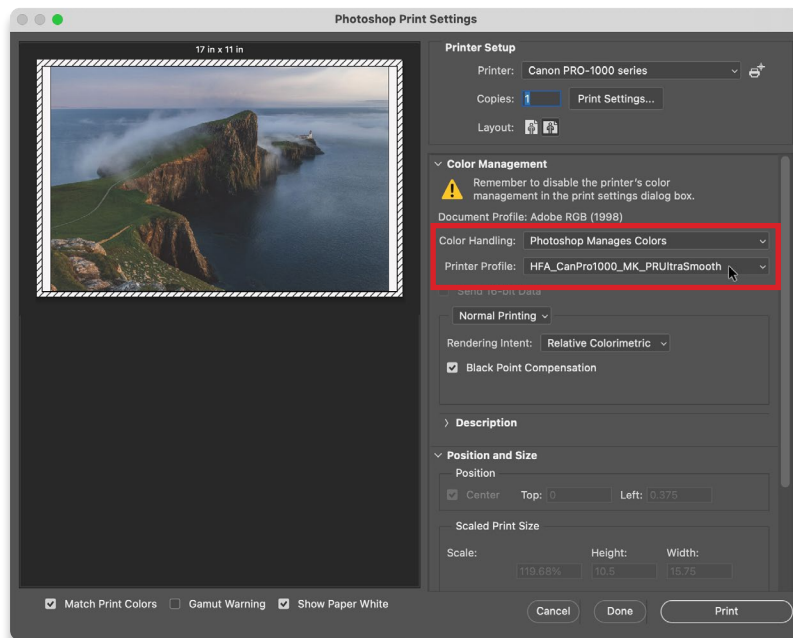

TIP: Creating Your Own Profiles

You can also pay an outside service to create a custom profile for your printer. You print a test sheet (which they provide), overnight it to them, and they'll use an expensive colorimeter to measure your test print and create a custom profile. The catch: it's only good for that printer, on that paper, with that ink. If anything changes, your custom profile is just about worthless. Of course, you could do your own personal printer profiling (using something like one of X-Rite's i1 Software), so you can re-profile each time you change paper or inks. It's really determined by your fussiness/time/money factor (if you know what I mean).
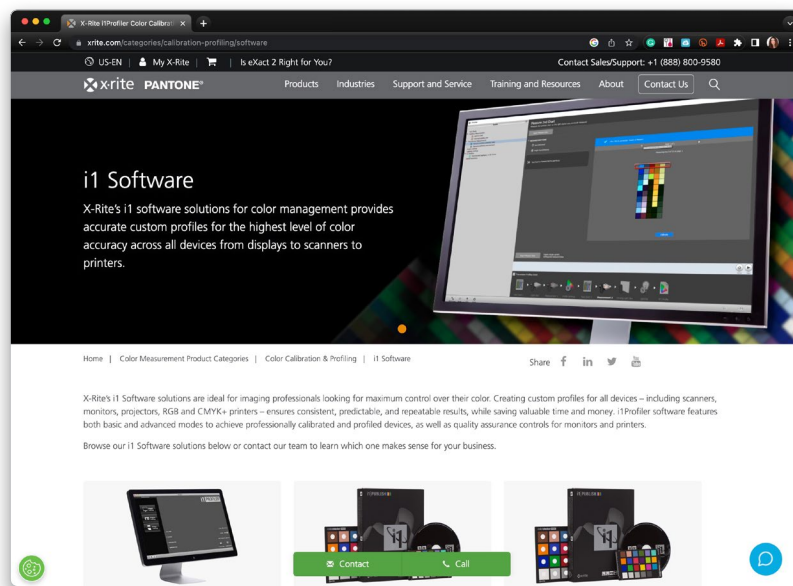
Making the Print (Finally, It All Comes Together)

Okay, so at this point, you've set Photoshop to the proper color space for the type of photo you're going to be printing (RAW, JPEG, TIFF, etc., see page 3), you've hardware calibrated your monitor (see page 8), and you've even downloaded a printer profile for the exact printer model and style of paper you're printing on. In short—you're there. Luckily, you only have to do all that stuff once—now you can just sit back and print. Well, pretty much. The Photoshop Print Settings dialog has some options you'll want to know about, which we'll cover here:
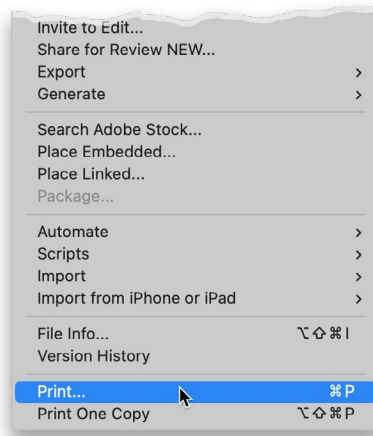
Step One:
Go under Photoshop's File menu and choose **Print** (as shown here) or just press **Command-P (PC: Ctrl-P)**.
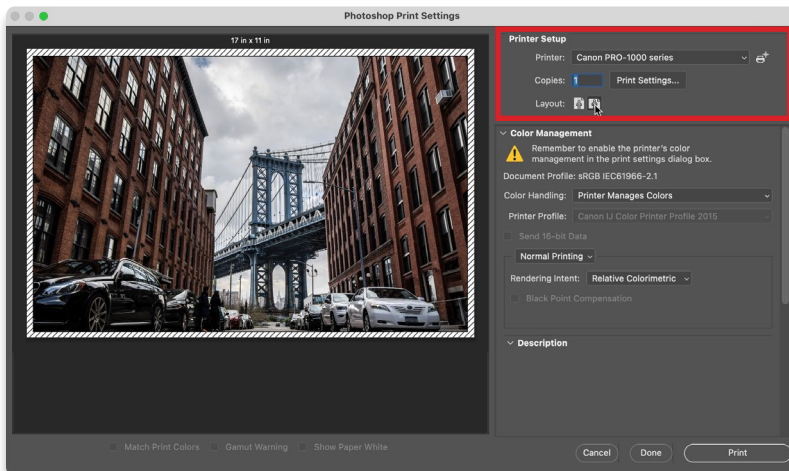
Step Two:
When the Photoshop Print Settings dialog appears, let's choose your printer first. At the top right, choose the printer you want to print to from the **Printer pop-up menu** (here, I'm going to be printing to my Canon PRO-1000). You can choose your page orientation by clicking on the portrait and landscape **Layout icons** at the bottom of the Printer Setup section (as shown here). By the way, you'll be happy to know that you can actually resize this dialog to any size you'd like by clicking on the bottom-right corner and dragging it out.

Step Three:

If you want your image to fit fully on the page, scroll down to the Position and Size section and turn on the **Scale to Fit Media checkbox** (as shown here) and it scales the image down in size, so the entire image fits on the page without being cropped (the image is less wide here than what we saw back in Step Two). Just so you know: I have no problem turning this Scale to Fit Media checkbox on if my image is going to shrink in size to fit the paper, but if turning that on would wind up increasing the size, I'll hit the Cancel button and go to the Image Size dialog (under the Image menu) and resize it there, so I have control over the upsizing process (see Chapter 8 in the book for more on resizing).
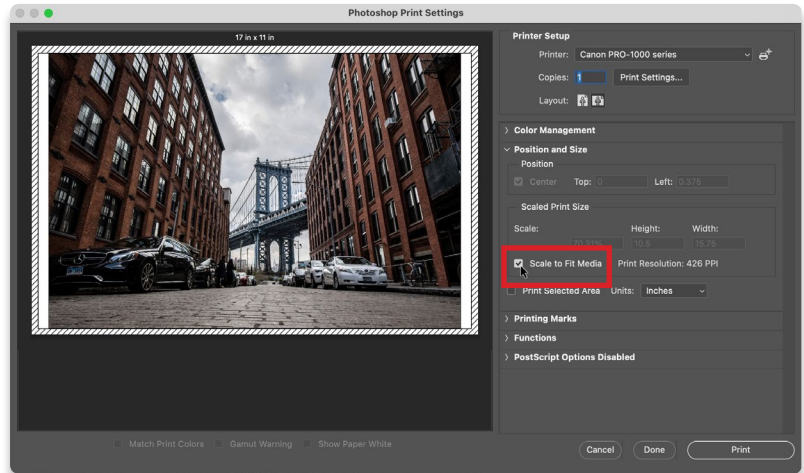
Step Four:

While we're talking about size, there's another Print feature, which gives you the ability to just print part of your image (so, it's kind of like cropping the print without actually cropping the image itself). You do this in the Position and Size section by turning on the **Print Selected Area checkbox**. When you turn this on, you'll see little arrows appear around the corners of your image. Just click-and-drag these in toward your image, and as you do, it darkens the areas to be cropped away (as seen here, where I've dragged those arrows on the top left, top right, and top left side). Now, only the area that's not darkened will actually wind up being printed on the page.
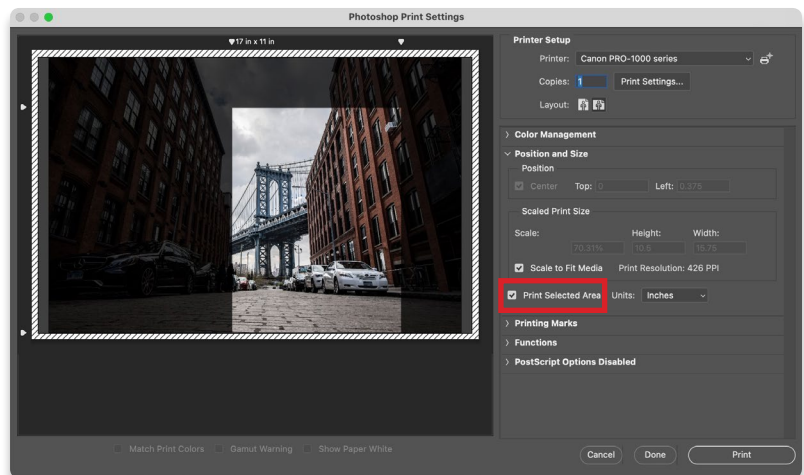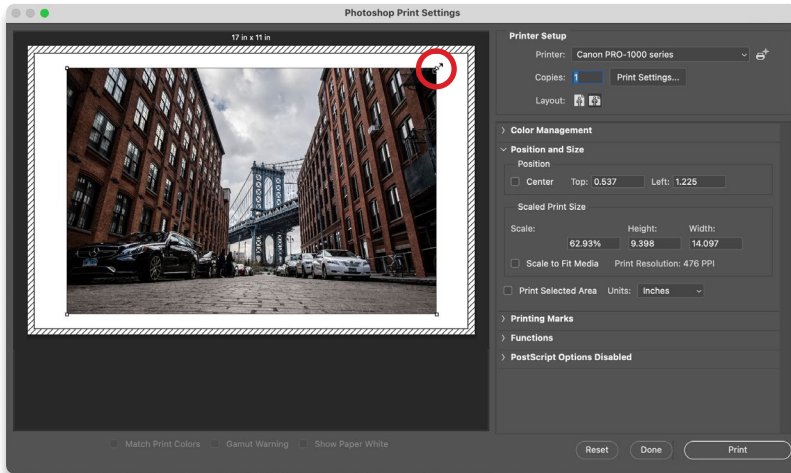
Step Five:

Another resizing feature here is the ability to just click-and-drag on your photo to reposition and/or resize it. To use this feature, first make sure the Scale to Fit Media checkbox is turned off, and then click-and-drag the image around so you can reach a corner handle surrounding your image. Then, just click-and-drag a corner handle inward, and it resizes your image (kind of like Free Transform does). Here, I scaled the image down in size and positioned it where I wanted by just clicking-and-dragging it in the preview area. Now, before we go on to the next step, you're probably wondering what that lined area around the outside edge of your paper is all about. That's showing you where the margins are (the non-printable areas of your paper).
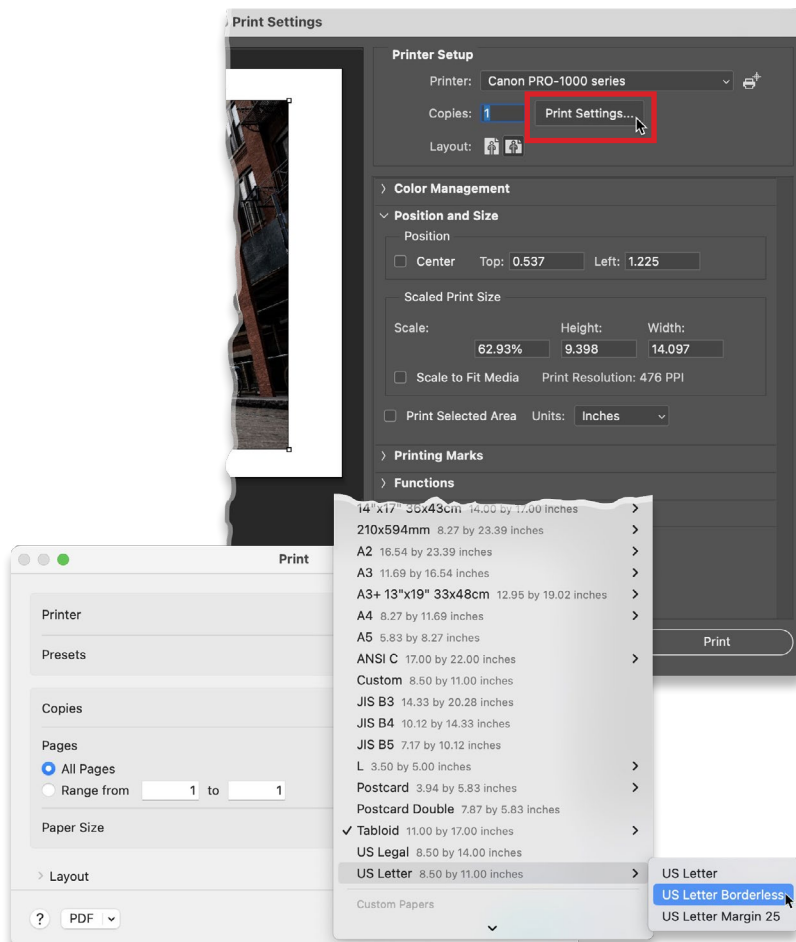
Step Six:

If you want to be able to print all the way to the border (and have those margin lines and non-printable areas go away), all you have to do is to set your margins to 0 inches. You do this by clicking on the **Print Settings button** in the top right of the dialog (as shown here, at the top) to bring up your OS Print (PC: Printer Properties) dialog (as seen here, at the bottom). (*Note:* I use Canon printers, but if you have an Epson or HP, the dialog will have the same basic function, just in a different layout.) When you choose a paper size that is borderless (as shown here), you can now print to the edges of the paper (well, as long as your printer supports edge-to-edge printing, of course). Now, take a look at the preview—the margin area lines are gone.

Step Seven:

Okay, now let's turn on our Color Management, so our prints will match what we see onscreen. In the Color Management section, you'll see that, by default, the Color Handling is set up to have your printer manage colors (instead of Photoshop). You really only want to choose this if you weren't able to download any printer/paper profiles for your printer. Having your printer manage colors like this is your backup plan, not your first choice. But, today's printers have gotten to the point that if you have to go with this, it still does a decent job (that wasn't always the case). Instead, I recommend that you choose **Photoshop Manages Colors** (as shown here). That way, it uses the color profile we downloaded earlier for our printer and paper combination, which will give us the best possible match.
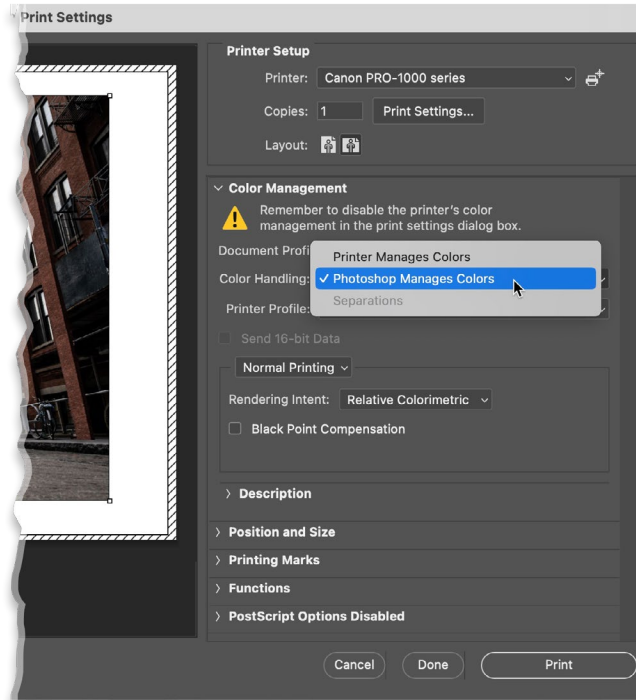
Step Eight:

Next, you'll need to choose that printer/paper profile you downloaded and installed earlier. So, from the **Printer Profile pop-up menu**, choose the printer/paper profile that matches your printer and paper (here, I'll choose the profile for the Hahnemühle Photo Rag® Ultra Smooth paper I installed earlier). Now, Photoshop and the printer know exactly which paper you'll be printing on, and it's optimized to give you the best possible color print on that printer using that paper (this is very important, because this sends a whole series of instructions to the printer, including everything from the amount of ink it should lay down, to the drying time of the paper, to the proper platen gap for the printer, and so on).
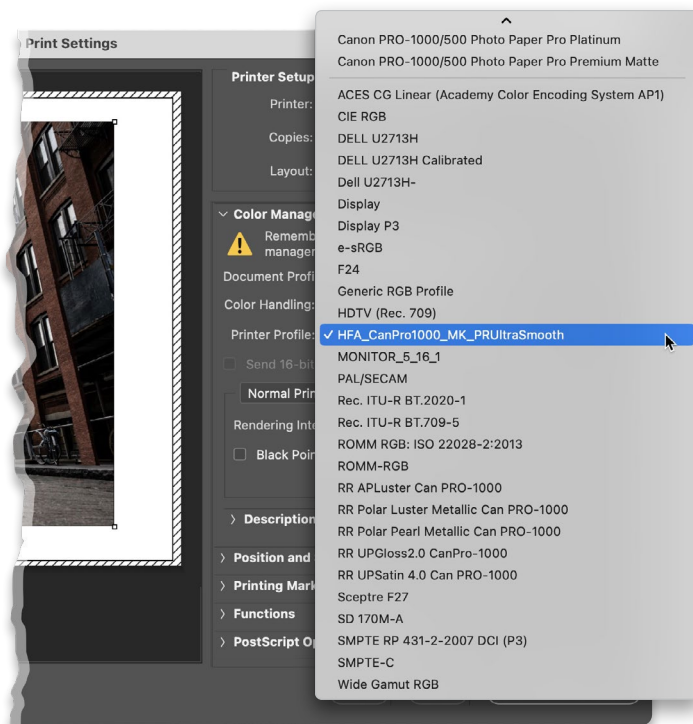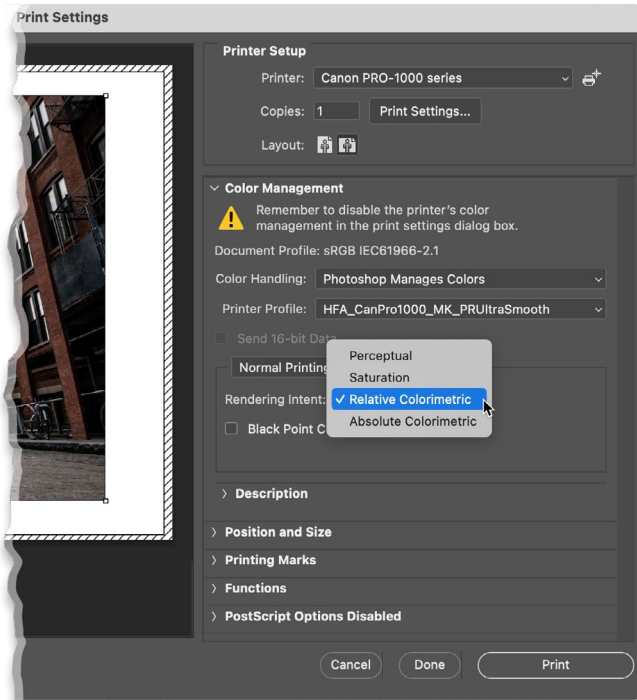
Step Nine:

Next, you'll need to choose the **Rendering Intent**. There are four choices here, but only two I recommend: either Relative Colorimetric (which is the default setting) or Perceptual. Here's the thing: I've had printers where I got the best looking prints with my Rendering Intent set to Perceptual, but currently, on my Canon PRO-1000, I get better results when it's set to Relative Colorimetric. So, which one gives the best results for your printer? I recommend printing a photo using Perceptual, then printing the same photo using Relative Colorimetric, and when you compare the two, you'll know.

TIP: The Gamut Warning Isn't for Us

The Gamut Warning checkbox (beneath the preview area) is not designed for use when printing to a color inkjet (like we are here) or any other RGB printer. It warns you if colors are outside the printable range for a CMYK printing press, so unless you are outputting to a printing press, you can leave it turned off.
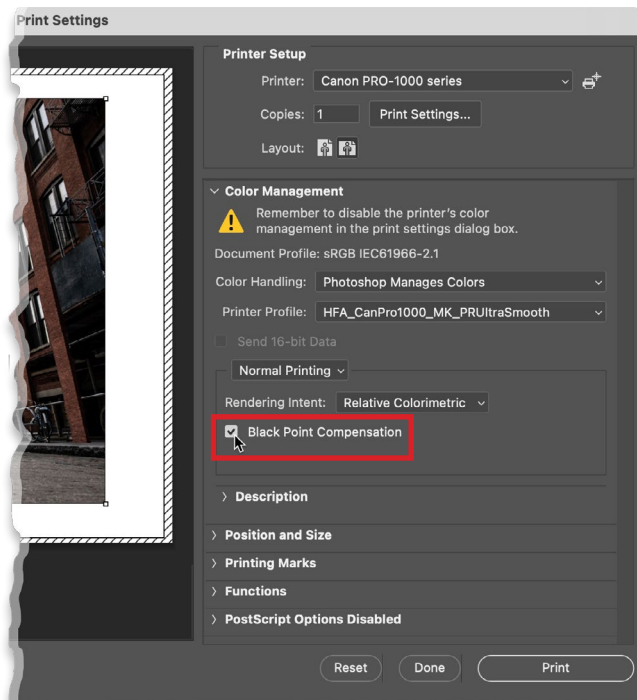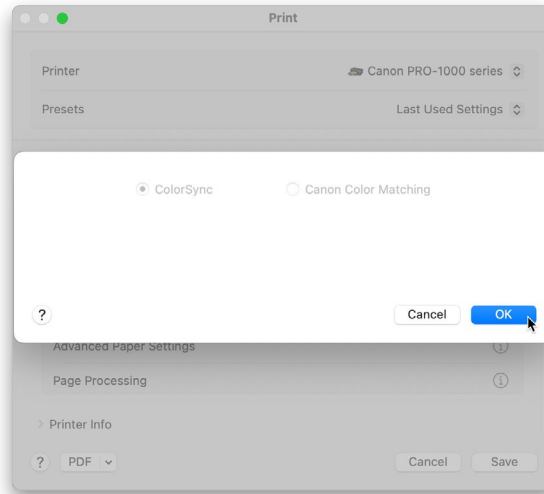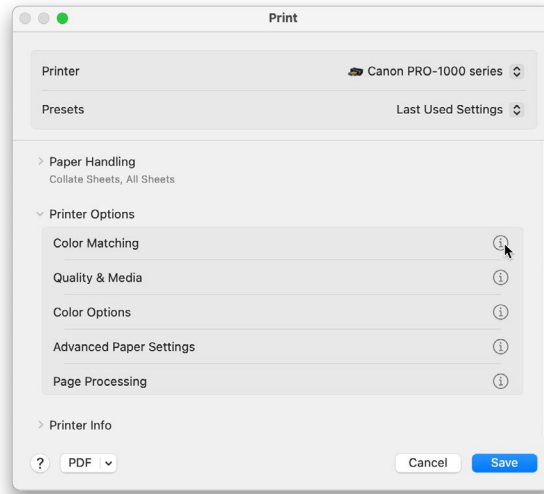
Step 10:

Lastly, just make sure the **Black Point Compensation checkbox** is turned on (it should be by default) to help maintain more detail and color in the shadow areas. Now, click the **Print Settings button** in the top-right corner (we're not quite done yet).

**WARNING:** If you're printing to a color inkjet printer, don't ever convert your photo to CMYK format (even though you may be tempted to because your printer uses cyan, magenta, yellow, and black inks). The conversion from RGB to CMYK inks happens within the printer itself, and if you do it first in Photoshop, your printer will attempt to convert it again in the printer, and your printed colors will be way off.

WARNING: From this point on, what appears in the OS Print dialog is contingent on your particular printer and operating system (again, I use Canons). You may or may not be able to access these same settings, so you may need to view each option to find the settings you need to adjust. If you're using a Windows PC, you may have to click on the Advanced tab or an Advanced button to be able to choose from similar settings.

Step 11:

In your OS Print dialog, your printer will already be chosen in the Printer pop-up menu. Under Printer Options, click on **Color Matching** (as shown above). On a PC, click on the Properties button, and then Photo Printing in the Commonly Used Settings section at the top of the Quick Setup tab, where you'll see the Color Intensity Manual Adjustment checkbox. Turn this on and it will bring up the Manual Color Adjustment dialog. On a Mac, when the Color Matching options appear, you'll see your printer's color management may be turned off and grayed out (as seen here, below). If it is, ColorSync should be selected rather than Color Matching, since you're having Photoshop manage your color. You don't want the printer also trying to manage your color, because when the two color management systems both start trying to manage it, nobody wins. So, if you're on a Mac, and if it's not already set to ColorSync, be sure to switch it. On a PC (this may be slightly different, depending on your brand of printer), you should already be in the Manual Color Adjustment dialog. Click on the Matching tab up top, then click None under Color Correction (that way, only Photoshop is managing the color, and click OK.
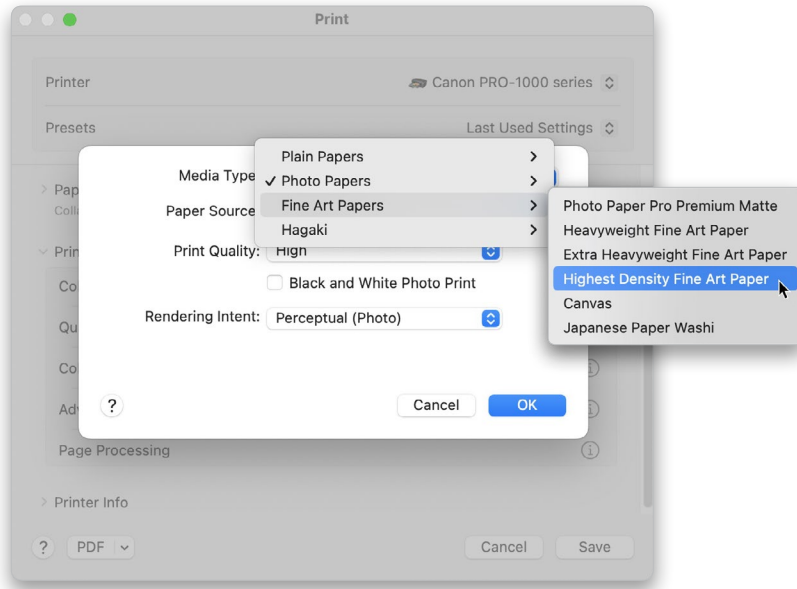
Step 12:

Now, choose **Quality & Media** in the OS Print dialog (on a Windows PC, these paper choices are at the bottom of the Quick Setup tab in the Properties panel, so when you closed the Manual Color Adjustment dialog, you should be back in the right place already.) For Media Type, choose the type of paper you'll be printing to from the pop-up menu (as seen here, where I chose Highest Density Fine Art Paper). In that same Quality & Media section, select High from the Print Quality pop-up menu. Again, this is for printing to a Canon printer. If you don't have a Canon printer, choose the one that most closely matches the paper you are printing to. On a Windows PC, for Print Quality, choose High from the pop-up menu. Now, click OK, then Save on a Mac. On a PC, click OK twice to close the dialogs. Back in the Photoshop Print Settings dialog, hit the Print button to get prints that match your screen, as you've now color managed your photo from beginning to end.


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What to Do If the Print Still Doesn't Match Your Screen

Okay, what do you do if you followed all these steps—you've hardware calibrated your monitor, you've got the right paper profiles, and color profiles, and profiles of profiles, and so on, and you've carefully turned on every checkbox, chosen all the right color profiles, and you've done everything right—but the print still doesn't match what you see onscreen? You know what we do? We fix it in Photoshop. That's right—we make some simple tweaks that get the image looking right fast.
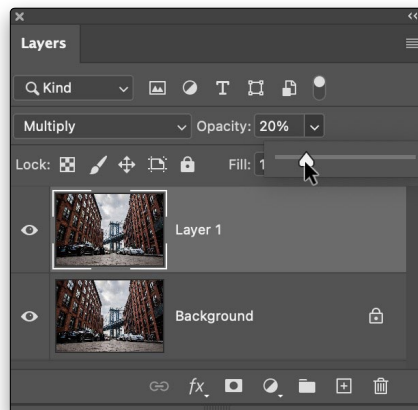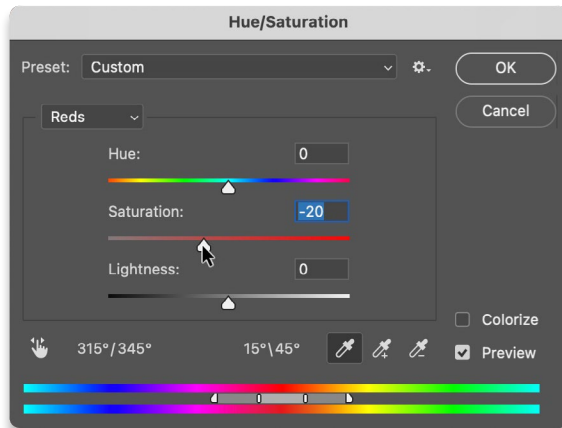
Your Print Is Too Dark:

This is one of the most common problems, and it's mostly because today's monitors are so much more incredibly brighter (either that, or you're literally viewing your images in a room that's too dark). Luckily, this is an easy fix and here's what I do: Press **Command-J (PC: Ctrl-J)** to duplicate the Background layer, then at the top of the Layers panel, change the layer blend mode to **Screen** to make everything much brighter. Now, lower the **Opacity** of this layer to 25% and (this is key here) make a test print. Next, look at the print, and see if it's a perfect match, or if it's still too dark. If it's still too dark, set the Opacity to 35% and make another test print. It'll probably take a few test prints to nail it, but once you do, your problem is solved (by the way, this is a great thing to make into an action).
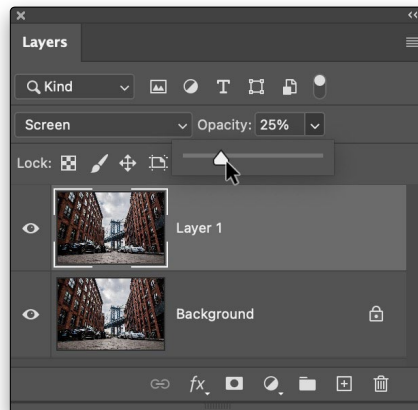
Your Print Is Too Light:

This is less likely, but just as easy to fix. Duplicate the Background layer, then change the layer blend mode to **Multiply** to make everything darker. Now, lower the **Opacity** of this layer to 20% and make a test print. Again, you may have to make a few test prints to get the right amount, but once you've got it, you've got it. Now, make that into an action (name it something like "Prep for Print") and any time you print, just run that action first. (We looked at actions in Chapter 9 in the book.)

Your Print Is Too Red (Blue, etc.):

This is one you might run into if your print has some sort of color cast. First, before you mess with the image, press the letter **F** on your keyboard to put a solid gray background behind your photo, and then just look to see if the image onscreen actually has too much red. If it does, then press **Command-U (PC: Ctrl-U)** to bring up Hue/Saturation. From the second pop-up menu, choose **Reds**, then lower the **Saturation amount** to –20%, and then (you knew this was coming, right?) make a test print. You'll then know if 20% was too much, too little, or just right. Once you make a few test prints and nail it, save those steps as an action and run it before you print each time.
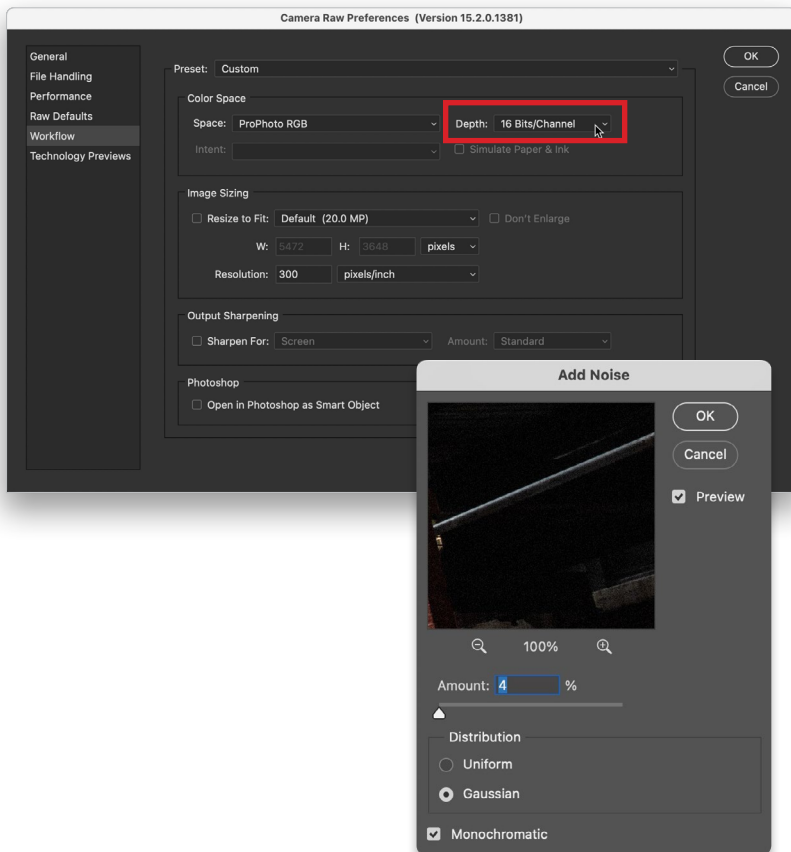
Your Print Has Visible Banding:

The more you've tweaked an image, the more likely you'll run into this (where the colors have visible bands, rather than just smoothly graduating from color to color. It's most often seen in blue skies). There are two ways to deal with this: If you shot in RAW, make sure you keep the image in 16-bit mode (don't have it down sample to 8-bit when it leaves Camera Raw). Click the Workflow Options link beneath the Preview area in Camera Raw, and choose **16 Bits/Channel** from the Depth pop-up menu. Stay in 16-bit through the entire printing process. If your original was a JPEG, then there's no going back to a 16-bit original (and just converting to 16-bit mode does nothing), so instead try this: Go under the Filter menu, under Noise, and choose **Add Noise**. In the dialog, set the Amount to 4%, click on the Gaussian radio button, and turn on the Monochromatic checkbox. You'll see the noise onscreen, but it disappears when you print the image (and usually, the banding disappears right along with it).

Making Contact Sheets in Photoshop

For reasons known only to a secret society of Adobe engineers (who meet in underground catacombs buried deep below Adobe's headquarters and lit solely by torches), they chose to remove the Contact Sheet feature back in an earlier version of Photoshop. I guess they assumed we'd use the PDF Contact Sheet in Bridge, which can only mean they never actually tried it themselves. Thankfully, after the public stormed Adobe's headquarters with axes and pitchforks, they brought Contact Sheet II back a number of years ago, and the balance of power has been restored to the kingdom. Here's how to unleash its wrath:

Step One:

To launch Contact Sheet II (the II part comes from the fact that this is the second version of this automated script, a big improvement over the first one. But, honestly when I heard Adobe was bringing this back, I was hoping for Contact Sheet III. Sigh), go under the File menu, under Automate, and choose **Contact Sheet II** (as shown here).
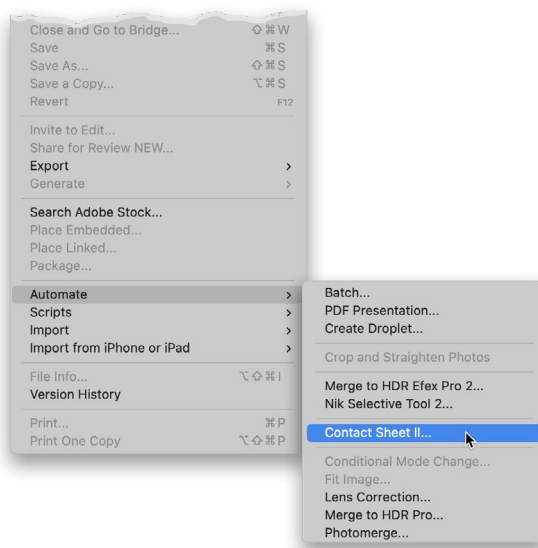
Step Two:

This brings up the Contact Sheet II dialog, where you get to choose how your contact sheet will look. You start at the top by clicking on the **Choose button** and selecting which folder of images you want to create a contact sheet of. In the next section down, **Document**, you get to choose the size and resolution of your contact sheet. In our example, we're going to make a wide 10x8" sheet at a resolution of 240 ppi (pretty standard resolution for a color inkjet printer). I always leave the Flatten All Layers checkbox turned on, so when it's done I'm not looking in my Layers panel and seeing 36 different layers, and that's pretty much what you'll get if you choose not to flatten all layers.
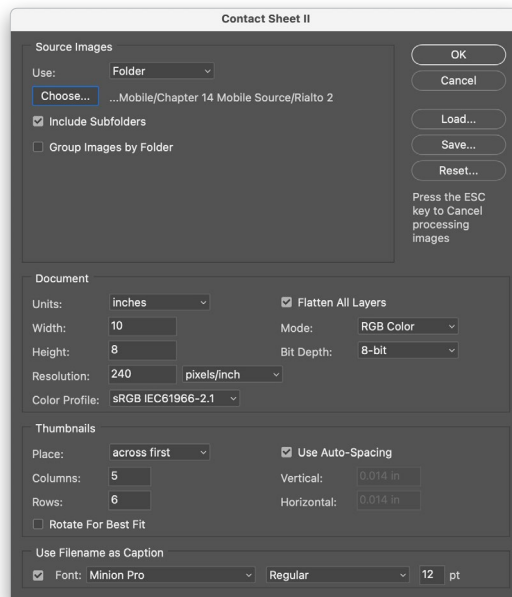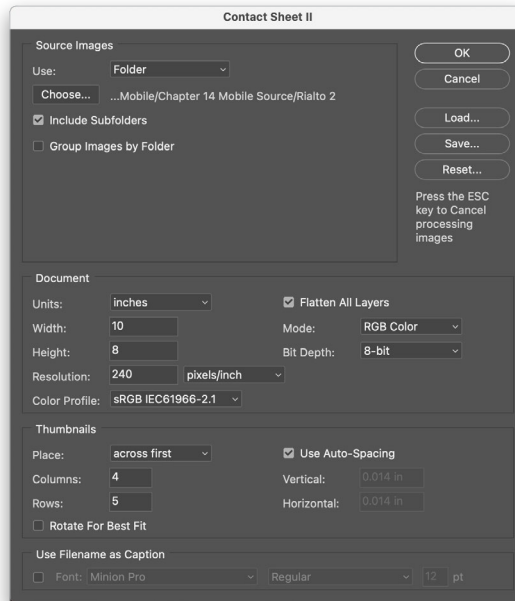
Step Three:

The next section down, **Thumbnails**, is where you choose how many columns and rows you want. In our example, we're going to do four across, with five rows deep. I generally leave the Use Auto-Spacing checkbox turned on, because it has Photoshop do the math to figure out how to make the thumbnails in your contact sheet as large as possible. However, if you turn that checkbox off, you can type in what you'd like for your vertical and horizontal spacing (the only time I would do this is if I wanted more space along the top and sides. As you'll see in the next step, this one has them spread out, so they're really close to the side edges of the paper and pretty darn close to the top and bottom).
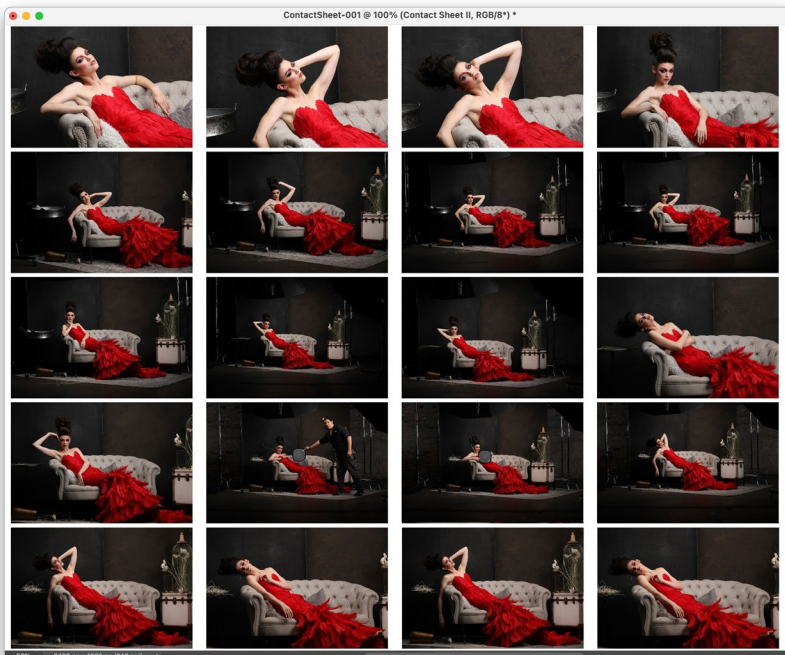
Step Four:

The last section, **Use Filename as Caption**, at the bottom of the dialog, is pretty important (even though I turned it off here), and that is the option for the filename of each photo to appear below the thumbnail. If you're using this as a proof sheet for a client, that's pretty important. My only recommendation for this would be to use a smaller font size than the default 12-point, which always seems too large to me (especially if you have a long filename). Try 9- or 10-point, and I also would try a sans serif font, like Myriad Pro (rather than the default Minion Pro), simply because it looks better. Now, click the OK button up top, and in about 20 or 30 seconds, the contact sheet you see here appears. This particular one uses 20 photos (4 columns by 5 rows), but if your folder contains more than 20 photos, it just keeps making more contact sheets until every photo is accounted for.

Soft Proofing in Photoshop

I don't usually include how to do soft proofing in my books because I don't use—or recommend—soft proofing myself, and I don't want to include techniques I don't really use. But, I have had so many people ask me about it, I felt I had to include it. Just know that my advice about this is simple: nothing beats a real proof. If you're serious about making great prints, make a test print—soft proofing just gives you a hint of what it might look like. A test print is what it actually looks like. Okay, I'm off my soap box. Here's how it's done:

Step One:

Start by downloading the free color profile from the company that makes the paper you're going to be printing on (see page 11 for where to get these and how to install them). Open the image you want to soft proof, then under the View menu, under Proof Setup, choose **Custom** (as shown here).

Step Two:

When the **Customize Proof Condition dialog** appears, from the Device to Simulate pop-up menu, choose the color profile for the printer/paper combo you'll be using (here, I've chosen the profile for the Hahnemühle Photo Rag® Ultra Smooth paper printing on the Canon PRO-1000 I installed earlier). Next, choose the Rendering Intent (see page 19 for more on this), and make sure you leave Black Point Compensation turned on. Down in the Display Options (On-Screen) section, leave Simulate Paper Color and Simulate Black Ink both turned off. You can toggle the Preview checkbox on/off to see a before/after of the simulation of what your print might look like with that profile on that paper (though, of course, it can't simulate how your sharpening might look on different papers, just the color. Kinda). Give it a try and then compare it with a real test print, and you'll be able to determine if soft proofing is for you.