

Reasons for missing or corrupted EXIF file data

(We should strive to keep at least the Colour Space information in the Metadata)

First, a little about Colour Space

The 'EXIF file' is a collection of additional information about the image. It's often called metadata as this means 'data about data', which is exactly what the EXIF format is all about. EXIF stands for EXchangeable Image File format. There are many possible 'tags' in the current EXIF standard but one of the most important ones is the Colour Space tag. This tag tells any receiving device or software how to interpret the image RGB values into 'real world' colours. Without the information in this tag no true conversion between various colour spaces can be made. There are many colour space formats but the two we'll most likely come across in our photography are sRGB and Adobe RGB. sRGB is the world standard, but it's so much so that many bits of equipment, most software and most internet browsers don't even measure the EXIF file. They just assume it will be sRGB.

But as digital photographers many of us have the option of sRGB or Adobe RGB in our cameras. Photoshop, being made by Adobe can handle both Adobe RGB and sRGB, but most other devices (including your LCD monitor) can only deal with the sRGB colour space and so show dead spots in a linear colour ramp, particularly in the reds and violets. They just can't handle the wider gamut of the Adobe RGB colour space. If you are printing your own work and understand what you are doing with Adobe RGB there are some advantages, but don't expect to see them on your monitor. If you have to ask, then maybe you should be using sRGB everywhere.

There are even wider colour space formats. ProPhoto RGB for example, but if you have the equipment and skill to use this space then you don't need any help here!

By all means shoot in Adobe RGB if you want to capture the wider gamut, even if you only want to save the images for a future era of photography. However, have your Photoshop Color Settings set to deal with Adobe RGB in the way you'd like to work, but also, convert the file to sRGB for use in digitally projected competitions, web browsers and sending to anyone else for digital display. Photoshop converts to sRGB using Image>Convert Color Profile.

Not setting Software Preferences properly

This is probably the most common cause of uncalibrated or missing colour space data. The default 'Color Setting' of some (& as far as I know all) Photoshop and Photoshop Elements software is 'No Color Management'. When you leave Photoshop set in this default state it will accept any image colour space without question. Great! It's a no-worries, head-in-the-sand setting that's useful if you only output to a monitor. Many monitors and other software are uncalibrated anyway, so what the heck! Now that might just be a fair setting if your Photoshop-modified image was saved with the same profile as it was opened with. But it is not. When Photoshop opens an image under the default settings, it not only ignores the attached colour space profile it also strips it out of the metadata entirely! When you next 'Save As' your image the EXIF file will contain 'uncalibrated' as the colour space setting. As if this was not bad enough in itself, when the image is loaded into anything else (such as DiCentra) 'uncalibrated' gives no clue to what the original colour space was – so the correct colour space cannot be converted. (Most things will assume sRGB, which is fine if the original colour space was sRGB – apart from any changes you made in Photoshop, which won't be colour managed at all)

Those of you who have seen my tutorial slide show 'Getting Your Colours Right' will know how to set Photoshop's *input* Colour Settings up properly. If you haven't seen it, it's available on the website handouts pages. In the meanwhile – **don't** have colour settings set to the default setting of 'No Color Management'. Interestingly, it's worth checking this from time to time as I have personally had crashes where *all* Photoshop's default settings have been reinstalled afterwards.

Editing / saving from non-standard image viewers/editors

Sadly, very many software applications (amazingly, including products from Microsoft and Apple), take no notice of Colour Space. When you save from these applications the EXIF tag for colour space set by your camera is stripped out, resulting in an 'empty' Colour Space tag. As an example, Windows Photo Gallery allows you to adjust colour and tint, but leaves your Colour Space tag empty.

Mixing parts from different images

Dragging or merging two images together may sometimes cause the software to lose its way. There can be only one EXIF data set, yet the image is composed of two files with differing EXIF data – what is the software to do? True it should warn you – but I've never seen such a warning while manipulating images. To

be fair, all versions of Photoshop that I've come across have preferences (Color Settings) that allow you to decide how Photoshop handles colour, but this is only activated as you open an image. Once an image is opened, Photoshop will continue to operate using the profile specified – but it won't change the metadata while you are in the middle of editing. (It may re-write the EXIF data as the file is saved – or when it is opened if your Color Settings dictate such.

Working in Greyscale or Indexed colour modes

These modes don't have a projector-friendly colour space – use Image>Mode to assign sRGB.

Converting images from Raw files

Many Raw converters (Adobe included) don't assign any Colour Space to the image as it is passed on. After all, one of the reasons people use Raw is to distort the colour information – it would be a bit presumptuous then to assign a colour space arbitrarily. If your Raw converter does not give you an option to assign the Colour Space, then assume it does not assign it. It will be passed on with an empty EXIF slot for Colour Space. As Adobe's Raw converter passes files directly into Photoshop the colour preferences dialogue is bypassed – so there is no warning about 'uncalibrated' images.

If you have Photoshop set to warn you about uncalibrated images (as you should have) it will keep the image uncalibrated until it is saved, when Photoshop will assign the original Colour Space from the camera. If you have Photoshop preferences set differently then an 'uncalibrated' tag is assigned to the image when it is saved.

I have not experimented to find out what Photoshop does if you mix or blend images from Raw with those from anywhere else. I suspect this is where some of the 'empty' colour space files come from.

Images combined in HDR software such as Photomatix

In a similar way to Raw converters, there is difficulty in assigning an appropriate Colour Space so it's likely to be left 'empty'. Photomatix does this. Images such as these are not loaded into Photoshop automatically so Photoshop's colour preferences will pick this 'empty' colour space up and allow you to assign a value on input. But, if you have not set the preferences properly, it won't warn you and assign 'uncalibrated' when you save the image.

Photoshop allows you to assign a Colour Space & set Colour Policies

(Unfortunately as Photoshop & Elements have evolved some of the commands have moved or been renamed)

1. Photoshop allows you assign a Colour Space – so if you know your camera was set to sRGB or Adobe RGB, then after some processing hiccup (see the many possibilities above) you may set the Colour Space back to what it should be. The command in Elements is Image>Convert Color Profile. In CS2 it is Edit>Assign Profile or if you wish to convert profiles it is Edit>Convert to Profile.
2. Most importantly, Photoshop allows you to set your Colour Policies. (Edit>Color>Settings.) If you set them sensibly you will always be warned if you attempt to load an image with a missing or uncalibrated Colour Space. The only remaining way an image can get into Photoshop without being checked is if you pass an image from another program such as Adobe Raw. If you are using Raw then you should be very aware of what you are doing to colours already. If you are just experimenting or starting out with Raw, always remember to assign your camera's colour space setting once the image is in Photoshop – see 1. Above.

A good way to measure your EXIF data is to use Exif Pilot

Exif Pilot is a freeware program from <http://www.colorpilot.com/exif.html> It allows you to analyse a range of EXIF data from complete folders – thus you may also compare files to see how your photography varies.

Summary

- You must set colour preferences appropriately
- Checking File Info in Photoshop is useful, but not fool-proof as Photoshop assigns the working profile as you save the image
- A better way to check your Colour Space is to use Exif Pilot – a freeware program
- Colour Profiles may be assigned in Photoshop – and should always be checked. (A properly tagged image will allow you to convert or un-assign, so reverse logic tell you it's OK!)
- Merging Files can corrupt the Colour Space as there is no instruction to Photoshop as to which EXIF file to use.
- Raw file converters will not necessarily assign a colour space
- HDR and similar programs may also not assign the colour space
- Many other editors do not know how to handle colour properly and strip out the colour space info.