

Grey Card Techniques for Colour Balance – David Jenkins

The BirdLife Melbourne Photography Group had a study night a few weeks back and it was good to get together with everyone and discuss techniques, equipment and birds. One of the subjects that came up, as it usually does, was the issue of colour management, which changed into a discussion on colour correction, which morphed into a discussion on colour balance.

One of the techniques put forward as the best solution was to use a “grey card”. Bob Young and others have explained White Balance at *Digital Photography in the Bush*, and in the newsletter, so I don’t want to revisit that, except to say that the grey card is a great way to establish correct colour temperature for White Balance setting. Which is OK if you happened to have one when you took the pictures - but what if your card was still in the car, or even more regrettably at home, or what if you don’t have one?

Fortunately Photoshop has a technique that allows you to be grey card-less and still make very accurate colour corrections to obtain correct colour balance.

It is a technique that I used to use when dealing with magazine printers, and was part of the Scott Kelby *Professional Photoshop Association* three-ring circus. It is relatively simple to do - just follow the instructions and it will get you there.

A Bit of Grey Card History.

Grey cards are not a digital invention. Photographers have been using them from way back in the 1920s. The theory is that all scenes reflect about the same amount of light - around 13%. So, a card which had that amount of reflectance could be used as a ‘standard’ to obtain correct exposure.

It all got a bit complicated a few years later when Ansel Adams, he of the landscapes in Yosemite and other places, required the card to show an 18% reflectance to match his photographic style. If you can find a copy of “*The Print*”, by Adams, he discusses his logic on pages 33, 42, and 43.

Kodak, who made the cards commercially, had an instruction sheet that suggested reading the card’s value and adding an extra 1/2 stop exposure, to allow for the difference between 13% and 18%.

All worked well until some time in the mid-1960s when a revision of the instructions, by some unknown know-it-all copy-writer, left out the critical sentence to increase the exposure. Many photographers began to use the card and its values without any modifications and long battles ensued over what was correct exposure, or “How come my images are consistently underexposed?”.

The oversight was corrected in the 1990s, and probably by then the copy-writer had gone on to be head of communications or something in the Yellow Father’s corporate HQ in Rochester NY.

My file copy of the instructions (R-27, 1948) has the text. Here it is for completeness:

“Give 1/2 stop more exposure than is indicated by the dial on the meter.”

For more information, see *“Is 18% Gray a Myth?”*, Dickerson and Zawadzki, Photo Techniques Magazine, May/June 2008, Preston Publications.

Why the Grey Card Works for Digital Colour Balance.

Grey is, to digital photography, a Holy Grail. In any scene pixels that have equal values of red, green and blue (RGB) will appear as a neutral (grey) colour. For example, pixels with values of R50, G50, B50, will appear as a dark grey. A neutral colour.

However if the values were, say, R150, G50, B50, then the pixels would have a red colour. To neutralise that cast, it would be necessary to subtract 100 red units.

Photoshop allows us to do that very easily: open either **Levels** or **Curves** and there is a row of eyedroppers, one black, one grey, one white. If we had a photo with a grey card included, and the grey card values were, say, R110, G100, B100, then it would have a slight red colour balance, and by activating the grey eyedropper and clicking on the grey card area, Photoshop would analyse the pixels, decide that it was 10 units too many red, and subtract 10 units from the red value of all pixels in the image. (Actually, it's a bit more complex than that sentence, but we're photographers, and the principle is correct).

It's all cool if you've got the card and the bird is happy to hold it. One of the problems of using the card for colour correction in the field is that it needs to be in the same position as the subject. Just holding it out at arm's length in front of the camera position can lead to inaccurate colour correction as the light, both direct and reflected, will likely be different between camera and subject. Especially so with birds that are a long way from the camera position.

But it's a good place to start.

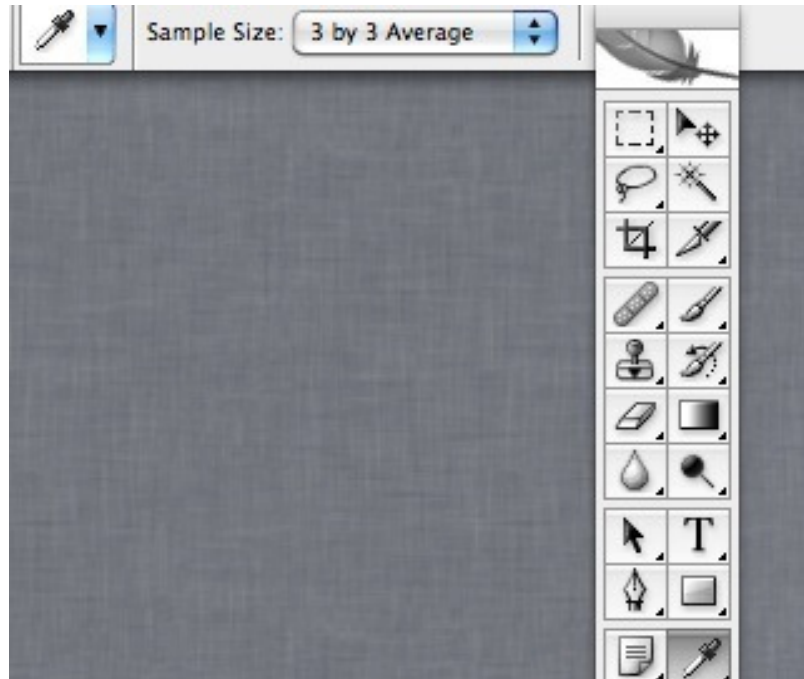
What if you don't have a grey card handy?

The following works for both Photoshop and Photoshop Elements. It isn't suitable for Lightroom or Aperture, and I haven't used it with PaintShop Pro, or any other packages.

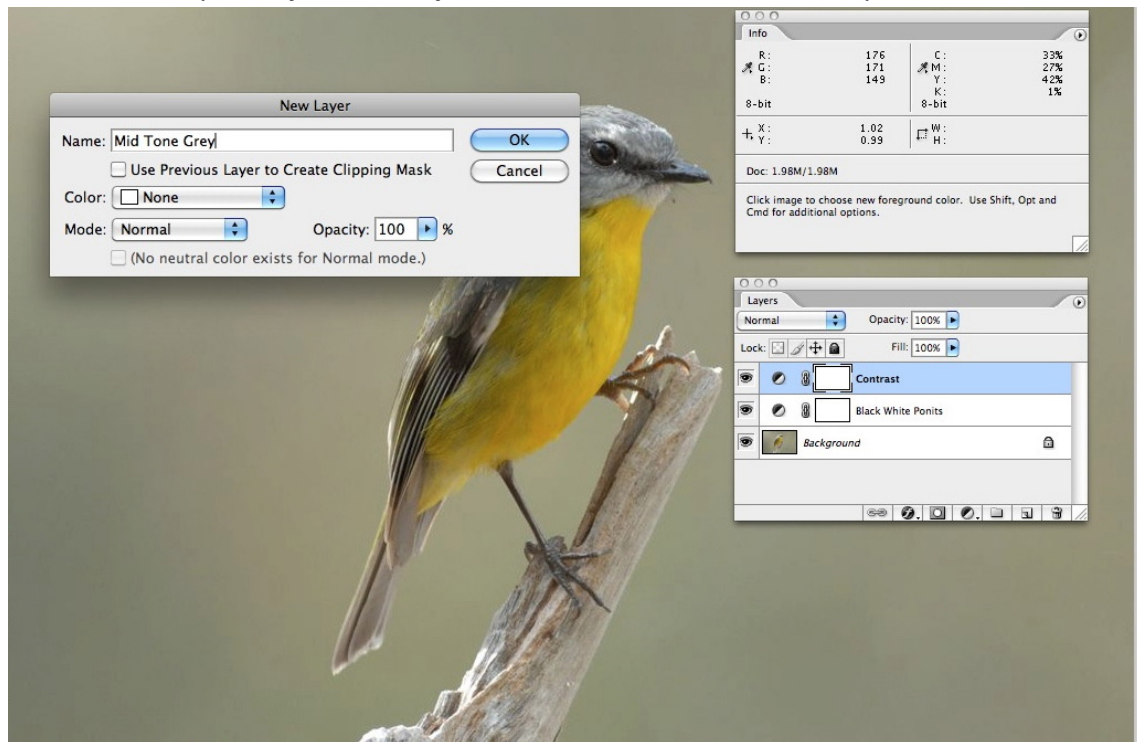
What we're going to do is use Photoshop to set up a 50% Neutral Grey, and then compare the values in the image to that. When we find a match, mark it, then use either Curves or Levels mid-tone grey eyedropper to colour match that area. Once it is neutral, then all the other pixels will have been changed by the same amount and the image should be correctly colour balanced.

1. Go to Toolbox and click on **Eyedropper Tool**.

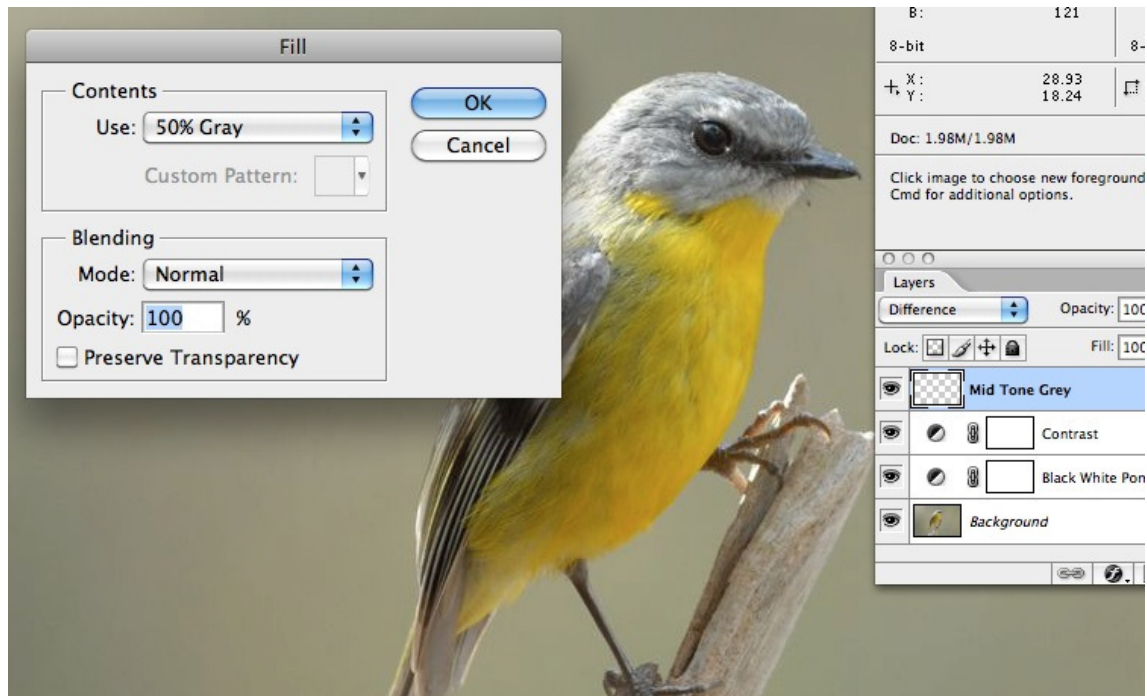
2. Go to the Options Bar and change **Sample Size** to **3 by 3 Average**. (This gives you a broader sample to work with.)



3. Open an image. **File>Open>**myimage.jpg, .cr2, .nef, .pef, etc.
4. Before you attempt to correct colour, set Black/White points and Contrast. (See previous tutorials.)
5. Create a new layer. **Layer>New Layer**, or icon at the bottom of the Layer Palette.

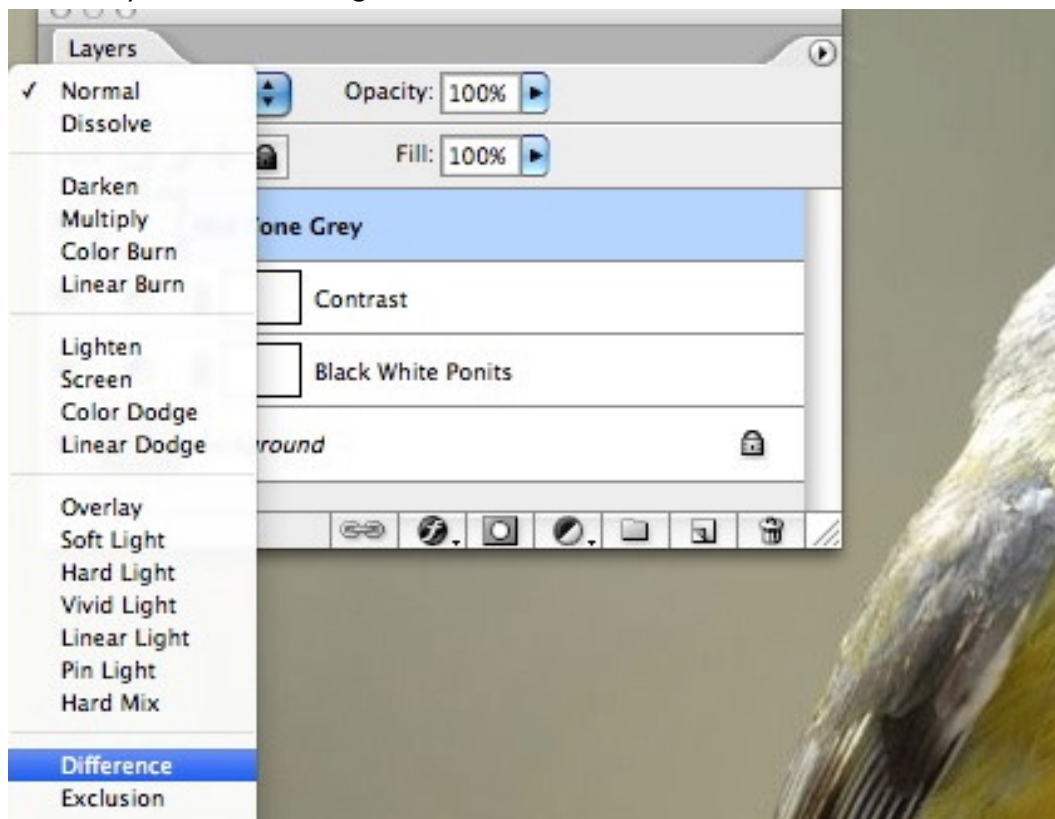


6. On the Edit menu, select Fill. **Edit>Fill**

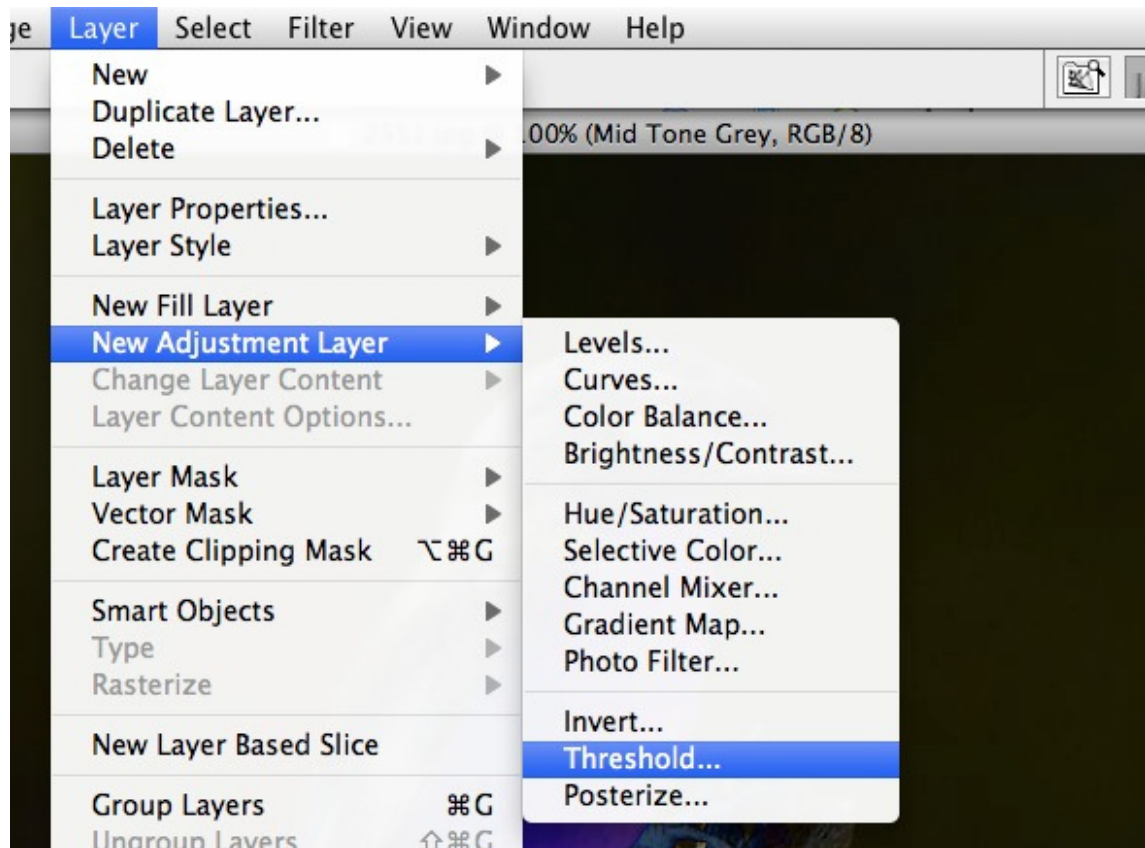


In the dialogue box, on the **Use** pop-up, choose **50% Gray**. Click OK

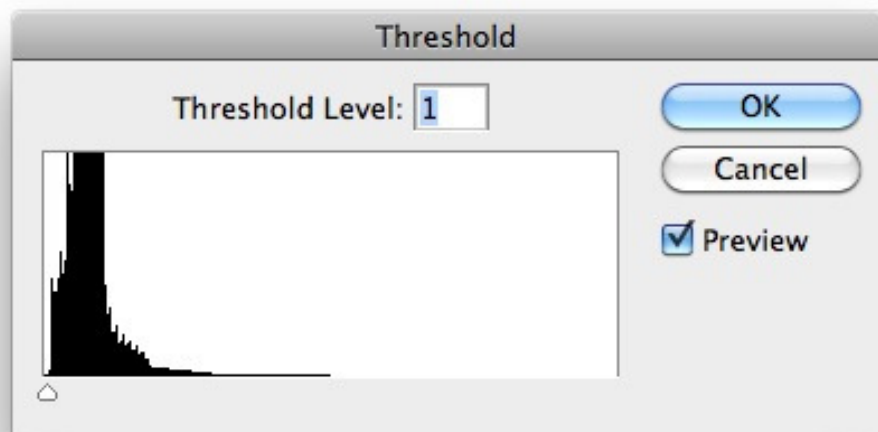
7. Go the Layers Palette. Change **Blend Mode** to **Difference**.



8. **Layers> New Adjustment Layer>Threshold.**



9. In the dialogue box, drag the slider all the way to the left. The picture will turn completely white.



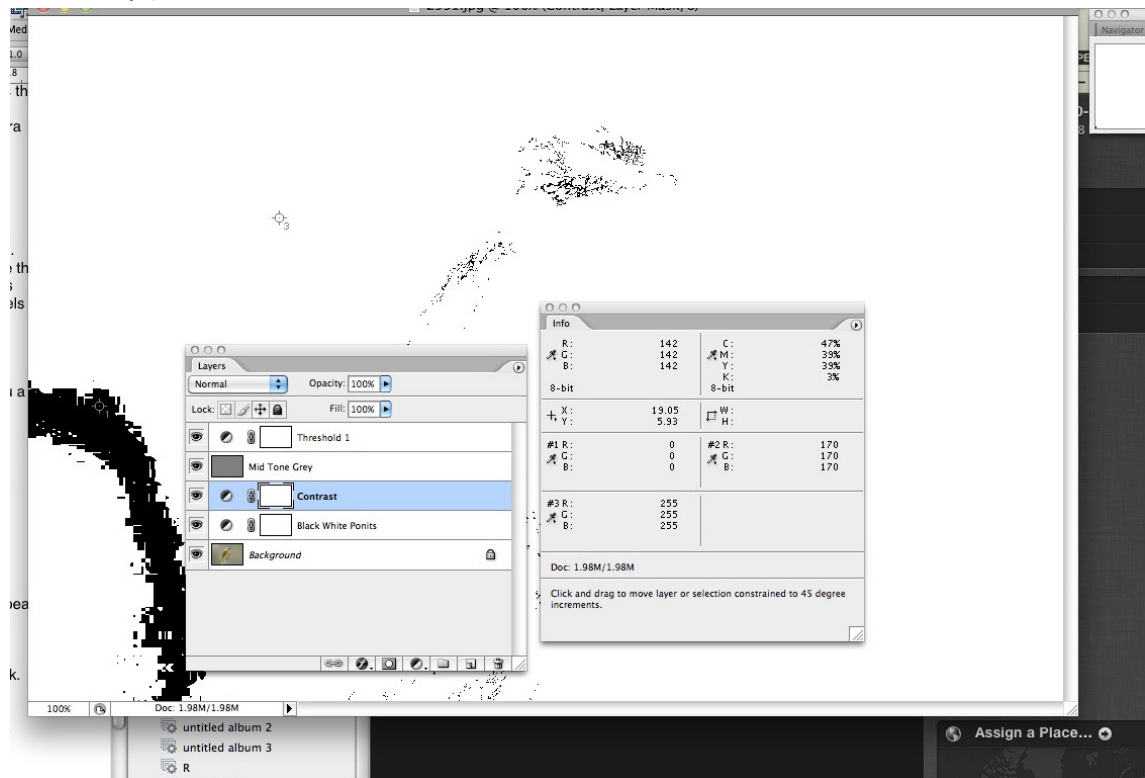
10. Now move the slider slowly to the right, until the first few black pixels begin to appear. They are the ones closest to neutral in your photo. Go right far enough to get the outline of part of your image.



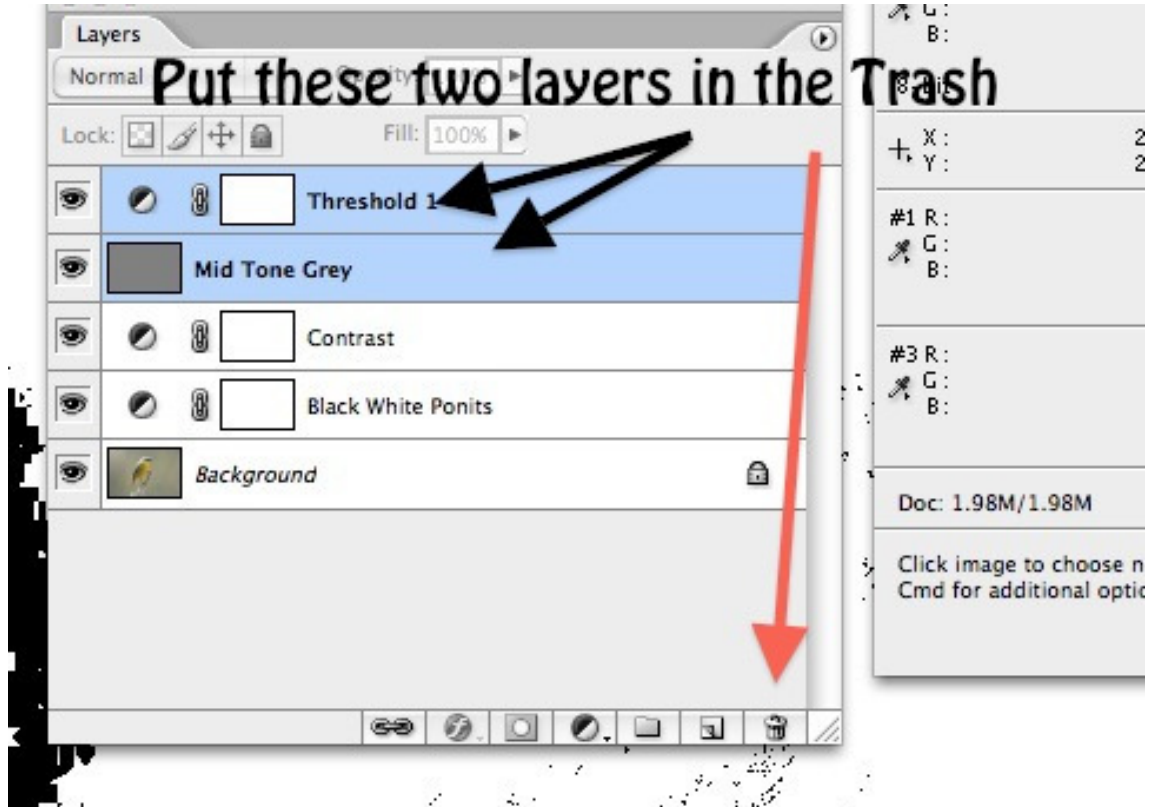
11. In the Toolbar activate the **Eyedropper Tool**.

Move it over parts of the “Black” areas and then holding down the **SHIFT** key, **click**.

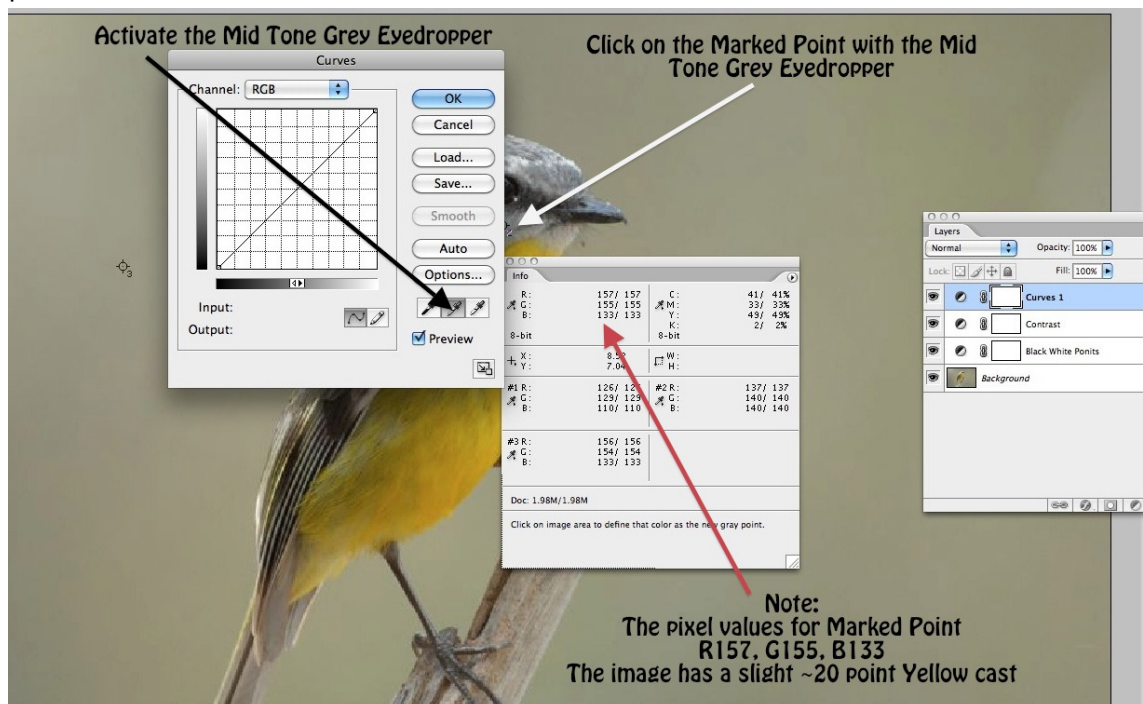
The eyedropper area will Mark the spots 1, 2, 3, as you click. You can see the values in the **Information** panel. (I put point 3 up in the white so you can see how it looks: demo only!)



12. Now we've established where "grey" is, the Mid Tone Grey layer and the Threshold layer can be dragged into the trashbin, as we don't need them anymore.



13. Open up **Curves**. (I do it on a layer). **Layer>New Adjustment Layer>Curves**.
14. Activate the Grey Eyedropper, and then move it over the Marked areas.
15. Position the Eyedropper Cursor over the Mark and then Click. The colour balance of the image will be changed to make the marked area neutral, and bring all the other pixels into correct colour balance.



16. I use the Layer Opacity Slider, to turn down the 'Neutral' a bit sometimes as it is just a bit too cold for my liking, but experiment.

17. You can hold down **SHIFT**, **click** and **drag** the Marked points out of the image to remove them.

I've broken the steps down, but really it is only a few clicks, and the image will be corrected against a standard.

The alternative is to train the birds better. Here's a White-necked Heron I found very cooperative out at the Western Treatment Plant. (Heron training provided by Photoshop!)

