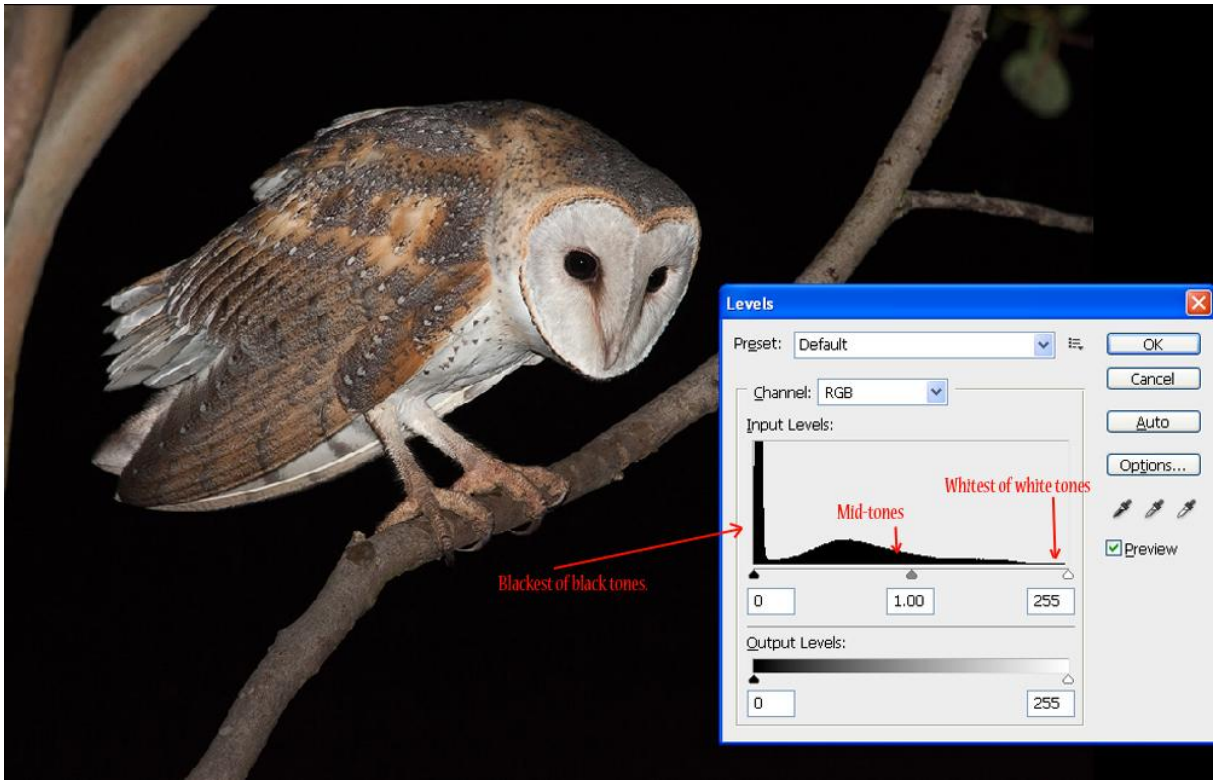
A MATTER OF LIGHT

Tutorial 03

DIGITAL EXPOSURE TO MINIMIZE NOISE

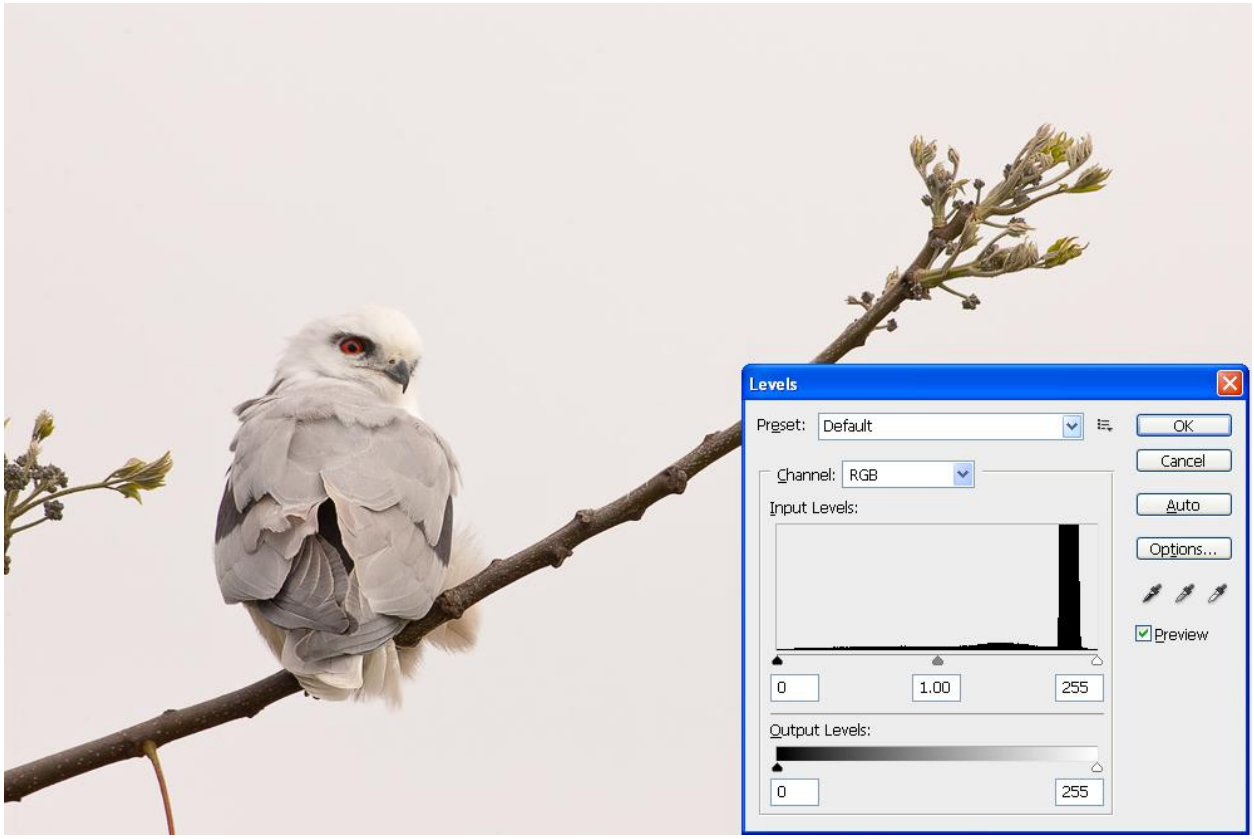
This is a simple tutorial to show you how to minimize noise during the digital capture. I will show you how simple it was to convert the original RAW capture into an appealing final image. It is simple, really is, but you must be working in RAW file capture mode to reap the most out of your digital capture. So if you don't already shoot RAW, please do yourself a favor and make the switch now.

Digital cameras are funny instruments. The sensors within record less dynamic range than our own eyes, and the majority of pixels fall into the right side of the histogram. The histogram is the funny thing you see that shows you what pixels you have and of how much quantity in your captured image. Let's take a look at a couple of histograms quickly.



The above image of the Eastern Barn Owl was captured at night. Night is black, so the histogram clearly represents a lot of dark pixels, some medium toned pixels and very few light pixels. While you can clearly see clipping of the dark tones on the left of the histogram, meaning there is no detail in the

blackest of blacks, I am not fussed, as I don't need detail in these blackest blacks. The whites are fine, not clipped so the detail is all there. Let's look at a different image.



There are a lot of light and very light tones in this image, with very little dark tones and some mid tones as you can see a slight rise across the entire graph, suddenly shooting upwards to the right, or light tonal end. That's the whites in the kite and the light sky. See the graph pushing to the right? It was a dreary, white cloud morning, so shooting a Black-shouldered Kite against this was difficult. But still, need to preserve the tones with no clipping. There is no clipping of blacks or whites here. Let's look at a different image.

The Long-billed Corella below has a wide ranges of tonalities representing the buff grass, the background and some light tones the bird. See how evenly distributed the tonalities are?

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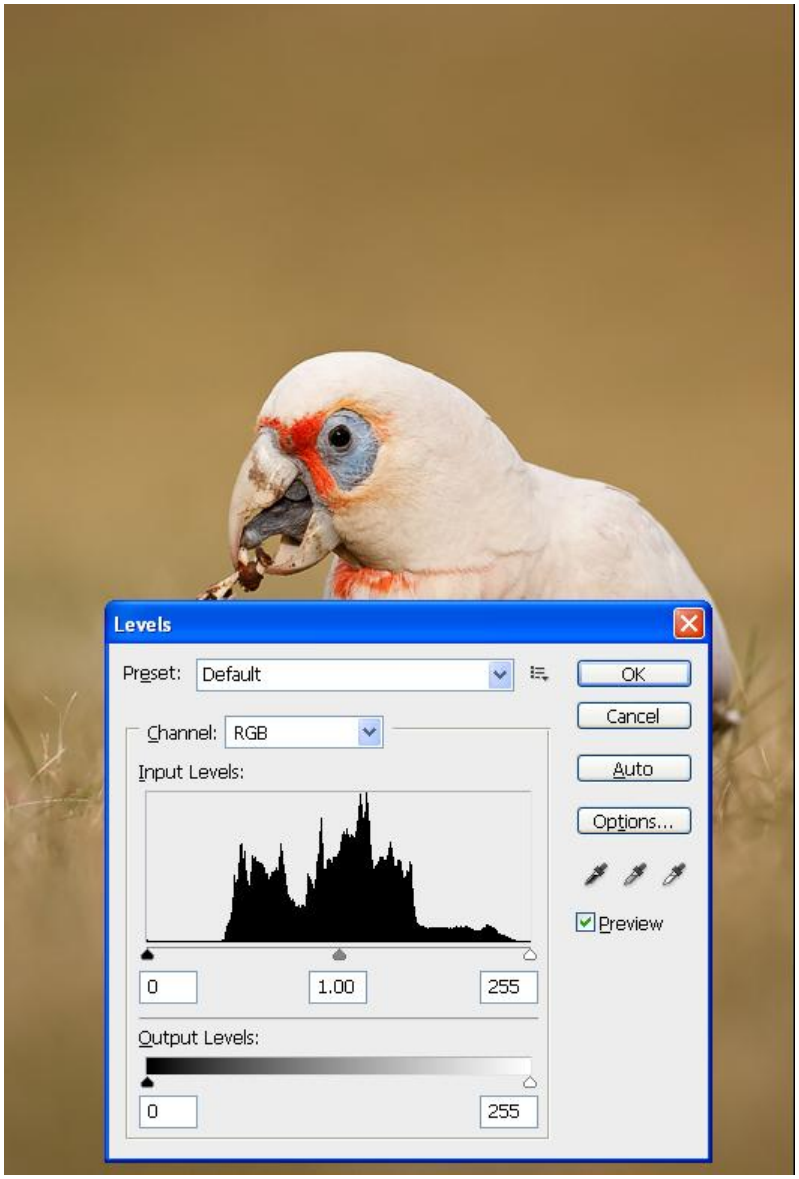

This image is perfectly representative of a capture with a good spread of tonal range, yet managed well without damage (clipping) on either dark or light ends.

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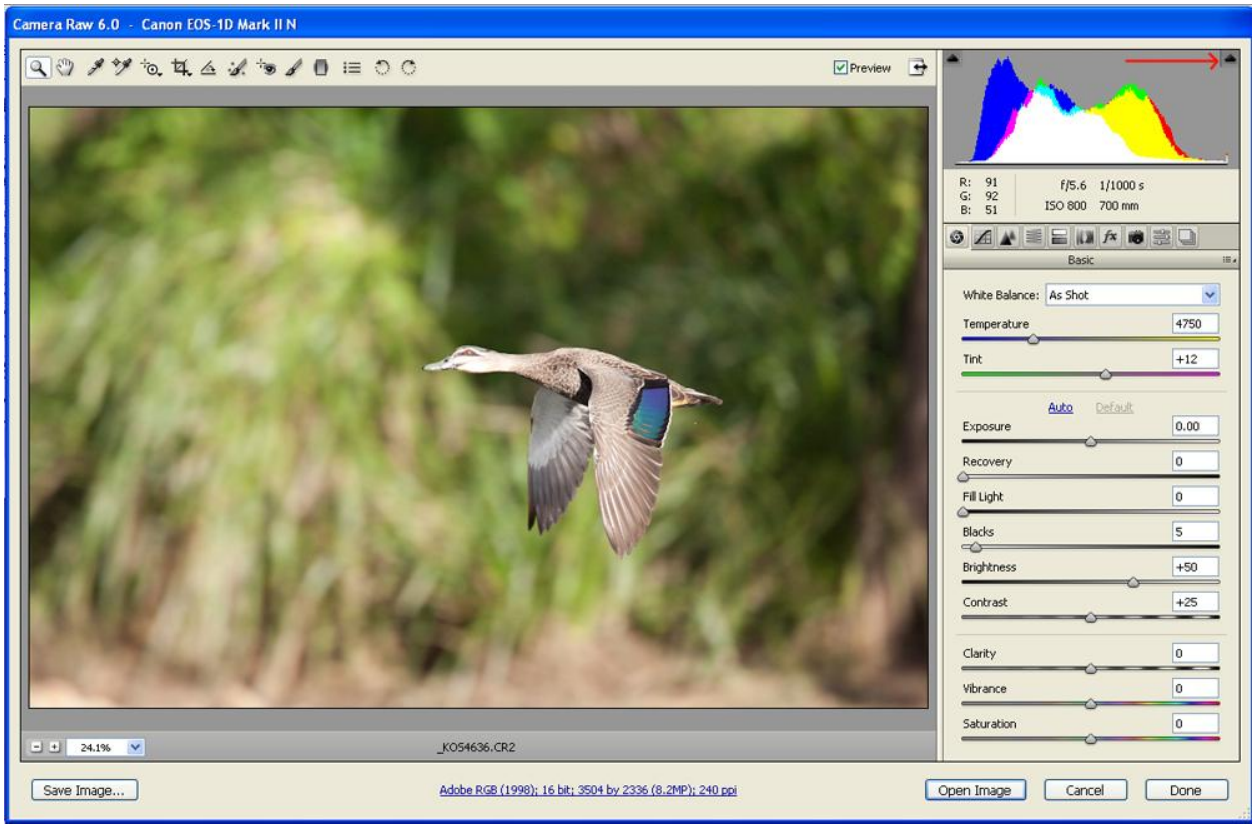
Now we can take a look at this Pacific Black Duck I photographed near the Nepean Weir in Penrith.

Underexposing a digital image will lead to noise, especially in the dark tonal range, therefore, it is advised that you shoot in RAW and push your histogram to the right during capture. Metering does not matter too much. You can use spot, evaluative (matrix for Nikon), center-weighted, or manual metering. At the end of the day you will be able to capture the exact same image regardless of metering mode used. I generally use the evaluative metering, so I have learned it and stuck with that for nearly six years.

Here is the original RAW file, straight out of my Canon EOS 1DMkIIn camera.

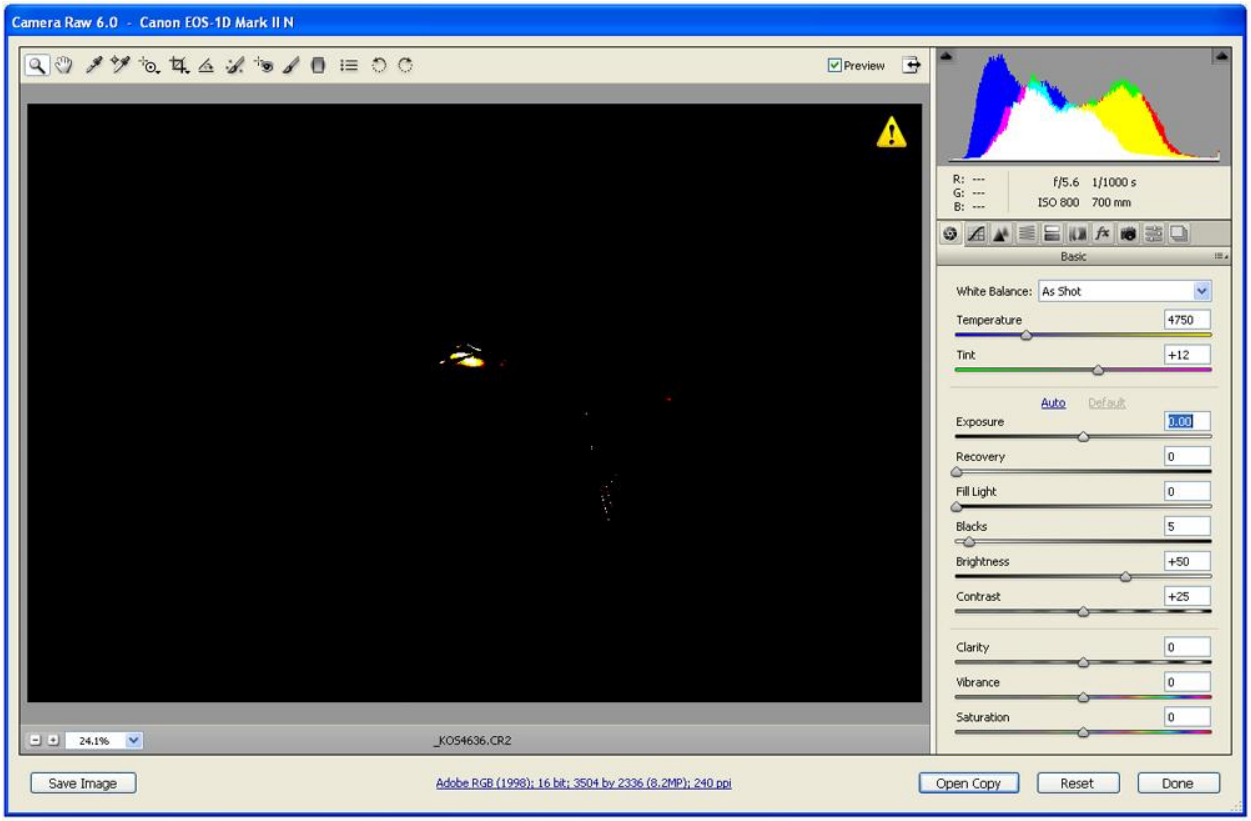


YUCK! You may exclaim, and rightly so. It looks terrible, washed out. Garbage. Full stop! But look above. The histogram shows an evenly distributed pixel range with no white clipping. In Adobe Camera Raw, the little triangles on the top left and right of the histogram would be blue (left for blacks) or red (right for whites) if there were any clipped pixels. So there are no clipping indicators, so I am happy. Also note

my settings. I used a Canon EF 500mm f/4L IS USM lens and matching Canon EF 1.4x MkII converter for best image quality. The total focal length is 700mm when you multiply 500 by 1.4. Hand held, it's not hard, but not an easy feat either.

Now, all I need to do is carefully process this image using Adobe Camera Raw (ACR) then Adobe Photoshop.

In ACR, I reduce exposure, but as I am pulling the slider back into underexposure territory, I hold down the ALT key, which shows me the pixels that are borderline hot in the image. The light feathers around the duck's head are showing here in this image. All I see is black with some pixels showing in the center and some of the wing tip and a little red dot.



I now start to pull the EXPOSURE slider into negative territory. This will make those "hot" pixels disappear. I reduce by one and a half stops, then push the RECOVERY slider up a little to finish the cleaning of pixels in the danger zone. See below for an already improved image.

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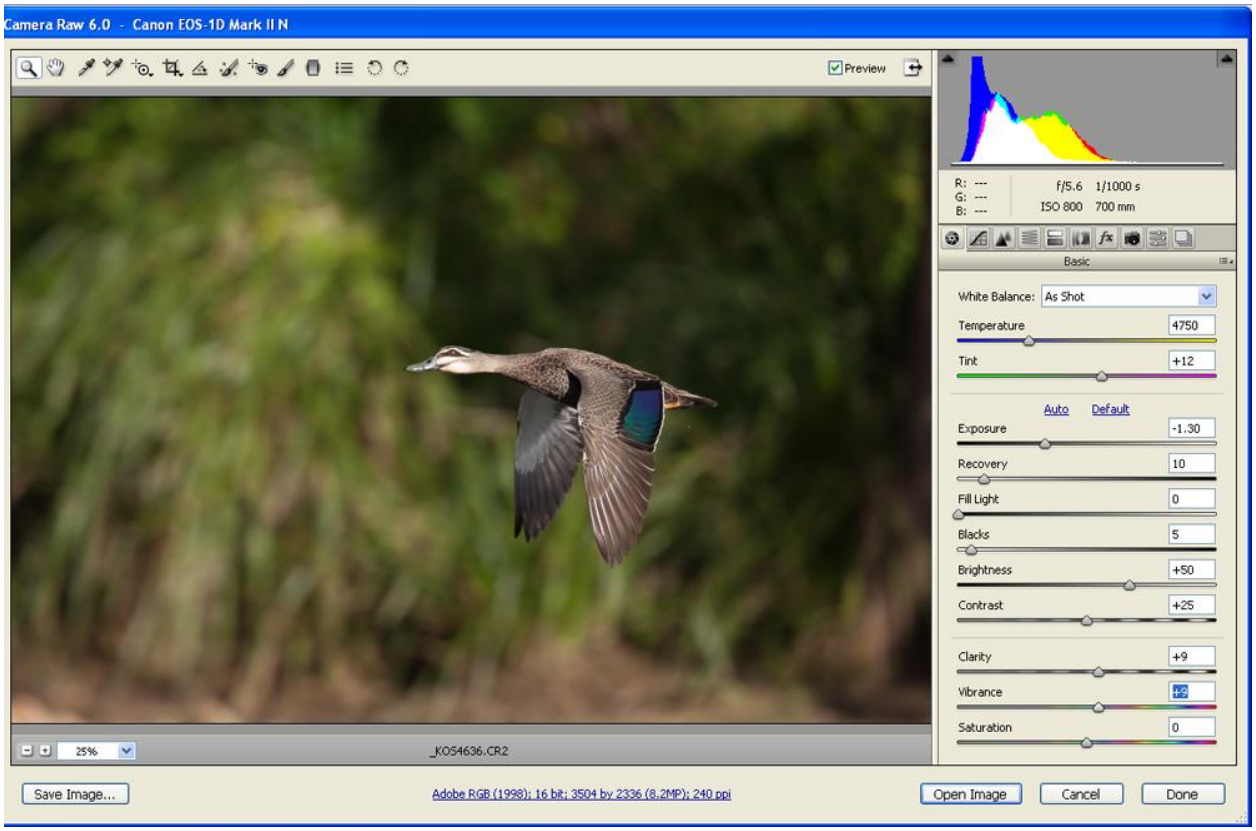

It's that simple. Using these two basic sliders AFTER you've captured an image with the histogram pushed right will greatly reduce your noise risk in the post processing. It all starts at the time of capturing the RAW image. I cannot emphasize this enough. Check it out above!

The only other sliders I changed as you may notice, were the CLARITY and VIBRANCE sliders, pushing them up from zero to nine or so. These small adjustments just pop the overall colors a little. I leave SATURATION well alone. In fact, I have found that since I have bought the professional 1DMkIIn body, the images straight out of camera look pretty good.

Now I am ready to open the image with Adobe Photoshop. Don't worry, the only changes I make here are crop to taste, and a couple of basic layer adjustments that don't damage the original file and then use preset ACTIONS to create differently sized web images from 1280 pixels wide to 700 pixels for my Facebook pages.

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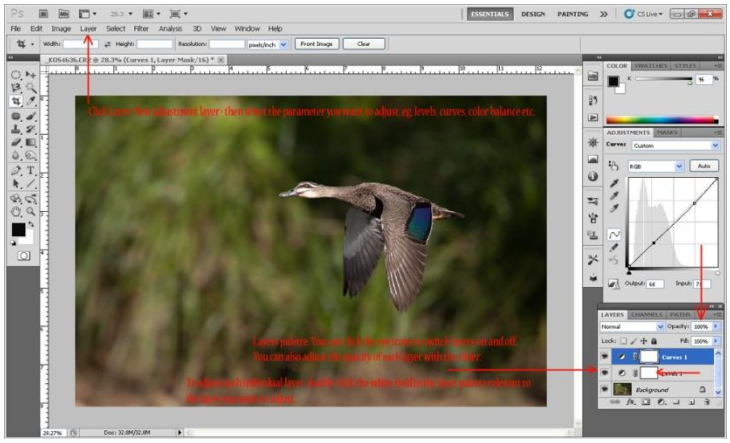
The above image shows the way I cropped from the original to my taste in composition. I feel it's balanced this way with the duck on the right of the frame flying into negative space on the left.

As stated, I prefer the non-destructive layers adjustment method where I make adjustments like LEVELS, CURVES etc via separate layers. If you cannot see the layers palette as you can in the next photo, press F7 and it will appear. You can then drag it around the work area to place it where you see it fit best. I usually keep mine in the lower right of the work area as per the next image.



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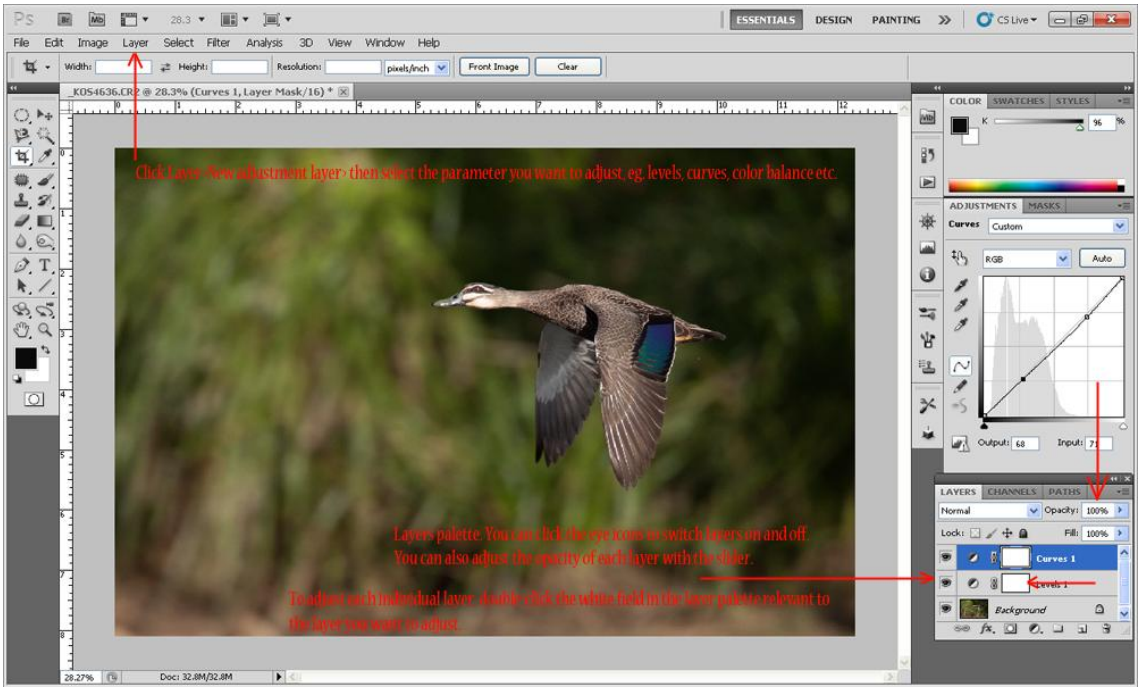

Here is the image enlarged. There are some notes over it to help you understand what can be done with layers adjustments.

Hope this is sufficient for your reading and understanding.

Once I save the images in the different pixel dimensions, I apply some simple smart sharpen from Adobe Photoshop and save for web or whatever else. I will though, first, zoom into the image at 100% (Press CTRL+1) and sharpen so I see exactly how the sharpening worked.

Hope you enjoyed this tutorial.