downunderpix

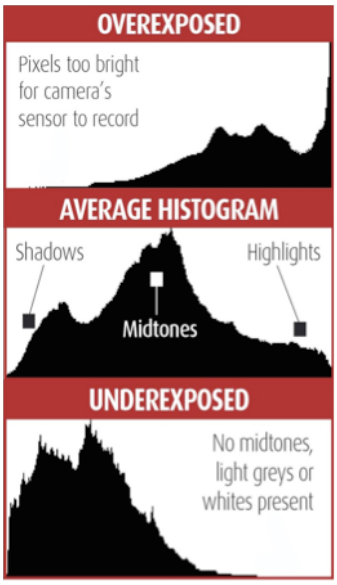
TIPS AND TRICKS NO 6.

Understanding the Histogram

Most digital cameras will display a histogram of an image after it has been taken. Many can also be set to show a histogram on the LCD screen before the image is taken. The histogram in itself doesn't indicate whether or not you have captured a good image. But for photographers it is important to understand what it represents.

The histogram is a graphical representation of data captured in the image. It displays a graph of the number of pixels in a 256 step range from pure black (0) on the left to pure white (255) on the right.

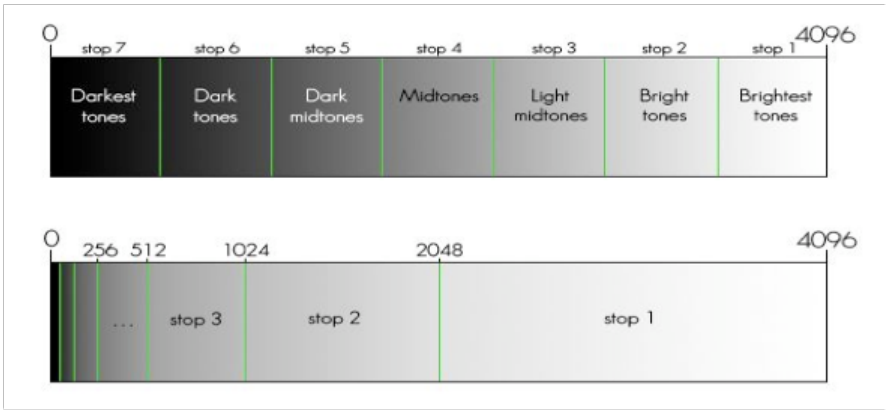
Given the image data that the histogram represents it is logical and generally accepted theory that a histogram skewed to the left is underexposed and one with a skew to the right is overexposed. And therefore a correctly exposed image would have no skew and be roughly bell shaped.



So a histogram showing many pixels on the left edge will be a dark image. Conversely an image with many pixels on the right edge will have a lot of white in it. This usually means the image or a section of it is burnt out and that definition and texture in this part of the image is lost.

Many cameras now have a highlights warning feature. When the recorded image shows on the screen, the burnt out areas flash, usually in red. This is a very useful tool to turn on if your camera supports it.

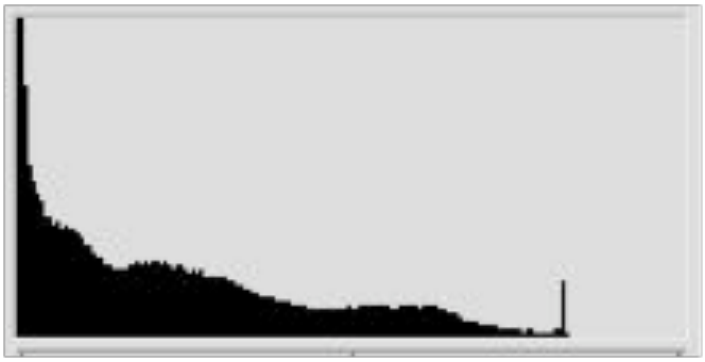
Digital cameras have dynamic range of about 7 f stops and the camera sensors capture 4096 tonal levels. Important to understand for photographers is that one half of these levels, that's 2048 of them, are captured in brightest stop. One quarter captured in next brightest stop and so on with 1/128th (32 levels) captured in darkest stop.



So this would suggest that the histograms of the best images would be skewed to the right, where the most tonal levels are, with none or very few on the very right edge.

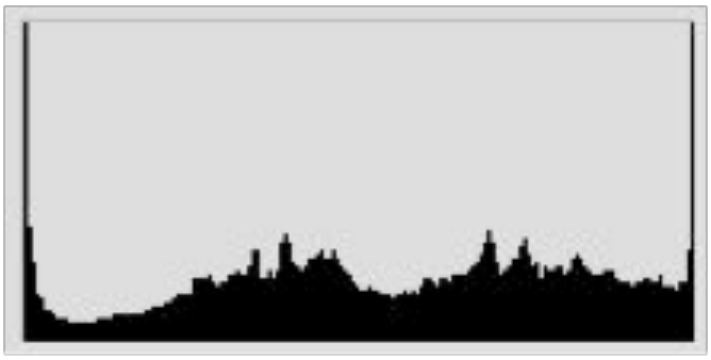
Well the answer is that there are no right or wrong histograms.

It is however important to understand what they represent. Have a look at this histogram.



It suggests that the associated image is badly underexposed and probably not really worth keeping. But this is exactly what I expected to see because it indicated that I had captured correctly the image that I had envisaged. Here is that image.

Here is another histogram to consider:



The associated image is below. The histogram indicates some burnt out white areas as expected because I captured the sun in the top right corner. There are some black areas as expected because of the black on the fins. There is also a nice spread across all 256 steps with a general skew to the right.

Ask Paul a question about Underwater Photography Tips and Tricks »