

Color Balancing Underwater Photos

There is a super-easy, fast way of [color balancing](#) photos using Photoshop's Auto Levels feature. But what if you need a little finer control? Let's look at manually adjusting levels to fine-tune your pictures color balance. We'll use this picture of a turtle.



Color balance

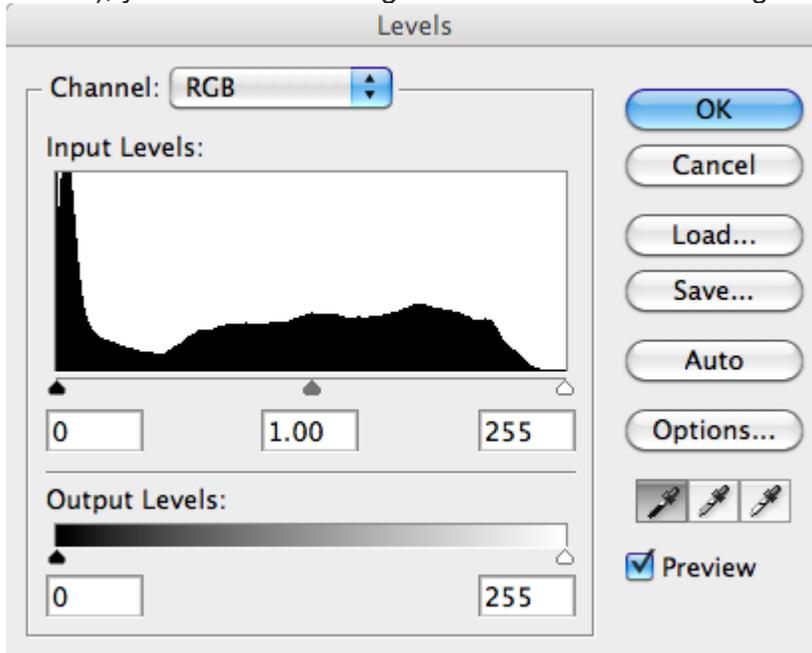
If you don't know what I mean by color balance, it is simply the different amounts of different colors that are present in an image. Underwater photos taken without a flash or adjusted white balance tend to have a blue-centric color balance that usually needs correcting. Very few professional images that you see have not been tweaked in post-processing.

Usually, when we talk about colors, we talk about reds, greens, and blues. Every other color is a blend of these three (called the RGB color space). There are alternatives, of course.

One useful color space is CMYK, which stands for cyan, magenta, yellow, and key (black). This is useful because it acts like the complement to RGB. If you take a fully saturated picture (full red, green, and blue) and take out the blue, you get red and green. On a computer this is yellow. Similarly, the complement of red is magenta, and the complement of green is cyan. This becomes useful later.

Histogram

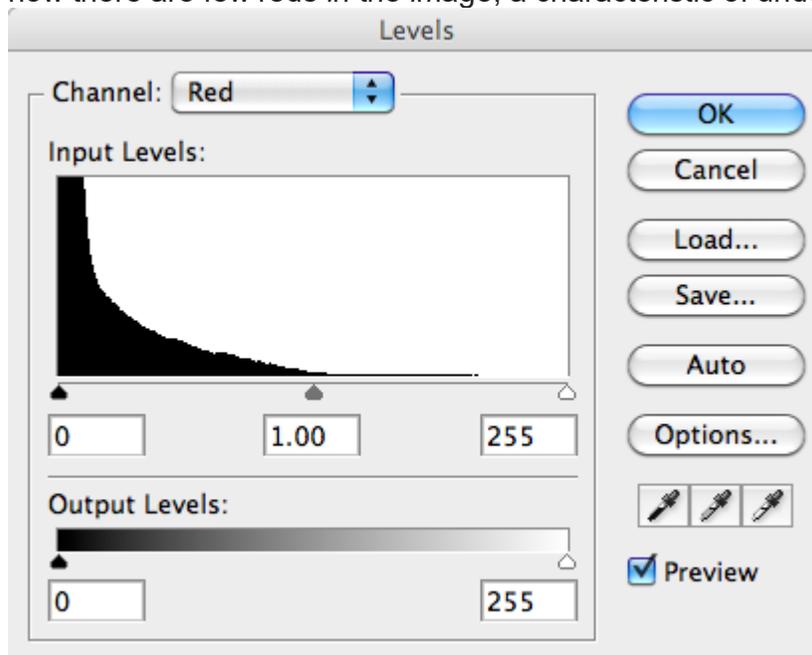
Open up the Levels in your image editor (in Photoshop, go to Image -> Adjustments -> Levels), you'll see something that looks like the following:



This is called a *histogram*. Basically, it tells you the intensity of colors present in your photograph. You can see in our histogram there are a lot of darks present in the image. These are the shadows in the coral and the spots on the turtle.

You'll notice that there is a drop-down box where you can select the channel. Either RGB, which is the combination of all colors, red, blue, or green. Switch to red and you'll notice

how there are few reds in the image, a characteristic of underwater photos.



If a histogram is concentrated towards the right, we say that it is a *high key* picture. If it goes all the way to the edge, it is “blown out”, or overexposed.

Conversely, a left-shifted histogram indicates a *low key* image. If it reaches the edge, then the picture is most likely underexposed.

This is a quick test to see if an image can be salvaged. If it is overexposed or underexposed, that means many of the pixels in the image are 100% white or 100% black. If that is the case, then no color balancing can really do anything for them. So unless the overexposure / underexposure is part of the look you are going for, you may not be able to do much with the image.

Fortunately, our image is not either, so we can tweak it to get colors a little stronger. We want to get rid of that blue haze.

Notice the little sliders at the bottom of the histogram. There are three, one indicates black, one white, and the other grey, or the midtone. These are adjustable, and redefine the range of colors in your photo. This is how we'll get fine-tune control of our image's color balance.

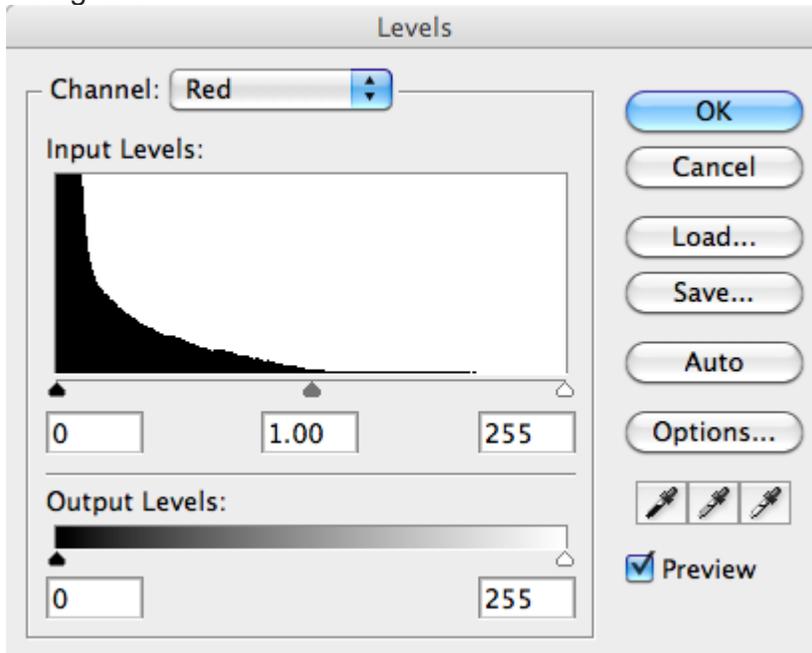
Levels

By adjusting the levels, we are adjusting the balance of colors in our image. Before we get started, I want to say:

- Do so with caution. Adjusting too much will be obvious. Think little edits.
- Play around. Explore the color space. No one can tell you exactly what will make the photo really pop.

- It's artistic, there is no fixed solution. This is more art than science.

There are a few guidelines we can follow, though. In particular, you should know that what happens when you use Auto Levels in Photoshop. Look again at the following red histogram.



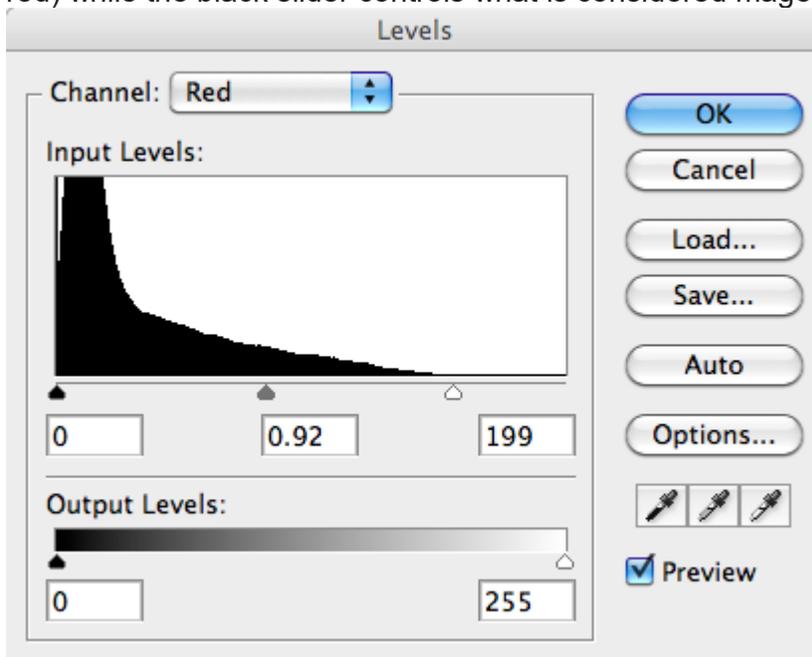
Notice how the balance is totally off? We're going to fix this by moving the white slider. Because there are no pixels at that level, we can do so without losing any information in the image. By moving the white slider, we are telling Photoshop that anything to the right of the white slide should be considered pure white. Likewise, when moving the black slider, anything to the left of it is considered pure black.

When we move the white slider, it also moves the grey slider, which redefines what the midpoint color between white and black (depending on the channel) is. This redefines the entire color range.

Tightening up the edges of the histogram for each channel is basically what Auto Levels does. That's why we say that it is a super-quick way to get good results. It moves the black and white sliders to the edge of the histogram, where the curve starts.

Go through each channel and adjust. Remember how I said the complement of red is magenta? Well, this is where it matters. When in the Red channel, black and white take on different meanings. For red, the white slider controls what is considered red (fully saturated

red) while the black slider controls what is considered magenta (fully desaturated red).

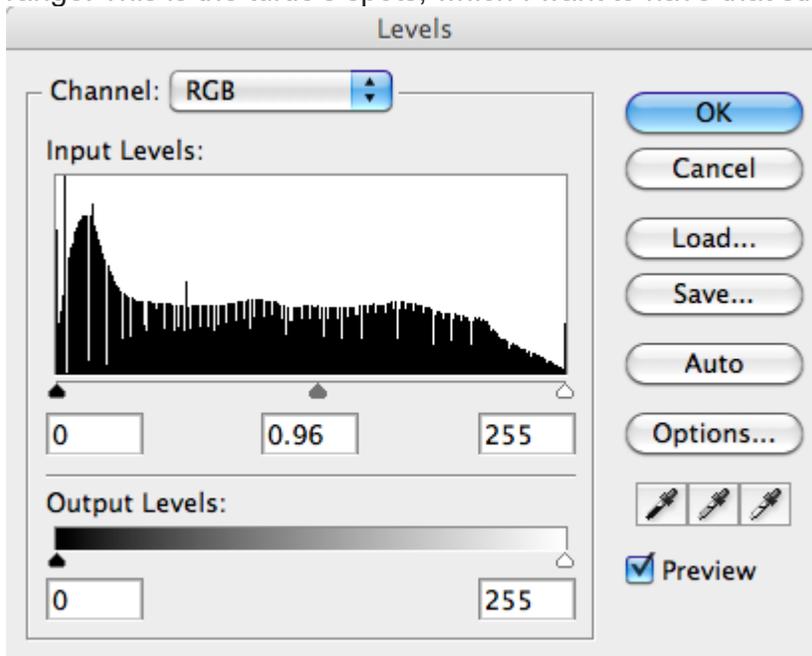


Go overboard with the sliders (it's easy to undo any changes). Doing so really illustrates what each slider in each channel does. By doing so, you get a feel for how the Levels tool works.

While adjusting, don't neglect the grey midpoint slider. This changes the overall brightness of the image for each channel. Here is our final image. Notice how the contrast is much better, and the image doesn't appear nearly so washed out?



Here's the corresponding histogram. There are some gaps, but it's fairly balanced in the middle, which is generally what you are going for. There is still a bump towards the dark range. This is the turtle's spots, which I want to have that strong dark color.



This tutorial assumes you have Photoshop (or Photoshop Elements). You don't have to have these, though. Most modern image processing applications have a Levels feature. Look through the documentation for yours.

Now you know how to color balance your underwater photos.