

Everything you need to know about camera settings in ten paragraphs

One of the most common questions on my photography workshops is, “What do the settings do?” It can seem overwhelming when there are so many different options on a modern digital camera. Many of those options come from the factory parked in a decent setting, so you can ignore most of them until you master what is important. The settings to concern yourself with are those that relate to creative control: Aperture, Shutter Speed, ISO, White Balance and Image Quality/Size.

The easiest to grasp is probably Image Quality/Size. If you’re taking pictures and want to make them fill a double truck in a magazine such as Ocean Paddler or if you want to make quality fine art prints, you need to have a file with lots of information. The more information that the file has, the larger it can print and the more you can do to it when processing the file. For example, bringing detail out of the shadows while preserving the highlights (see the example before and after shot).

All quality cameras have at least two settings for file types: JPEG and RAW. RAW will give you the most information. During editing the difference between RAW and JPEG is like the difference between Silly Putty (RAW) kept at room temp and Silly Putty (JPEG) put in the freezer for days. You can easily pull and stretch the room temp Silly Putty, but if you try to do the same with the frozen Silly Putty, it breaks apart. The only

difficult part about RAW is that it isn't easily shareable. You must run it through a computer program and turn it into a JPEG after editing before you can share it. Most image editing software now supports RAW editing – even some on your smartphone.

There are several modes on your camera: Aperture Priority (A or Av), Shutter Priority (S or Tv), Manual (M) and Program (P). If there are any other modes, just ignore them until you master Aperture Priority and Manual. You can safely ignore Program mode most of the time; I do like to use it when my camera is inside a waterproof bag. Landscape photographers can ignore Shutter Priority, whereas action photographers may want to use Shutter Priority. Although when shooting action, I generally use Aperture Priority. Most of the time, you can choose to be in Aperture Priority or Manual. I suggest starting with Aperture Priority. In Aperture Priority, you set the aperture and the camera sets the shutter. If you turn on Auto ISO, the camera sets the shutter speed and ISO. I use this combination often when handholding my camera from the seat of my kayak.

Your Aperture setting, rated in f-stops, determines the Depth of Field (DOF) or how much of the scene appears in focus. The number of f-stops varies based on the lens, but typically starts around f/2.8 and goes to f/22. The best way to think about this is to believe that the higher the number you set, the more DOF you'll get in the final picture (they are fractions). So, an aperture of f/22 has more DOF than f/2.8. That means more would be in focus at f/22. The main issue here is that the bigger the number, the more diffraction. Diffraction reduces sharpness. Somewhere around f/11 to f/16 works well for landscape shots while balancing a tradeoff between diffraction and DOF. If you want to blur the background behind your subject, a setting of around f/2.8 to f/5.6 works well. Two items that modify DOF are the length of your lens and how close you are to your subject. DOF gets smaller longer your lens and the closer you are to your subject. Another tradeoff is when you increase your DOF, you decrease the light coming into the lens which forces a longer shuttering speed to keep the same brightness. This makes it more important to use a tripod when shooting for great DOF.

Shutter Speed, rated in seconds and fractions of a second, determines the look of motion in your shot. You can blur motion or stop motion. Generally, 1/500th second and faster will stop most action and 1/15th of a second and longer will blur motion. Shutter speeds between those two settings might stop action or it might blur action. The faster the action the faster the needed shutter to stop it. For example, in the wave smashing into the short sea stack picture, a shutter of 1/500th stopped the action. You should also watch your shutter speed when hand-holding your camera. A good rule is that the shutter should be at least as fast if not double as fast as the focal length of your lens. For example, if you are shooting with a 50mm lens, your shutter should be 1/60th to 1/125th or faster.

ISO controls the gain on the sensor. Changing it allows you to change the shutter speed or aperture or both while maintaining the same brightness of the image. Lower ISO settings offer higher quality images with less noise and more dynamic range. The way I like to think about it is in two parts: 1. Use the lowest ISO possible for the shot you want to get, 2. Only raise the ISO from its lowest setting to get a faster shutter for the aperture you need. Every time you double your ISO, you double the shutter speed and vice versa.

White Balance only matters if you shoot JPEG. If you shoot RAW, you can change the white balance to whatever you like after you get the photo into an image manipulation program. For JPEGs, match the setting to the light you are seeing. If you are in the shade, set it at shady. If you are in the sun, set it to sunny. Auto White Balance works well in most circumstances, except at night and under artificial lighting. For RAW users, just keep it in auto.

When in the field, you need a working method to take advantage of these settings. This is my suggestion. Start in Aperture Priority. Set your aperture based on the depth of field that you desire. Check what the camera set the shutter speed at. If you need a slower shutter than the camera decided, reduce your ISO. If you need a faster shutter, increase your ISO. If you are handholding and need a faster shutter, set your camera to Auto ISO or open (use a smaller number) your aperture.

That's it. Camera settings explained in 10 paragraphs.