GET PERFECT SHOTS EVERY TIME

BY FOLLOWING THESE GUIDELINES, IT'S EASY TO GET PRECISELY EXPOSED IMAGES OF THE OUTDOORS WITH PRACTICE AND PATIENCE

TEXT & PHOTOGRAPHY BY RICK SHEREMETA

With a wide range of highlights and shadows in this panorama of Glacier National Park's Swiftcurrent Lake, understanding a camera's exposure settings is key to a properly exposed image.

When I talk with other photographers, many confess that they always shoot in one of the camera Program Modes. The consensus seems to be something along the lines of: Does it really matter, since I'm really not sure how to correctly determine exposure, and my DSLR generally comes up with a good exposure on its own, and then I can always fix problems later in Photoshop or Lightroom! On the surface, that might be true to a certain extent. While today's sophisticated cameras are pretty good at getting exposure right most of the time, a lack of understanding metering and exposure control can be a severe handicap to the photographer.

If one relies entirely on the camera's auto or program modes, not only does it limit creative control, but also the chance of getting consistently good images now becomes pure luck. With that in mind, it makes perfectly good sense to get as close as possible to optimal exposure when taking the photo. This will result in less time and effort required to make any necessary or interpretive adjustments in post-capture processing and will provide much more latitude when it comes to doing so. Moreover, if exposure is too far off, any corrective adjustments may be severely limited or not even possible. Photography is all about the control of light and its interaction with the subject so as to achieve a desired effect. Keeping that objective in mind, let's take a look at how light is measured, and then how those measurements are used to determine best exposure for shooting outdoors.

WHAT CONTROLS EXPOSURE

DSLR cameras measure light that's reflected from the subject through the lens (TTL) to the meter. Camera meters are calibrated to measure neutral tone as 12.5 percent gray, which forms the basis upon which all exposure settings are made. Before we get too far along on this subject, understand that there are three means by which exposure is controlled—shutter speed, aperture and ISO—and we'll discuss each of these briefly. In creating a photograph, a conscious effort is required to choose which of these parameters, either singly or in combination, govern to attain the desired outcome. It's important to understand the role that each of these factors plays, so let's take a brief peek at what these things actually do.

Shutter speed is used to control motion—the goal being to either stop or blur motion. A fast shutter speed will freeze motion, and the faster the subject is moving, the faster the shutter speed needs to be to accomplish this. Conversely, the slower the shutter speed, the more a moving object will be blurred. While this might seem intuitive, a full understanding of the correct shutter speed to use will only come with experience and experimentation. It's important to remember that doubling or halving the shutter speed will respectively reduce or increase exposure by 1 exposure value (EV) or stop. For example, going from 1/125 sec. to 1/250 sec. increases the shutter speed by a factor of two, thus reducing exposure by 1 EV or 1 stop. Going from 1/125 sec. to 1/60 sec. decreases the shutter speed in half, with the result of an increase in exposure of 1 stop or EV.

The next thing that controls exposure is lens aperture. This is the size of the opening through which light passes on its way to the sensor or film plane. It's used to control depth of field, or how much of the scene is sharply in focus from near to far. Aperture is measured in f-stops. For example, $f/2.8$ is considered a wide aperture (or fast lens), which allows more light to reach the sensor but with a very shallow depth of field, whereas $f/16$ is a small aperture that permits much less light but with a much greater depth of field. Each full f-stop represents a doubling or halving of light. Case in point, going from $f/2.8$ to $f/4.0$ (a full stop) halves the amount of light reaching the sensor, and vice versa.

ISO is the last parameter that has a bearing on exposure. Put simply, this is a measure of the camera sensor's sensitivity to recording light. The higher the ISO number, the greater the sensor's ability to capture light, but generally at the cost of image quality. Conversely, the lower the ISO value (typically 50 to 100 for many cameras), the lower the ability to capture light but the higher the image quality. At high ISO values, digital noise can be introduced into an image. Noise will be visible in shadow or dark areas, where the appearance of red and green dots occurs. With continuing advances in technology, ISO numbers are increasing exponentially with better quality and less likelihood for the introduction of digital noise. This improvement is being reflected in the latest camera models as they're unveiled. Again, as with shutter speed and aperture, a doubling or halving of the ISO value doubles or halves the amount of sensor light sensitivity, respectively. It's always best to set ISO at its lowest value for highest image quality, only increasing it as necessary to obtain higher shutter speeds and/or smaller apertures in low-light-level situations.

METERING

Okay, now that we completely understand what controls exposure, let's look at light metering—how to do it and what it means. The first thing to consider is what metering mode to be used. There are several options available—from Evaluative/Matrix/Pattern (synonymous depending on camera manufacturer) to Center Weighted to Partial to Spot—each going progressively from a larger to smaller area within the viewfinder that's being used to measure light input.

It's vital to understand that every object or thing in a scene will have a certain tonality, or level of brightness, regardless of its color (doesn't need to be a gray shade). It's possible that some elements or areas of the scene may have the same brightness (tonality) level while others may vary by several stops or exposure values (EVs). The important concept to remember is that the relative relationship of each object will stay the same regardless of lighting conditions, or any changes thereto, and each one will be relative to every other one so that if one changes in value all the others will change by the same amount. What this means, for example, is that if we change exposure to lighten the sky, shadow areas will be lightened by the same amount, with the converse being true as well. Understanding that concept, and knowing what to expect, is the whole key to understanding metering and control of exposure. Taking this a step further, an evergreen forest will generally always be 1 EV or stop darker than a neutral-tone blue sky when in the same light—so if the sky gets darker or lighter, the forest will still be 1 stop darker or lighter, respectively. Makes sense?

SPOT METER READING TO USE AS STARTING POINT FOR ESTIMATING EXPOSURE:

• Rocks	-1 to +1
• Evergreens	-1
• Green Foliage	0 to +1
• Whitewater	+2
• Blue Sky	-1 to +1
• White Cloud	+2
• Grey Sky/Cloud	-1 to +1
• Green Grass	-1 to +1
• Yellow Flower	+1
• Palm of Hand	+1

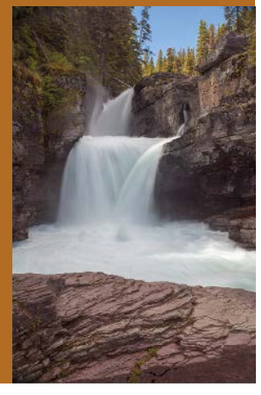


Figure 1. Here are the rules of thumb for setting initial exposure. In this image of Glacier National Park's St. Mary Falls, I selected an aperture, then metered the whitest water, while adjusting shutter speed until the meter reading was +2. Then, for confirmation, I metered the foreground rocks, which measured 0 EV, and the blue sky at +1 EV.

Figure 2. At top is the opening image in this article. Above is the image as seen in the viewfinder, zoomed in to the whitest area of the clouds and spot-metered to set exposure. With the ISO set at 200 and aperture set at ƒ/16, shutter speed is adjusted (1/125 sec.) until the meter reads +2 EV.

SETTING EXPOSURE

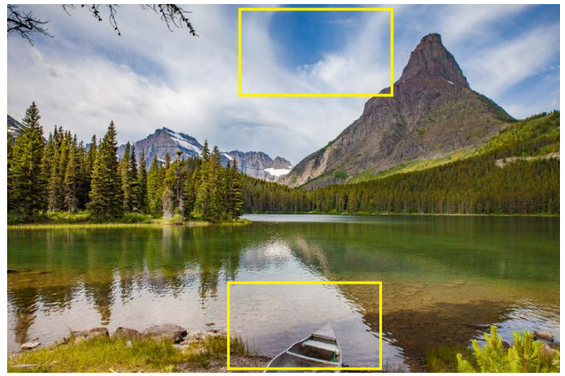
To best understand the concepts to be presented below, I suggest that the camera mode be set to Manual and metering to Spot (or Partial if Spot isn't available on your particular camera). Manual Mode allows the camera's meter to actually function as a gauge, showing relative brightness or darkness between various objects or areas within the scene in terms of "stops" above or below neutral or 0 EV. The camera's meter doesn't control or set exposure like in the Auto/Priority or Program Modes—we'll control how exposure is set and will do that in the next step. By Spot metering, you can isolate specific areas or objects (zooming in might better help segregate an element in certain cases). Looking through the viewfinder or LCD screen, you'll see the meter; it's either at the bottom or side of the display, depending on make and model of camera. To proceed, depress the shutter release halfway and hold it. This engages the meter and will also focus the lens (assuming autofocus is turned on). Now point the camera at different parts of the scene that have different values of brightness. As the camera is moved around, the meter readings will change depending on how light or dark the objects are, i.e., showing exposure in stops or EVs relative to 0 EV or neutral tonality.

To help grasp this concept better, I suggest first starting by metering a blue sky (metering the northern sky will give best results) as indicated above, then adjust shutter speed and/or aperture, while still holding shutter release halfway until the sky meters 0 EV or neutral—this is your initial exposure. You'll notice that as the shutter speed or aperture is changed, the meter's pointer will move to reflect how that change has affected the exposure, either toward plus (overexposure) or minus (underexposure) on the scale.

Now, without changing anything, continue to meter other mid-ground and/or foreground elements—noting the different meter readings. Regardless of what or where you start metering, the first question to ask yourself is, what do I want to control the exposure and how brightly do I want it to be rendered? To assist in this task, I've developed some handy rule-of-thumb values for different objects that are shown in Figure 1. These are good values upon which to set initial exposure. Be aware, however, that they're by no means cast in stone, as exposure is relative and can vary throughout the day, as the light changes or with changing weather. There's nothing absolute—the main thing is that you're in control and can get as inventive as you wish, basing exposure on how you prefer the scene to be interpreted and rendered; after all, the photograph is your creation.

Things will come together more as we look at an example as shown in Figure 2. To begin our exposure evaluation, we'll use an area of white cloud as the starting point to set the initial exposure. This works out well since we would normally expect the whitest part of a cloud to be +2 EV from our rules of thumb. For landscape images such as this, maximizing depth of field is desirable, so we'll start out by first setting the aperture at $f/16$, then, while metering the white cloud area, we'll adjust shutter speed until our meter reads +2 EV.

Without making any other changes, we'll then meter the blue part of the sky, as shown in Figure 3. It meters 0 EV, which works fine for us. Lastly, we'll measure something that we think should be a little brighter; in this case, the front of the canoe suits our purpose, and it meters +1 EV as shown in Figure 4. It doesn't matter where you start your exposure evaluation just as long as the objects or areas you measure fall within the range you would expect them to be. Like anything else, getting good at this takes practice—so don't get discouraged on the first try. You'll get better at estimating EVs as you gain experience, and soon it will become second nature.



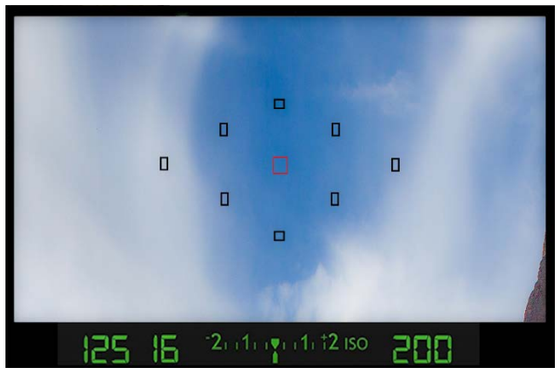


Figure 3. To confirm the initial exposure setting, I now meter the bright blue sky. It meters 0 EV or neutral-toned, as the reading shows. In this case, I didn't have to change any of the camera's settings—the sky is 2 EV darker than the white cloud area, which in this case works perfectly.

Figure 4. Metering the bow of the canoe, we see that it measures +I EV. This provides additional confirmation that our exposure is spot on. Notice that there are no changes to camera settings.

Since we now feel confident that the exposure is acceptable, we can go ahead and take a test shot, then check the preview screen along with the histogram for confirmation of good exposure. Don't just rely on the preview you see on the LCD screen, as it can be misleading—the key is a correct histogram. Learning how to properly interpret the histogram is an art unto itself, as it may vary considerably from scene to scene based on many factors—subject matter, time of day, uniformity of light, cloud cover, etc. Looking at the histogram, bright areas show to the right of center and dark areas to the left, respectively. As long as the histogram isn't severely clipped (pushed up against the right or left axes), which would indicate over- or underexposure with resulting loss of useful information, things should be okay. Anything clipped will have no detail, and it can't be recovered in post-processing no matter what's done. Overexposure is far worse than underexposure, particularly where sky is concerned, and is to be avoided even if shadow areas need to be compromised. Keep in mind that some minor clipping in highlight areas such as white clouds and/or whitewater is to be expected and is acceptable—it's just a matter of degree, and too much isn't a good thing.

I highly recommend that Highlight Alert warning be set for your LCD preview screen. This can be done through the camera's custom functions and will help your understanding considerably as to how the histogram reflects the amount of overexposure. Any area(s) overexposed will blink black and white in the preview screen to alert you. Unfortunately, there's no similar preview alert for underexposure. If you have concern that the scene isn't exposed correctly, readjust shutter and/or aperture in one-stop increments (exposure bracketing), taking additional test shots until you're satisfied or until there are a tolerable amount of "blinkies" remaining.

Trouble occurs when meter readings measure beyond the right/top or left/bottom limits of the meter screen (typically shown as a blinking screen). When this undesirable situation occurs, it's indicative that the scene is either completely under- or overexposed. As with anything, there are exceptions—for example, the sun, white water, bright snow, the brightest part of a cloud, etc., can show as overexposed. Things that are pure white or pure black have little or no detail anyway, so this can be accepted with no ill effects to the overall image as long as they don't dominate the entire scene. The main thing is to understand what and how much over- or underexposure is acceptable—this will only come with experience. Keep in mind that the process of metering, setting exposure based on the meter reading(s), taking a test shot and checking the histogram are all part of the normal photographic workflow. This is an iterative process, and it needs to be gone through with each and every shot until you get proficient at it.

We've spent a lot of time explaining the basics of exposure using Spot Metering. What about other metering modes? Well, they work the same as Spot except that a larger portion of the image frame is used for measuring light input. This is a personal

Figure 5. The top image was taken using Evaluative Metering in Shutter Aperture Priority Mode with the resulting gray (underexposed) cast to snow. The above image was taken in the same manner, but with +2 EV exposure compensation, resulting in correct exposure.

thing, but I never use anything but Spot and Evaluative Metering. You may find that other modes work for you depending on the type of photography you do. Evaluative Metering is best suited to scenes that are evenly lit with consistent light, such as midday or when overcast.

Setting exposure will be most troublesome under variable light conditions, or when very bright or dark objects dominate significant parts of the frame, such as early and late in the day. If there are great tonal differences in a scene, e.g., when very bright sky or deeply shadowed foregrounds dominate much of the frame, the dynamic range of exposure may be beyond the camera's means to capture it. That being said, under those situations, it'll be time to make a conscious decision as to how to best capture the image. One way is simply to let a portion of the scene's exposure be compromised, and this is generally more preferable to allow shadow areas to go black—because nobody wants a blown-out sky. Another way to deal with unforgiving light is to use a graduated neutral-density filter. This permits exposure between bright sky and dark foreground to be evened out—expose for the dark foreground and hold the dark part of the filter over the bright sky. I generally use a three-stop graduated neutral-density filter for this, as I've found that it works in most situations. Use of HDR techniques with multiple exposures in post-processing is yet another way to go.

By all means, if there's any doubt whatsoever as to exposure, take a series of bracketed shots at 1 EV/stop intervals and select the frame you feel works best after getting home and reviewing them on your computer screen—you may have only one opportunity to capture that special moment and pixels are cheap, so this isn't the time to be thrifty.

How does shooting in Aperture or Shutter Priority or Program Mode affect things? The basics are exactly the same. However, in any automatic camera mode, the camera will take over control of setting exposure by adjusting aperture or shutter speed or ISO to render the scene based on where the camera is pointed when the shutter is released. It will set exposure for neutral tonality (12.5 percent gray), regardless of how bright or dark the scene should be. Unfortunately, not all scenes are neutral tone—for instance, white snow will be rendered as gray if the camera is left to its own accord. When the scene is not neutral tonality, the camera must be instructed to adjust how it interprets the scene, i.e., to over- or underexpose and by how much. This is termed "exposure compensation," and you'll need to refer to your camera manual to see how your particular make and model handles this. When setting exposure compensation, one-stop increments are generally sufficient. For example, white snow may require exposure compensation to be set between +1 EV and +2 EV to be rendered correctly depending on how brightly the scene is lit. This is illustrated in Figure 5.

Similarly, for a scene in which darks dominate, negative compensation, such as -1 EV for a twilight scene, may be fitting, otherwise it may be depicted as too light. A word of caution: If Spot Metering in a program mode, things can go awry if the image is reframed after initial metering. The camera will automatically change exposure based on what it sees in the reframed scene unless Automatic Exposure (AE) Lock is engaged until the shutter release is fully activated. Evaluative Metering can be more forgiving when using Aperture or Shutter Priority Modes, because light and dark areas can balance each other to give a more uniform exposure. Things will work fine as long as you're aware of and comfortable working with these limitations.

PRACTICE

You can hardly ever go wrong using Spot Metering in Manual Mode if you follow these guidelines, and this is how I teach all of my students regarding metering and setting exposure. True, you're forced to make a conscious decision with each shot to select a shutter speed and aperture appropriate to the situation, but then isn't that what photography is all about?

As with everything worth doing, the art of metering and setting exposure correctly requires practice. Yes, this can seem a little intimidating at first, but the more experience you gain, you'll come to recognize that it makes perfectly good sense. This effort will become second nature, and your photographic efforts will improve dramatically. DP

*To learn more about **RICK SHEREMETA**'s photography and his photo workshops, or if you have any questions, visit his website at **alpenglowproductions.com** or check out his Facebook Page at **facebook.com/AlpenGlowProductions**.*