

Exposure Modes for Wildlife, Macro, and Landscapes

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Figure 1 The lakes in the Grand Tetons nicely reflect the mountains on calm mornings. I used full manual exposure and set the shutter speed that gave me the first flashing highlights (blinkies) in the white clouds. If you wish to use an autoexposure mode, then aperture-priority is a fine choice as it preserves the two most important exposure control for this image – ISO and aperture. On a tripod with a still subject, shutter speed seldom matters much. But if handholding, then you must be willing to use a faster shutter speed for sharp images and that means you must use a higher ISO and not stop down as much. My choice is to always use full manual exposure since I use a tripod whenever possible. But when I must shoot landscapes handheld, such as the colorful cliffs of Pictured Rocks National Lakeshore in Michigan from a moving tour boat, then I use Auto ISO.

As cameras evolve, often new camera tools allow photographers to capture excellent exposures using quicker and easier methods. And the choices depend on what you are photographing. I avidly photograph landscapes, macros, and wildlife. Here are my opinions about exposing these three subject areas as of Oct. 10, 2021. This is how I am doing it now, but my strategy will certainly change in the future as I buy newer cameras that offer tools that I have not had previously. There are many other strategies one could adopt that will deliver excellent exposures, so take your pick.

Before getting into the details, all the options I consider are influenced by my choice to use manual exposure or one of the autoexposure modes. Whenever possible, I do prefer manual exposure, but sometimes an autoexposure mode is best. In no way do I suggest using manual is always superior to an

automatic mode and manual makes you a pro. Both manual and auto exposure have their place and much of the exposure selection is really a matter of personal preference.

Wildlife Photos

Frequently wildlife is active early and late in the day – read that as dim light. Wildlife is mobile, so they often move in their environment where the ambient light changes quickly and unexpectedly. For most wildlife situations, I find Auto ISO, manual setting of the aperture and shutter speed, along with exposure compensation works best. With auto ISO and manual aperture and shutter speed, this method keeps aperture and shutter speed set to your preference, and ISO changes rapidly to accommodate changes in ambient light. Auto ISO is like any other autoexposure mode where the camera attempts to make the scene middle tone reflectivity. That means Auto ISO will underexpose anything with plenty of light tones around it like a red fox on a snowbank. All the white snow tones force the camera to darken the exposure to obtain the average middle tone reflectance. In this case, using exposure compensation of +1 to + 2 is often necessary. Should mostly dark tones surround the subject, then it may be necessary to use negative exposure compensation to achieve an ideal exposure.



Figure 2 As this wood duck swims about the pond, the ambient light changes from one area to the next. Auto ISO keeps the shutter speed I set and the aperture while allowing the ISO to automatically change to keep a suitable exposure. In this case, I used a little positive exposure compensation to produce the first blinkies that appear in the white feathers on the duck's head. And I did shoot this on a tripod using a Wimberley gimbal head to follow the slowly swimming duck.

Auto ISO is efficient because it adjusts the exposure for you as the ambient light changes by selecting a higher or lower ISO. It can be a problem though for a moving subject that passes before a background with different reflectance tones. For example, if you have a suitable exposure for a flying Canada goose against a blue sky, should the goose fly onward and the background becomes a white cloud, then all the light tones of the cloud cause the camera to change the set exposure to a darker exposure and seriously underexpose the goose. When the background brightness varies from shot to shot, then full manual

exposure is the best way to go. But if the subject is in the sun one moment and then in the shade a few seconds later, rather than making the exposure adjustment manually, you are better off to let the camera instantly do that by letting Auto ISO adjust the ISO.

Shutter priority once was a super way to lock in the shutter speed desired, while letting the aperture fluctuate, but the problem is aperture choices are limited. It is easy for the light to dim quickly where the camera cannot open up the aperture enough because it is already at the maximum aperture resulting in a dark exposure. With Auto ISO, the ISO range is much greater and there is less chance of shooting dark images, though possible. If it is dark enough, it is still possible to run out of ISOs high enough to compensate for the dim light. Also, higher ISOs are noisier and picture quality suffers. Still, I would rather have a photo of bigfoot at ISO 50,000 that is nicely exposed than one where the image of bigfoot is seriously underexposed and all black.

Aperture-priority is a disaster for wildlife photos because it lets the shutter speed slow to compensate for dim light and that leads to unsharp images due to the slow shutter speed. What good is a fuzzy photo that is well exposed? Often I hear well-meaning folks say that when using aperture-priority you should notice the slow shutter speed and compensate by increasing the ISO or opening the aperture. I agree that would solve the problem of slow shutter speed, but usually there is so little time that making exposure changes is not practical.

My wildlife choice is to use Auto ISO when the ambient light can change quickly as the subject moves around or I move around such as in a safari vehicle on one of my many photo tours of Kenya. However, when photographing in steady sunshine where the ambient is changing little or not at all, normally I use manual exposure. And when photographing action, should the background be capable of changing in brightness as I pan with the subject, then full manual exposure is king!

Macro

Macro photos were my initial start in nature photography back in 1972. My first one hundred sales were all macro photos – butterflies, caterpillars, frogs, dragonflies, mushrooms, and wildflowers. Those initial sales bought all of my camera gear way back then and that launched my career and that explains my special fondness for macro photography. I never cut any corners in my photography, especially macro photos, so I always use a tripod. Indeed, I have never shot a macro image handheld that I actually kept. Sharpness is crucial to me. Therefore, since I use a tripod, shutter speed becomes irrelevant. ISO and aperture are the important exposure components that I carefully select. I always use ISO 100 and f/14 or f/16 to obtain sufficient depth of field. Since focus stacking became available, though, I primarily use f/8 aperture, ISO 100, and whatever shutter speed is necessary for an excellent exposure. I always use manual exposure for its precision and because I am used to it.



Figure 3 The amanita mushroom is colorful to photograph and often abundant in the wet autumn woods of Northern Michigan. I set the aperture to f/8 because that is a sharp aperture on my Canon RF 100mm macro lens. Using the in-camera focus bracketing of my Canon R5 camera, I shot a 40-image focus stack and combined them with Helicon Focus software. Using manual exposure, I also used ISO 100 since I might as well use the best quality ISO in my camera as nothing is moving here and I am on a tripod. I set the shutter speed manually to 1/30 second because that produced the first blinkies. For those who prefer to use an autoexposure mode, then aperture-priority makes the most sense to keep the f/8 aperture and ISO 100, while letting the shutter speed go to whatever is needed. If you insist on shooting handheld, then Auto ISO is the best choice to lock in both a suitable aperture and enough shutter speed to obtain a sharp image.

However, if you would rather use an autoexposure mode, aperture-priority is the obvious pick since you do not want the ISO to bounce around with Auto ISO and you do not want the aperture to change without your permission and that rules out shutter priority.

If you shoot macro handheld, though, then shutter speed is critical. In that case, Auto ISO where you set the aperture and shutter speed works best. Just make sure the ISO does not go too high.

My macro choice is always manual exposure and usually manual focus too. However, now that my camera offers autofocus bracketing, I now often use autofocus when shooting focus bracketed sets of images that I stack together later with Helicon Focus to obtain superb depth of field and overall sharp images. One more reason I always used manual exposure was the problem of light passing through the viewfinder, influencing the exposure, and underexposing the image when using any autoexposure mode. Since the meter was up in the pentaprism and light was bounced off the mirror and up to the pentaprism, under certain conditions where a lot of light passes through the viewfinder, the meter

might record the light passing through both the lens and the viewfinder, think it is all through the lens, and automatically underexpose the image. That is why many older camera models have a way to block the viewfinder when shooting on a tripod and your eye is not blocking the viewfinder. That remains a problem for many older camera models, but the new mirrorless cameras do not have this problem because without the mirror, the light sensor is at the image plane and not up in the top of the camera. So now that I use mirrorless, one of the reason I avoided autoexposure when shooting macros on a tripod is no longer a problem with my mirrorless Canon R5. (I do not know if all mirrorless cameras avoid this problem, so check yours carefully.) Still, I much prefer manual exposure and stay with it. That is my preference, but it is fine if you prefer an autoexposure mode.

Landscapes

At least 95% of the time I favor full manual exposure. I select the preferred aperture and ISO, and since I am on a tripod, I set the shutter speed to whatever is necessary to produce an ideal exposure. Sometimes, though, shutter speed is more important than ISO as I want to blur a waterfalls or freeze the waves crashing on a rocky beach. In those cases, I may favor a long shutter speed to blur water or a fast shutter speed to freeze water. Normally I use ISO 100 at f/14 if not stacking. However, now that capturing incredible depth of field by stacking images shot at different focus distances is easily done, I usually use f/8, ISO 100, and whatever shutter speed is necessary to produce the first blinkies in my highlights. I stack the set of images with Helicon Focus. The depth of field in the landscape image is captured in my focus stack, rather than stopping down to a small aperture like f/22 where the image suffers the image-softening effects of diffraction and f/22 also forces you to use a longer shutter speed.



Figure 4 I used manual exposure to shoot this red pine forest scene with a few colorful maples growing among the numerous red pines. This is an 8-image focus stack to obtain superior overall sharpness. If you wish to use an autoexposure mode, then

aperture-priority makes sense to lock in both the ISO and aperture. On a tripod, the shutter speed does not matter on this calm morning. Should the breeze be blowing a bit, then I would increase the ISO from ISO 100 to ISO 400 to gain two more shutter speeds to freeze a little leaf motion, wait for a lull anyway, and shoot. Handheld I suggest Auto ISO and set the slowest shutter speed you feel can give you a sharp image (depends on how steady you are and IBIS) and select an aperture of f/11 to f/16 while allowing the ISO to adjust to a final correct exposure. Some exposure compensation is needed to produce the first blinkies in the yellow leaves as they are the lightest subject in this scene. Remember I shoot RAW images and then process them. The blinkies are rendered from an embedded JPEG in the RAW file and do not perfectly represent the RAW data that captures a greater range of tones. If shooting JPEGs only, then find the first blinkies and subtract one-third-stop of light to eliminate them.

If you favor an autoexposure mode, then once again aperture-priority makes sense for tripod shooting as landscapes are still and the tripod holds the camera and lens steady. It is similar to macro photos. When shooting handheld, then Auto ISO with manual aperture and shutter speed settings make perfect sense. Sometimes I shoot landscapes handheld too. In deep snow where I am using wide-angle lenses such as my Canon RF 15-35mm or RF 24-105mm zooms, then I set ISO 100, f/14, turn on IBIS on my mirrorless system, handhold as steady as possible and the shutter speed with a short focal length lens is normally fast enough to capture sharp images. I admit I sometimes use auto ISO here, but still tend to favor all manual exposure. In winter where the percentage of snow might vary from one composition to another and that can unfavorably influence the exposure set by the camera using Auto ISO, I prefer to use all manual exposure and lock in the best exposure which I determine as the exposure that produces the first blinkies in the snow. Then if one composition is 70% white snow and the next is 30%, I still have a good snow exposure as the changing percentage of white tones from one composition to another does not affect the manual exposure, unlike all autoexposure modes including Auto ISO.

The choice of manual exposure or an autoexposure mode such as aperture-priority is a bit of a tradeoff. By using manual exposure, I must continually be aware if the ambient light on the scene gets lighter or darker and adjust for that. Autoexposure folks do not need to concern themselves with this as the autoexposure adjusts for changing ambient light. On the other hand, the percentage of tones might vary from one compositions to another and then the camera may automatically change the exposure as the percentage of light and dark areas change from one composition to another, so the autoexposure photographer must continually check their autoexposure. If using full manual exposure, once proper exposure is set, it does not matter if the percentage of snow significantly changes from one composition to another.

How I Judge a Good Exposure

I only shoot large RAW images. Long ago I learned I could see the image just shot because all RAW files have a small, embedded JPEG that is processed and shows the image. The histogram and the highlight alert both are generated from the JPEG and represent that small file size that covers less dynamic range. RAW data covers more dynamic range. When the blinkies first appear, they indicate overexposure in the embedded JPEG, but the RAW data that captures a wider dynamic range of tones is not yet overexposed, though, approaching overexposure. By going to the exposure that produces the first flashing highlights or blinkies, you know the RAW data is still fine. Indeed, in extreme contrast, often once I see the first blinkies, I add another one-third-stop of light and go with that. I have never had exposure problems doing it this way and I have enjoyed a wonderful career as a nature photographer, so it works well for me.

The quick way for me to get to the first blinkies with my Canon R5 mirrorless camera is to use the live histogram that I see in my viewfinder and adjust the exposure, so the right-most histogram data touches

the right histogram wall, then I shoot the image, and quickly press playback. If I have flashing highlights (blinkies), they appear when the image is played back. If there are too many blinkies, I reduce the exposure by one-third-stop, shoot the image, and play it back. If that produces an image with only a few blinkies in the highlights, I go with that as my ultimate exposure. If there are no blinkies, then I add another one-third-stop, shoot the image, play it back, and hopefully a few blinkies appear. It is a little bit of trial and error. Hopefully, one day Canon will show me blinkies before I shoot the image as that would speed things up, and then if that is possible, surely they could produce an autoexposure mode that could be adjusted to produce the first blinkies automatically – that would be wonderful!

Summary

For landscapes, macro, and wildlife I only use full manual exposure or Auto ISO with manual aperture and shutter speed. Naturally, I use exposure compensation frequently to adjust the Auto ISO exposure to be lighter (usually) or sometimes darker. I reassigned my Set button on the rear of my camera to control the exposure compensation. With the exposure compensation assigned to the set button, I hold the Set button down and turn the main wheel on top of the camera to adjust the exposure compensation. This means I do not have to find this feature in the menus, so it is quicker to do.



Figure 5 This is the famous Oxbow Bend of the Grand Tetons. Using manual exposure, I set the exposure to allow the red channel of the RGB histogram to touch the right wall of the histogram. Since the red channel colors dominate (reds, oranges, and yellows), I did not increase the exposure to produce the first blinkies as I did not want to overexpose the red colors here. Once again this is an all-manual exposure. I shot two images at f/8, one focused on the willows in the near foreground and the second image focused on the aspens in the background at infinity. Then I merged them together with Helicon Focus software. We lead one photo tour in the Grand Tetons every year during the peak of autumn color – consider joining us!

Again, I use full manual exposure most of the time. One thing I find extremely useful is to reverse my dials. From camera rear, by reversing the dial direction, I turn my aperture or shutter speed dial to the right to add light and to the left to subtract light or darken the image. This makes more sense to me because adding light by turning the dial to the right also moves the histogram data to the right. It is easier to remember that all I must do is turn the dial the same direction I want the histogram data to move. This works really well for me. I never turn the dial the wrong way and I count my exposure changes by counting how many one-third-stop clicks I make. For example, to reduce the exposure by one stop, I turn my dial three clicks to the left or counterclockwise. Often I have clients tell me they will not adopt the way I do it as they have learned to add light and move the histogram data to the right, they must turn the dial to the left – the opposite way. Yet, when I watch them make exposure changes manually, most are just as likely to turn their dials the wrong way as the right way!!!! I think turning dials left to move data right is not intuitive, but if you truly remember to do that and do not turn dials the wrong way, then you are fine, and I have no issue with your preference. But for those who often turn their dials the wrong way, doing it like I do might prevent the problem altogether. It works for me!

Another word about aperture-priority.

While finishing my fall color workshops in Michigan during 2021, I shot only aperture-priority the last two good reflection mornings to give it an honest test. Frankly, it worked fine as I was photographing colorful reflections on a quiet lake. Since I was shooting on a tripod and the subject was also still, the shutter speed did not matter. Using the native ISO 100 of my Canon R5 and f/8 for the ultimate sharpness, aperture-priority let the shutter speed go to whatever was necessary to produce the optimum exposure. Of course, as with any autoexposure mode, exposure compensation must be used most of the time to achieve the ideal exposure.

The advantage of aperture-priority is it automatically adjusts for changes in ambient light. At sunrise, the ambient light gradually gets brighter as the sun rises, so aperture-priority raises the shutter speed automatically as this happens. On the other hand, as I changed from one composition to another, the exposure jumped around some as the percentage of light and dark tones changes between the different compositions. This caused me to have to keep adjusting the exposure compensation, something not necessary with manual exposure. Of course, manual exposure does not automatically adjust to changing amounts of ambient light, so it is important to pay attention to this variable. I did not find aperture-priority easier than manual exposure and because aperture-priority changed the shutter speed a little whenever I changed the composition, I decided to drop aperture-priority and return to my more reliable manual exposure that is for me easier and faster. But, if you wish to use an auto exposure mode, then aperture-priority is a useful exposure mode for still subjects on a tripod. The choice is yours!



Figure 6 I used aperture-priority here to make this colorful reflection image of a northern Michigan lake. I needed a +1/3-stop exposure compensation to make the rightmost data of the red histogram channel touch the right histogram wall. But, anytime I changed the composition, I had to adjust the exposure compensation. That would not be necessary with manual exposure.



Figure 7 Our workshop group enjoying one of the hundreds of lakes found in the forests around Munising, MI.

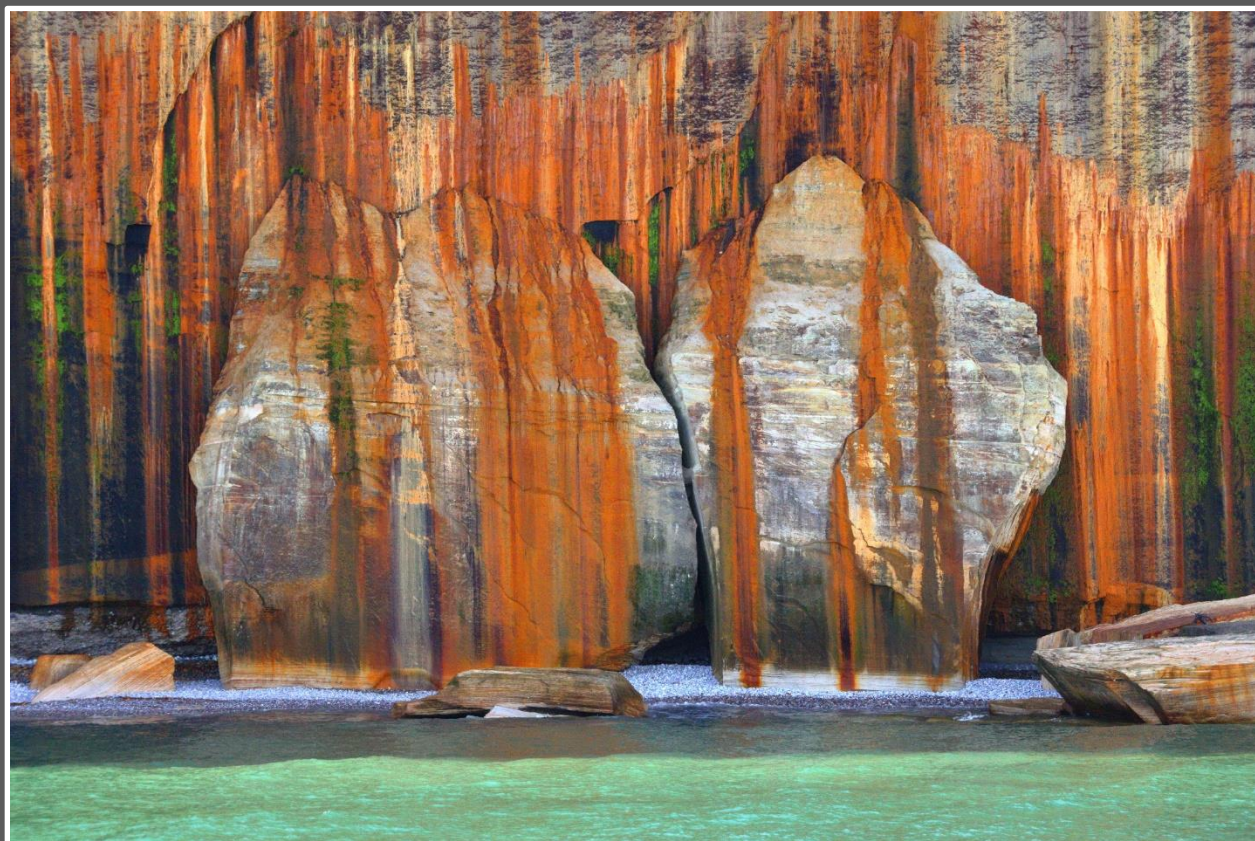


Figure 8 Aperture-priority is a poor choice when shooting the Pictured Rocks cliffs from a rocking boat handheld. You must keep the shutter speed up. Here I find Auto ISO with exposure compensation is the best answer. I prefer this auto mode because the exposure changes quickly when the boat goes around a corner of the cliffs and now they are in shade as seen here and you lose at least three stops of light.

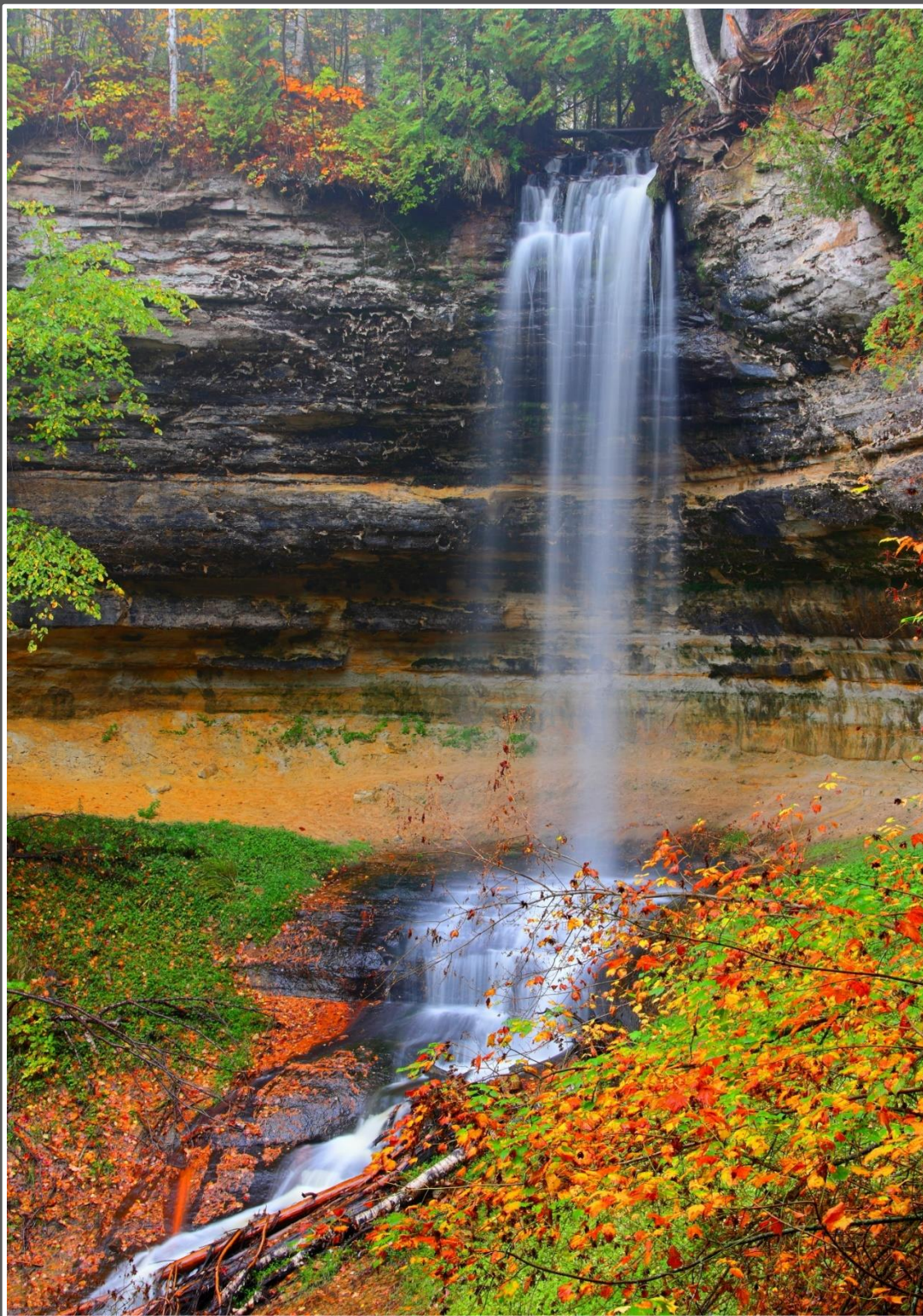


Figure 9 Manual exposure is the easiest way to expose any waterfall. This is Munising falls on the perfect morning as it is wet, leaf covered, and still. I use manual exposure and adjust the shutter speed to move the rightmost data over to the right wall of the histogram. Then I shoot a quick exposure and playback the image to look for blinkies or flashing highlights in the water. When the first blinkies appear in the highlights (the water), then I go with that exposure.