

Back-button Focusing Strategies

For 20 years I preferred this method, and now I don't use it. I tell you why at the end.

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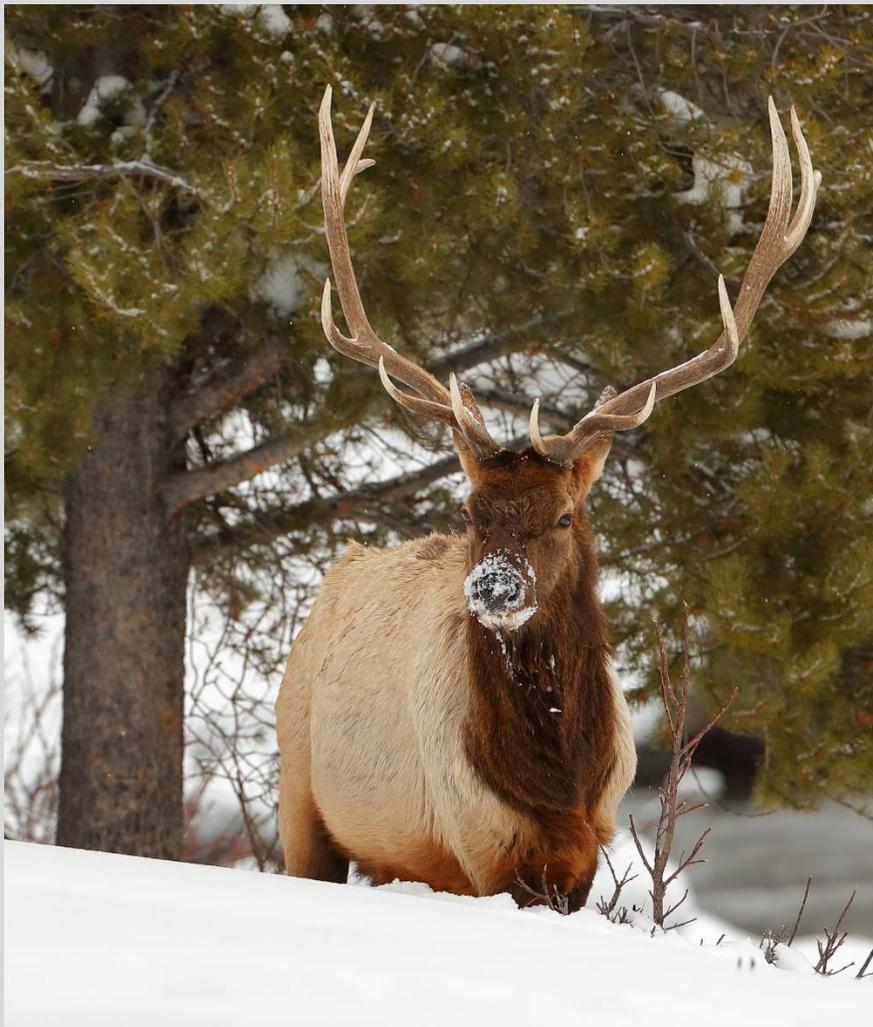


Figure 1 Use a single active AF point and put that point on the bull elk right between the eyes, push the back-button focus control to make the camera focus the lens on that spot, let up on the back button to lock focus, recompose and shoot away. Since the focus is active only when the back-button focus controller is depressed, the lens stays focused on the elk if you and the elk remain the same distance from each other.

Back-button focusing is a technique that allows the photographer to separate autofocus from the shutter button by assigning that role to one or more buttons on the rear of the camera. It is a way to precisely control autofocus that offers a wealth of benefits! Everyone should learn how to use it and when.

A Little History

Although back-button focusing has become popular among photographers lately, it is not a new focusing tool by any means. Back in 1989, I remember learning about and employing back-button focusing regularly with my top-of-the-line film cameras like the Canon F1. It solved so many focusing problems for me that I pushed its merits relentlessly. Indeed, even in the first book I wrote called *Digital Nature Photography – The Art and the Science* published in 2007 and in articles ten years earlier I promoted this technique. Let's take a look at what it does first, how to set it, and where things are going now.

Camera Design

Cameras are made so pressing the shutter button half-way down turns the meter on and activates the autofocus. That is quite a sensible way to achieve focus if you are shooting hand-held, but problems abound when shooting on a stable tripod. And keep in mind that cameras typically have a single-servo or one-shot autofocus mode that focus once and stops along with a continuous focus mode where the lens continuously refocuses as the subject to camera distance changes. One-shot AF doesn't work if you are photographing a still subject, and then it suddenly begins to move closer or further away. Now you need continuous autofocus to track the moving subject. It takes too long to switch between single-shot AF and continuous AF.

AF Points

Modern cameras offer numerous AF points to help you achieve sharp focus. That is a good thing! However, often using all of them at once, whether 61 or some other number, causes the camera to focus on the wrong spot. Autofocus systems typically focus on the closest object, and when your main subject, perhaps the face of the lion or a particular tree or rock in a landscape is not the closest spot, this causes a problem. Fortunately, cameras let you choose how many AF points you want to use and where they are located. You can choose all the AF points, a small group in one spot, or even a single AF point. There are many combinations to select. Notice in the discussion that follows that I refer to the active AF point(s) and not the ones that are disabled with camera selections.



Figure 2 African spoonbills are interesting birds as they filter the water finding their food. I found a flyway between two ponds in Kenya where they flew back and forth. Since they were always flying and continuous focus was the only option, setting the camera so autofocus is on the shutter button is perfectly sensible. In action only situations, I do not use back-button focusing.

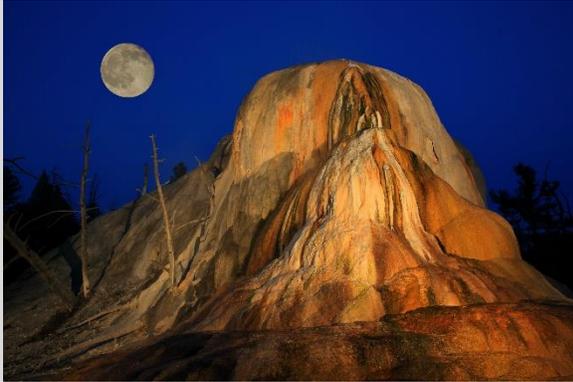


Figure 3 Night photography is very low light shooting. Autofocus generally does not work at night, so using live view, and manually focusing both orange spring mound in Yellowstone and later adding the moon to the image with the double exposure technique works best. Both the mound and the moon are manually focused at separate times.

Problems

1. If the camera is on a tripod, focus on the subject, then recompose the image so the active AF point is no longer on the subject, but on an object closer or further away from the main object, you have a problem when you fire the camera. Whether using a 2-second self-timer, cable or wireless release, or your finger gently pushing the shutter release button, each method activates the autofocus. Since the camera's AF point, or points, are no longer on the spot where precise focus is desired, the camera focuses automatically on a spot either too far or close causing the subject to be out of focus.
2. The camera may not even fire. Many cameras are set to focus priority. If the AF point is not on an object that is in focus, or the AF point can't see contrast in the object such as pale blue sky, the camera may not fire the shot at all even though you know the target is in perfectly sharp focus. The default on most single shot autofocus modes is

focus priority, but most cameras let you change this if you wish.

3. Unexpected action is always a huge problem for one-shot autofocus. If a still animal suddenly begins walking toward or away from you, it is necessary to make the camera track focus by switching from one-shot AF to continuous AF. There are buttons on the camera or menu choices to do this, but it takes precious time. Usually the photo is lost by the time you set the camera to continuous autofocus. Back-button focusing solves this problem easily.

How to Set it

Every camera seems to have a slightly different way to set back-button focusing. Most cameras can control focus with a button on the camera's back – though not all lower end cameras can. I shoot Canon cameras, so I know nearly all allow the user to set their camera to back-button focusing using a menu option in the camera. When set, a button that is typically about 1-inch to the right of the viewfinder is what activates autofocus. Perhaps that is why it is commonly referred to as back-button focusing because a button on the rear of the camera activates focus, and not the shutter button. The shutter button still has a role in picture-taking of course: pressing it turns the exposure meter on and the image is taken when the button is pressed all the way down. To set back-button focusing on my Canon 1DX Mark II, go to Custom Controls, press Set, go to the shutter button icon, press set, and move it one click right to the Metering icon only, and press set again to lock it in. Now only the AF-On button initiates autofocus and not the shutter button. To make it even easier, I also set the star button that is found a little to the right of the AF-On button to AF on and Metering as well. Both buttons now perform the same function, so

pressing either does the job of autofocusing and turning the exposure meter on. Most Canon cameras work in a similar fashion. For other camera brands, ask how to set back-button focusing for your camera on any internet forum that covers your camera model. Be sure to identify the model you have!!!

Benefits

1. Set the camera to continuous autofocus which may also be called AI Servo or some other term. With the autofocus set this way, the camera continuously tracks a moving subject if you keep the active AF point(s) on the subject. The advantage of back-button focusing is single focusing for still subjects isn't needed. Here is a simple example. Imagine a giraffe, prairie dog, or robin standing in front of you completely still. Point the active AF point at the subject's face, push the back-button focus control in to activate focus and the lens focuses on the face. When focus is achieved, let up the back-button to lock focus and recompose if necessary and shoot the image. The focus will stay at the distance where the subject's face remains, even if during the final composition the AF point coincides with a part of the foreground or background.



Figure 4 This black-tailed prairie dog is holding quite still now, so single focus or continuous focus works well if the active AF point is on the "dogs" face. But, should it begin to run, then you must have continuous focus immediately or it is too late.

Should the robin, prairie dog, or giraffe begin to move in any direction, select an AF point that corresponds to the face of the subject, push the back-button focus control in, and hold it in to force the camera to track focus while shooting away. In other words, with continuous autofocus set on the back-button control, it is necessary to both hold the back-button focus control in while at the same time press the shutter button to shoot images. With a little practice, it becomes quite natural and you will soon do it easily. This process is sometimes called thumb focusing because your right thumb does control the focus using a button on the rear of the camera generally a little right of the viewfinder.

The advantage of using your thumb to lock focus or initiate continuous focus is an enormous advantage for many subjects. It even works great for portraits and some close-up images of larger objects.

Also, many cameras let you manually focus the lens to touch up the focus or successfully handle a difficult focus situation and don't refocus when you take the photo undoing your best efforts. For example, when photographing through foreground vegetation, it might be possible to focus close to the desired spot, but not perfectly. Get close with back-button focusing and then focus precisely manually.

2. With the camera set to continuous autofocus, most cameras automatically set the default to shooting priority so they fire the shot whether the active AF point or points is on a focused target or not. This happens a lot when back-button focusing on an object and then recomposing right before the picture is taken. Some camera's still have focus priority even when set to continuous focus. In that case, find the menu option that controls this and set it to shooting priority.
3. Always remember back-button focusing is especially advantageous when photographing subjects that may be still at one moment and moving at another. And it has merit for still subjects too. Imagine photographing a large buck whitetail deer. It is feeding on acorns and keeps its head down in the grasses. With back-button focusing, focus on the deer's shoulder, recompose, and shoot a lot of images when the deer lifts its

head to gaze in your direction. It is quick because you have already focused on the deer.

When Back-button Focusing isn't the Best Option

Although I was a huge fan of back-button focusing for more than two decades, I certainly did not use it all the time and since autumn of 2018, I have not used it at all. There are many instances where other focusing systems are more efficient and accurate. That means you must learn how to set the back-button focusing option and take it off when needed. What are some situations where other focus choices work more effectively than back-button focusing?

1. Close-up Photography

Photographing tiny subjects that require magnification from around 1/5 life-size and greater really require manual focusing. Depth of field is limited as magnification increases – no matter what aperture is used. Often it is crucially important to precisely focus on a tiny specific spot on the subject such as the scales on a butterfly's wing or the stamens protruding from a flower.



Figure 5 Close-up photography really demands precise focus on the scales of this great-spangled fritillary. The best way to achieve the ultimate in sharpness is to use a tripod, trip the camera with a cable release, and especially use live view at 10x magnification to make it easy to manually focus on the wing's scales next to the thorax.

Autofocus typically has a hard time precisely focusing such tiny spots because focus precision is incredibly critical. To hit sharp focus on a small area, you are better off to use live view, move the focus box over to the area where sharpest focus is desired, magnify the LCD screen by 10x, and focus manually. This method works well if the ambient light is dark enough so you can see the live view screen easily.

Also, many small subjects have large areas of similar tones. Take an orange tulip for example. If you need to focus on a portion of the tulip that is uniformly colored orange with little contrast, the AF system might not be able to detect the spot where you want sharp focus because it relies on detecting contrast. Focusing is more accurate and easier by using the magnified live view image and focus manually!

2. Focus Stacking

Focus stacking is becoming a rapidly popular technique to obtain tremendous depth of field using the sharpest aperture on the lens – usually around $f/8$. Shoot a series of images where the focus is changed slightly from image to image until everything that is desirable to be sharp is captured in at least one of the images making up the set – called the stack. It is easiest to manually change the focus to do this in most close-up cases.

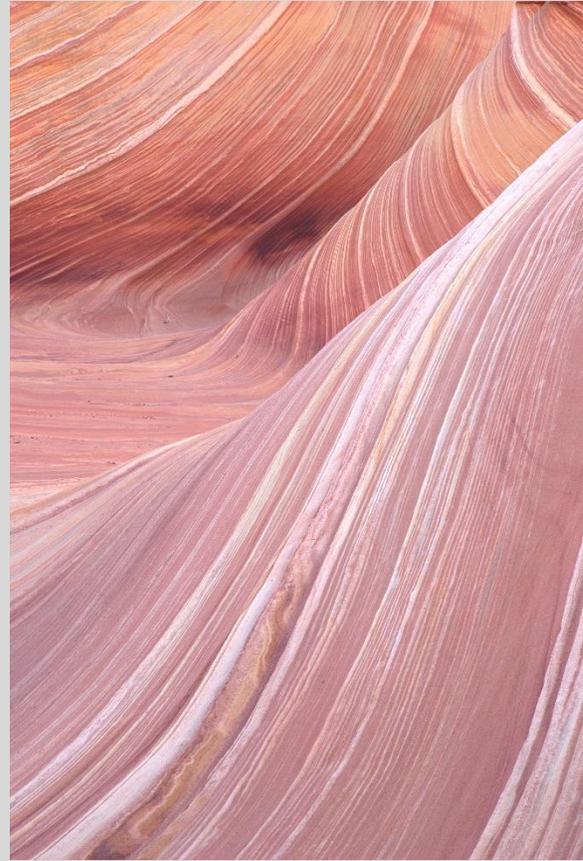


Figure 6 The famous wave at North Coyote Buttes near Kanab, AZ makes splendid pattern images. But the depth of field is huge and the foreground is only feet away. To get the best sharpness, do you focus on the foreground and stop down to $f/32$, or use $f/8$ and focus stack your way through the image? Hopefully you voted for focus stacking because that is so much better for sharpness! Focus stacking is by far the best choice and it requires several images to be in the stack. Manually focusing the stack of images is the best way to accomplish this small feat.

There are many times when autofocus does work well with focus stacking. If there are only two or a few distances that must be in focus, it is possible to autofocus on an important spot near the edge of the image and shoot that image. Then move the active AF point to the next spot, back-button focus on it, and shoot that one, and continue doing this until the closest spot in the foreground is sharply captured. Then run your stack of images through focus stacking software such as Helicon Focus, Zerene Stacker, and even Photoshop can do it.

An enormous improvement in modern cameras is the awesome Touch Shutter with AF active on the LCD. For simple landscapes, it is easy to touch the spot where sharp focus is desired. The camera focuses the lens on that spot and then shoots the image (the Touch Shutter). The advantage is enormous. It is easy to do, even with gloves on. Because the live view autofocus mechanism is used, autofocus is more accurate as focus is determined at the sensor plane, and not up in the DSLR viewfinder so no AF microadjustment needs to be done. True enough, you could jar the camera a little by gently touching the LCD to fire the shot, so put the camera on the 2-second self-timer to allow any tiny vibrations to dissipate before the exposure is taken. This works tremendously well! If you are **not** doing it this way, you are missing out **BIG TIME!!!!**

3. Shooting in Snow and Fog

Autofocus requires contrast to focus accurately. If you point the camera and lens at a subject that is very low in contrast, such as a field of snow on an overcast day, clear sky, or any uniformly-toned subject, the contrast could be so little that autofocus isn't reliable. And in falling snow, the autofocus does try to work, but the focus jumps back and forth as it detects snow at different distances. I photograph plenty of bison in the falling snow when leading my Yellowstone Snowcoach photo tours and the best way to hit sharp focus on the face when heavily snowing is to use a magnified live view image and manually focus on the eye of the bison, or any fur you can detect through the snow.



Figure 7 The snow falling in front of this Yellowstone bison made it impossible to hit sharp focus with autofocus. Manually focusing the lens while using a magnified live view image works far better.

4. Night Sky

Photographing the milky way or a landscape lit by moonlight or starlight is not a time to use autofocus because the light is too dim for the focus system to operate. You must go to manual focus. I use a magnified live view image and manually focus on an especially bright star. It must be bright because many of the dimmer stars cannot be seen in the live view image – at least I can't see them. For landscape foregrounds at night that are closer than infinity focus, shine a bright flashlight on the foreground and manually focus the lens on the now illuminated foreground.



Figure 8 Night sky photography requires manual focus due to low ambient light levels where autofocus does not work. This is Elliott falls on Miner's Beach east of Munising, Michigan.

5. When there is only action

Many photographers adopt back-button focusing and then say they use nothing else. That is a big mistake! When photographing subjects where there is only action, I see no benefit in back-button focusing. After all, you must hold the back-button in while pressing the shutter button, and that is one more thing to do. It is reasonably easy to do, but why bother if the subject is always moving so the camera must always be focus tracking.



Figure 9 A bald eagle has just grabbed a fish thrown by a fisherman in Alaska. More than fifty eagles were circling the boat because they knew more fish were coming. All the photo chances were flight shots, so it makes sense to put continuous focus on the shutter button to eliminate the need to also have to hold down the rear button focus control. With continuous AF assigned to the shutter button, I activate focus with a half-press of the shutter button and when I wish to shoot images, I merely press the shutter button all the way down.

If you are photographing flying cranes and snow geese at a refuge, rafters shooting some rapids, horse racing, or ice bergs from a moving boat, the camera must continually focus track. If there is little to no opportunity to need focus lock on a still subject, then why not put the continuous autofocus back on the shutter button so only pushing the shutter button initiates autofocus and shoots the images. By the way, if there is a small chance where you may need to lock focus on a subject holding still, many cameras can program the back-button focus control to lock focus instead which is helpful if you have continuous autofocus set on the shutter button. In this case, hold the

back-button focus control button in to lock the focus while shooting.

6. When pressing the back-button focus control is difficult

There are times when your body position may make it difficult to hold two buttons down at once. For example, I do a lot of waterfowl photography in a floating blind that is cramped while wearing chest waders. It is difficult to hold the back-button in while also pressing the shutter button, so in this case I always set continuous autofocus on the camera and use the regular shutter button only. I merely make my composition of the swimming bird, then select a single AF point that corresponds to the face of the bird and fire away. And it isn't a problem to keep the single AF focus point on the face of the swimming duck even when the duck isn't in the middle of the frame. I use a button on the back of the camera to move the AF point to the best spot as my composition changes.



Figure 10 My floating blind is too cramped to use back-button focusing. I therefore use continuous autofocus on the shutter button and quickly move the single active AF point around to make it coincide with the head of this bufflehead.

7. If you are quick at changing AF points

Over the years, the number of AF points has increased in cameras. Often a single AF point, or group of them, can easily and quickly be selected with a button or wheel on the camera. If you are good at doing this, then in many cases

it is quite effective to leave continuous focus on the shutter button, select the AF point that corresponds to the exact spot where sharp focus is desirable, and shoot. I find myself doing this all the time for action images now, and that is exactly what I do in the floating blind. Due to the ease of doing this and the larger number of sensitive AF points that are available now, I find myself using back-button focusing less and less as time goes on and abandoned it altogether in 2018

Summary

In no way am I telling you to abandon back-button focusing if you use it and like it. Back-button focusing does take some getting used to. But once its use becomes second nature; you will have great control over your autofocus systems. But, don't abandon focus on the shutter button or manual focus. In certain situations, focus on the shutter button, manual focus, and back-button focus all work best.

I loved back-button focus for decades, but now with the benefits of live view autofocus and the touch shutter, or the ease of selecting the active AF point with modern cameras, I no longer use back-button focus. Things aren't perfect for me, though. There are times where no AF point coincides to the head of my subject when I make my composition. None of my Canon DSLRs have AF points near the edge of the image. Sometimes my subject's head must be near the edge – an ostrich with a long neck for example, and then having continuous AF on the shutter button is a real problem. If I move the camera up enough to put an AF point on 'bird's face, I cut the feet off. For this reason, I use the AF-ON button that controlled my back-button focus in a different way. I program the AF-ON button to be the AF lock button. If I need to lock focus, I point the active AF point at the target, press the shutter button part way, the lens focuses on the target, then I press and hold down the AF-ON button to lock the focus,

recompose and fully press the shutter button down to shoot images while also hold the AF-On button depressed to keep the focus locked. It works well – once you get used to it, of course.



Figure 11 A drake American wigeon is a fine subject on a lake near my Idaho home. Had I been on shore, I would have been using continuous focus on the back-button. But in this case, I was offshore a little in my floating blind, so I moved the single AF point up and to the left till it was superimposed on the drake's eye and it focused the lens at that point.



Figure 12 As this American avocet searched the shallows for food, I compose the bird looking into the image, and selected a single AF point that coincides with its face. Continuous autofocus is assigned to the shutter button. As the avocet moves, it may turn around and then I select another AF point to coincide with the face.