

Canon RF Long Lens Options for Wildlife Photography

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Figure 1 This frosty bison greeted us one freezing morning in Yellowstone. After getting my photo workshop group into position, I used my Canon RF 100-500mm lens and zoomed out to 270mm. Exposure was 1/320 second, f/7.1, and ISO 1000. I did not use auto ISO here because it causes poor exposure when the composition is changed due to varying percentages of light snow and dark bison and tree in the image. Instead, I use manual exposure and set it to produce the first blinkies in the snow.

I bought my first mirrorless camera (Canon R5) in November of 2020 just to learn more about mirrorless cameras because many of my workshop clients were using them. Prior to the mirrorless R5, I was using the Canon 1DX Mark III and the Canon 5D Mark IV. In the 15 months since I made that purchase, I have only used the Canon R5 as it gives me so many useful features like eye focus that my DSLRs did not offer. Since then, I have invested in RF lenses and love them. Indeed, new RF lens choices are steadily appearing. Keep in mind that I have only owned and used the RF 100-500mm and RF 1.4x extender. I have also owned the DSLR equivalent 600mm f/4 and 800mm f/5.6 but have not used the RF versions of those lenses.

My college training is wildlife biology and therefore it is no surprise that wildlife photography is favorite subject. With all the RF lenses currently offered that work well for wildlife, here are my thoughts about each of them. Keep in mind that my opinion is exactly that. What works for me might not be the best choice for you and my opinion continually gets tested. Sometimes I change my mind when I see new ways to use gear to capture the images I cherish.

I tend to prefer to photograph the subject, so it appears large in the image. That means I get relatively close to the subject and use long focal length lenses. I realize many take “dot-bird” photos and blow them up tremendously to use on social media but having earned a living at nature photography since 1975, that strategy would have failed. I do admit that taking bird photos where the bird is tiny in the image and then blowing it way up in post works for social media, but the tiny file limits what you can do with the photo. I prefer to compose as closely as I can to my desired final image inside my viewfinder, not blow it up later. That is my preference and in no way do I suggest that is must apply to anyone else.



Figure 2 The Canon 100-500mm zoom worked well on the Canon R5 on South Padre Island, TX at the birding center. Plenty of birds like this green heron were perched along the boardwalk. Since I had to photograph on a narrow boardwalk with plenty of other visitors passing through, I shot handheld and braced the camera on a boardwalk post that supports the railing boards. This was stable and helped me shoot much sharper images. I naturally had my IBIS active and set to Mode 1 to compensate for lens movement in all directions. Remember IBIS or VR only helps with camera motion and not subject motion. Exposure set with Auto ISO at ISO 400, and my manually selected shutter speed of 1/250 second at f/8. Since the light continually changed on this partly cloudy day, Auto ISO was my best option and setting the EC (exposure compensation) to + 2/3 stop produced my first blinkies in this scene. I did not mind the gray water as a background as that helps the bright colors in the heron pop!

Canon Extender RF 1.4x (\$500)

While this is a lens, it really is a device to increase the focal length of the lens you put it behind. I cover this one first as it becomes a factor in all the other lens choices I am about to discuss. The 1.4x extender is a small object that contains glass and magnifies the image by increasing the focal length of the lens you put it behind by a factor of 1.4. That means put the 1.4x extender on a Canon 100-400mm f/5.6-8 lens, and then it can become a (400 x 1.4 = 560mm) 560mm f/11 lens as the extender costs you one stop of light. However, you do maintain the minimum focus distance and that is especially important for small birds. The quality is quite good when this extender and lens combo is used with excellent shooting technique and sharpness is improved by stopping the primary lens down at least one stop from the maximum aperture. I use the 1.4x extender frequently and get sharp photos that earned me an excellent living for decades.

Most of you already know 2x teleconverters are built by many manufacturers too. The extender doubles the focal length, but also slows your lens down two stops. By way of example, a 300mm f/4 lens becomes a 600mm f/8 lens when the 2x extender is used between the lens and the camera. While the focal length is doubled (that is good), the maximum aperture is two stops less and that is bad. By the way, how much larger is the subject in the image when you use the 2x extender? Many believe the obvious answer is twice as big and that is the wrong answer. In reality, if your subject is 1 inch high and 1 inch wide, that covers an area of 1 square inch. If you then add the 2x extender to the mix, the height doubles to 2 inches and so does the width. But the area is not 2 square inches. Two times two is four square inches so the area covered in the image by the subject when using a 2x converter really quadruples, rather than doubles in size. A 1.4x extender essentially doubles the area of the subject.

Notice the letter designations for these lenses. IS stands for built-in image stabilization in the lens and can be used in conjunction with a camera that has IBIS or in body image stabilization for sharper images. This is especially important for shooting handheld or from a tripod when you are hanging onto the camera. USM stands for ultra-sonic motor so that means it focuses quickly. L stand for low dispersion glass and it is highly correctly optically, but also more expensive than regular lens glass. Still, serious photographers, whether pro or not, tend to prefer the lenses made with L glass. By the way, a pro photographer is someone who earns a living from photography whereas an amateur is someone who does it for fun. Using terms such as pro and amateur says nothing about how good the photographer is. I know many amateur photographers who are far more skillful than most pros.

I listed the MFD when I could find it. That stands for Minimum focus Distance and that is important for small animals.

Canon RF 100-400mm f/5.6-8 IS USM (\$650) MFD is 2.89 feet when zoomed to 200mm

My first thought is 400mm is really too short for most wildlife photography. You really need a longer focal length most of the time. Naturally, this lens will work where wildlife is quite habituated to humans



Figure 3 This American marten perched on a snow-covered dumpster and stared at us for a few minutes. The manual exposure was ISO 640, 1/2000 second, and f/9 with the Canon R5 and RF 100-500mm lens. I handheld the camera but braced it against a nearby tree to reduce camera shake and had the IS set to 1, so all directions were stabilized. It is amazing how good image stabilization is with modern camera gear..

such as a city park or the Galapagos Islands where I have led over 20 tours over the decades. Of course, as mentioned above, when used with the 1.4x extender the lens reaches a focal length of 560mm and that is certainly the long lens range. And if you also have a camera with a crop factor, the reach of the lens is even more. The lens when zoomed out to 400mm with a 1.4x extender behind it and the 1.6x

crop mode in the camera set gives the reach of a $(400 \times 1.4 \times 1.6) = 896\text{mm}$ lens. Now that is a lot of reach and that makes your subject larger in the electronic viewfinder when you shoot photos. Since the subject is larger when viewed, it is easier to know when to shoot photos. For example, if the bird is slowly walking, seeing the legs in a better position for photos is helpful and so is being able to tell if the head is turned slightly toward you or away from you. This is a much lower cost long lens option and lighter to carry too. For many, it is a desirable choice.

Canon RF 400 f/2.8 L IS USM \$12,000

The f/2.8 speed of this lens is splendid, but the size, weight, and price of it are not desirable. I think the speed and 400mm focal length would likely be especially desirable to sports photographers. But, as a wildlife photographer, I find 400mm is generally too short of a lens for most of the wildlife photography I do. Sure, a 1.4x or 2x teleconverter could be used to make the focal length longer, but for about the same price, I can buy the Canon 600mm f/4 lens and not have to use the extender. Lens selection is a matter of personal preference for each photographer. For me, my wildlife lens options begin at 500mm and go longer, so I do not see me getting an expensive 400mm telephoto lens for wildlife photos in my future. Due to its mass, this lens would also be more difficult to handhold when photographing flying birds. I could handhold it for a while, but it makes more sense to me to use a lighter and smaller lens to pan with flying birds.

Canon RF 100-500mm f/4.5-7 L IS USM (\$2900) MFD is 3.94 feet at 500mm and that is amazing!

I bought this lens as soon as it became available, and it is wonderful. The zoom range is most adequate for wildlife that I can approach reasonably close and the f/7 aperture when zoomed to 500mm is not often a problem now that using higher ISOs such as ISO 2000 is realistic without getting too much noise. Naturally, I use noise reduction offered by my free Canon DPP4 software to advantageous effect too. This lens focuses super close and that is a huge advantage for small wildlife subjects like chipmunks and warblers. I also use the Canon 1.4x extender with it to increase the focal length when necessary. With the 1.4x extender, the lens can become 700mm lens when zoomed out to 500mm, but it does lose one stop of light. The maximum aperture is a slow f/10, but that is still quite useable with the IBIS of my Canon R5 along with shooting in brighter ambient light. Of course, in the dim light of early dawn or dusk, then f/10 is a problem unless you do not mind shooting with really high ISOs greater than ISO 2000. While the zoom lens will not be as fast as most fixed focal length long lenses, the merits of being easily able to change focal lengths to accommodate wildlife that vary in size or change their shooting distance when you can't move is an enormous advantage. For example, my shooting position is fixed when photographing from a blind, a parked safari vehicle, or even on a trail in the Galapagos where you cannot walk off the trail. In those cases, a zoom lens is ideal to allow you to compose better quickly and easily.

Special Fix Aperture Telephoto Lenses

Canon RF 600mm f/11 IS STM (\$800) MFD is 14.76 feet

Canon RF 800mm f/11 IS STM (\$1000) MFD is 19.68 feet

The price of both lenses is appealing to everyone and so is the low weight. These are fixed aperture lenses and that means f/11 is your only option. It is not likely you would need to stop down more than f/11, but there is no option to open up the lens. For the money, though, either one of these two lenses

is an effective way to get a long prime lens at a reasonable price. For me, f/11 is too slow for shooting wildlife photos in the dim light of dawn or dusk when I am most likely to be photographing wildlife, but in bright sun f/11 is quite workable. But due to the slow lens speed, I would not consider using these lenses.

RF 600mm f/4 L IS (\$13,000) 13.78 feet MFD

I own and use the 600mm f/4 III that is made for DSLRs. It works fine with my Canon R5 with the lens adapter, and I get excellent image quality. I do wish I had the RF version now so I do not have to use the adapter, but I do not think it is worth the money I would lose by selling the 600mm I have now to buy the RF version of this lens. I have heard both lenses are optically the same. If there was some optical advantage, then I would go to the RF version. I am disappointed the MFD is 13.78 feet while the new RF 800 f/5.6L is only 8.53 feet and that is an amazing short distance for a lens in this focal length. If the new 600mm f/4 had a much smaller MFD, then that would be a reason to buy it as it would help me focus on small birds like warblers and chickadees that are close to me.

RF 800mm f/5.6 L IS USM (\$17,000) MFD is 8.53 feet

When photographing wildlife, having more focal length is a significant advantage as it is easier to capture a large image of the subject without getting so close that you scare it away, plus the backgrounds are much more out of focus and therefore less cluttered with distractions. Before buying the 600mm f/4 lens, I was using the Canon 800mm f/5.6 made for DSLRs. It worked well and I got sharp images as I use excellent shooting technique. But I sold it and bought the 600mm f/4 to replace it. Why did I buy a shorter focal length lens? The 600mm f/4 lens offered me more options. First, it is one stop faster at f/4 than the one stop slower 800mm f/5.6 lens. More lens speed is crucial to me when photographing birds from my floating blind (a tremendous passion of mine) early in the morning when fog is drifting on the water. Otherwise, I would have to use more ISO with the 800mm lens as I do not have the option of opening up the lens to f/4. Plus, when I need more reach and the ambient light is adequate, putting a 1.4x extender on the 600mm f/4 gives me a focal length of 840mm f/5.6. While the lens speed of f/5.6 remains the same as the 800mm f/5.6, I have an additional 40mm of reach and the 600mm lens focuses closer than the 800mm. Again, with small wildlife subjects, minimum focusing distance is important. The closer the lens can focus, the more useful it is.

Another way I use the 600mm f/4 lens is I combine the 1.4x extender with the 1.6x crop mode of the Canon R5. When you do this, you get $(600 \times 1.4 \times 1.6 = 1344\text{mm})$ of reach. I am well aware that using the 1.4x converter changes the focal length to a longer one and the crop factor does not, but the crop factor does increase the lens reach if you consider reach to be the size of the subject in the viewfinder. While I know you can crop the image in processing, I find smaller file sizes do not fill the memory cards as quickly or the buffer and that lets you keep on shooting images. Plus, with the mirrorless camera the subject is larger in the viewfinder and a large subject is easier to see and that helps me monitor the subject's body position, so I better know when to shoot photos.



Figure 4 Canon R5 with the RF 100-500mm lens using Auto ISO set to +1 1/3 stops and using ISO 1000, f/7.1, and ISO 400. This coyote was rather friendly and laid down in the parking lot at the Mud Volcano area in Yellowstone.

RF 1200mm f/8 L IS USM (\$20,000) MFD 14.1 feet

This lens cost five times more than my first Chevy pickup truck I bought new in 1976 – how time flies and things become more expensive. It is hard to believe a lens could cost that much but here we are. To be honest, nature photography has treated me favorably, and I was skilled at investing and started young, so the price is no barrier for me today. But do I want it? I would love to try it out in my floating blind because staying further away from a wary subject is always an advantage, but do I need it? My 600mm f/4 offers the field of view of a 960mm f/4 lens when the 1.6x crop factor is set in the Canon R5. While that is not 1200mm, it is two stops faster than the 1200mm f/8 lens and lens speed is crucial to me. With the 1200mm f/8, I would have to live with f/8 no matter how dim the light and that is a problem. And should I combine the 1.6x crop factor with the 1.4x extender on the 600mm f/4, I have more reach of 1344mm f/5.6. I have 144mm more reach and one more stop of aperture speed to work with than offered with the 1200mm f/8 lens, so the combo of 600mm, 1.4x converter, and 1.6x crop factor wins that one. Of course, if I use the 1.6x crop factor with the 1200mm f/8 lens, I have the reach of (1200 x 1.6 = 1920mm) and still have an f/8 lens speed. I do not think adding the 1.4x extender to the 800mm f/8 lens to make it an f/11 lens would be useful that often unless you had bright sun to work with. Would I like to try this in my floating blind? You bet! But I do not think I will be spending \$20,000 to try the lens out. If Canon would like to loan it to me for a month in June or July, have Canon contact me and I will thoroughly test it on the wildlife around me near Yellowstone.

The preceding discussion are my thoughts as of this day in March of 2022. My opinion is subject to change and that is a given. I continually evaluate my options and always seek a better way to do things. I do wish Canon would offer some truly long zoom lenses as I would have a use for them. While I like a

fixed focal lens when I get to stalk the subject and that means I start shooting when it is big enough in the viewfinder, I need a zoom lens when my shooting location is mostly fixed, and the subject is not. Being hid in a photo blind or in a vehicle on safari in Africa are but two examples where it is difficult to change my shooting position while the subject often moves closer or further away from me.



Figure 5 The Canon RF 100-500mm lens is ideal for birds in flight. It is light to hold and easy to swing with the subject. Here 1/2500 second at f/8 and ISO 1250 easily let me make a sharp image of the crested caracara.



Figure 6 The common redpoll is a tiny winter visitor from Canada. Being small, lots of magnification is needed to capture it well. Here I used the Canon R5, Canon 600mm f/4 lens with a 1.4x extender attached making the lens 840mm. Then I used the in-camera 1.6x crop factor to reach a field of view of 1344mm. I used Auto ISO and it selected ISO 2500 when I manually selected f/6.3 and 1/800 second. The exposure compensation is + 2/3 stop of light. This is a case where I really needed a lot of reach, but also needed the 600mm lens that focuses fairly close for that focal length. A lens that focuses no closer than 20 feet, for example, would not be suitable unless extension tubes were also used, and they cost you light too.

New Lenses I would like to see Made!

How about a truly long zoom lens???? I would love to see a 300-700mm f/5.6 zoom that can focus down to six feet. Perhaps a 400-800mm f/6.3 that focuses close might be doable. I know more RF lenses will appear in the future and perhaps one of them will give me a better option than what I have right now. Time will tell. Good luck with your wildlife photos and remain open to new possibilities.



Figure 7 A lesser scaup bathed in the first red rays of sunshine at dawn. When the light is dim, then lens speed is crucial to avoid noisy high ISOs. That is where my Canon 600mm f/4 lens really is my best option. I can shoot using f/4 and if I want more reach, I can set the crop factor in the Canon R5 to 1.6x and then enjoy a larger subject image in the viewfinder while getting the field of view of a 960mm focal length.



Figure 8 The Canon R5 with the 600mm f/4 lens was perfect for this whooping crane near Rockport, TX. Exposure set to produce the first blinkies in the white feathers and it was ISO 640, 1/1250, and f/11. This is an endangered whooping crane - a rare bird indeed.

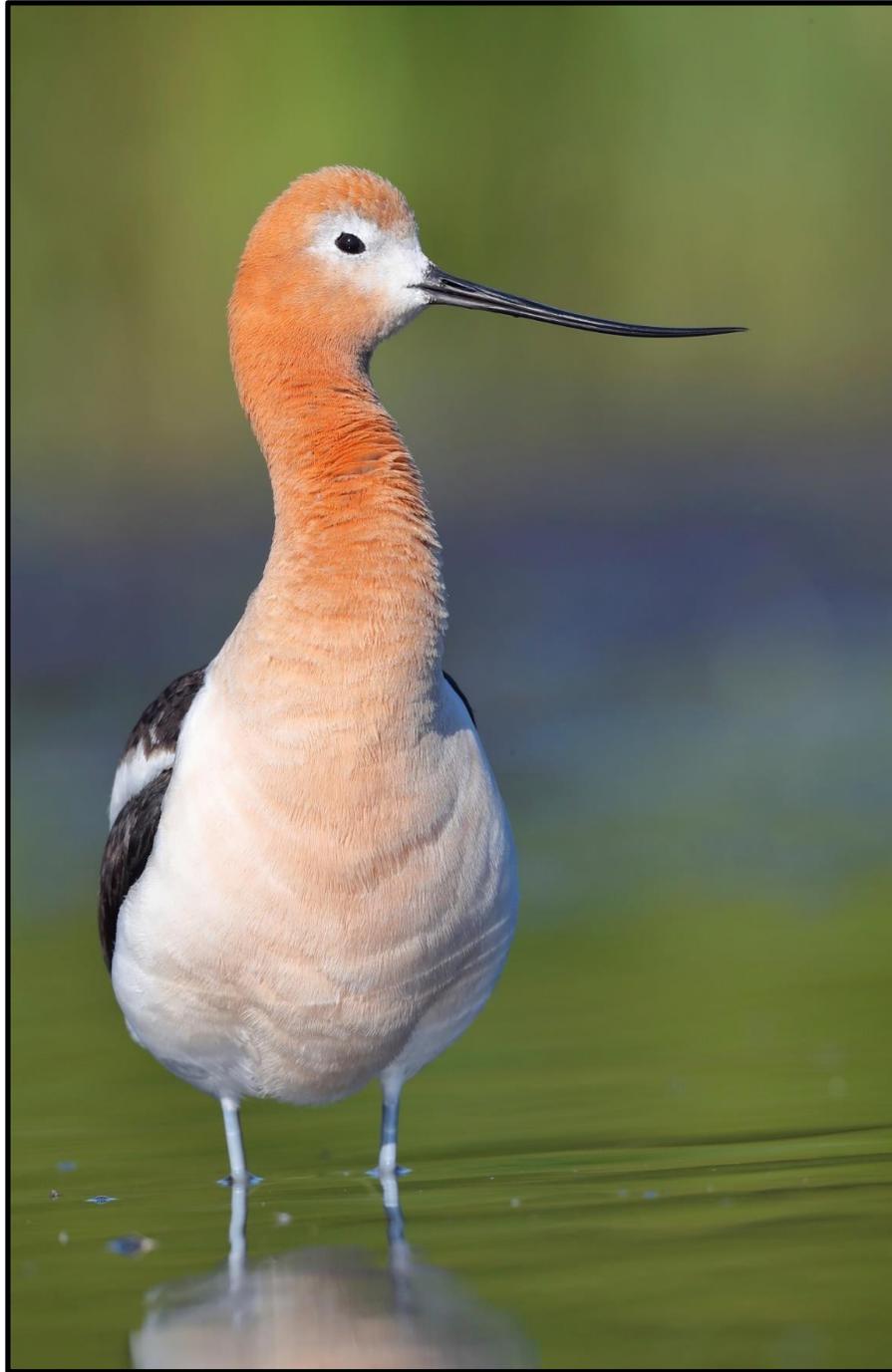


Figure 9 My floating blind lets me stalk birds and mammals while hidden inside the blind. That is where I really want a lot of focal length. Though most wildlife is not especially nervous about the blind when I slowly and quietly approach, some are, so staying further away helps me move into full-frame photo distance more easily. Here I opt for the Canon 600mm f/4 lens and use the Canon's RF in the 1.6x crop mode when I want to see the subject larger in my viewfinder as this helps me to know when to shoot images. That gives me a reach of 960mm, though, the file is smaller. And with a 1.4x extender, the 600mm becomes an 840mm lens and still delivers large file sizes. And if I need more reach, then combining the 600mm lens with the 1.4x extender and setting the camera to the 1.6x crop factor gives me the reach of 1344mm! By the way, I looked up the definition of reach as it applies to lenses and there seems to be no specific definition. So, to me, more reach makes the subject bigger in my electronic viewfinder and that is enormously valuable as it helps me shoot when the subject's pose is most favorable. You lose that advantage if you photograph the subject small and crop later in post.



Figure 1 A snowy egret hunting for dinner at Brazos Bend State Park in Texas. The Canon R5 with the RF 100-500mm lens and the camera set to the 1.6x crop mode nicely filled the viewfinder with this active white subject. The eye focus mostly kept the lens focused on the eye as the active bird moved about. Exposure was Auto ISO set to $-1/3$ stop or EV. While you might think a white subject needs positive exposure compensation, due to all of the dark green tones around it, a little negative exposure compensation is necessary to avoid overexposing the white feathers. The exposure of $1/1000$ second, $f/9$, and ISO 320 with EV set to $-1/3$ stop produced the first blinkies in the white feathers.



Figure 2 An American bittern hunts slowly at Brazos Bend State Park in Texas. The trail on the south side of 40 Acre Lake is the best place I know of to find and photograph this species during March. Exposure is $1/500$ second, $f/9$, ISO 400 with Auto ISO set to $+1/3$ stop exposure compensation. I used the Canon R5 with the RF 100-500mm lens set to 363mm.