

# 25 Tips for Sharper Wildlife Photos

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*Figure 1 This green heron held this pose for several minutes while it patiently waiting for a frog or minnow to catch for breakfast. Using a Canon 600mm lens with a Canon 1DX Mark II, I moved a single autofocus point around until the AF point coincided with the eye of this heron when I had this composition. The Auto ISO selected was ISO 640 and I manually set 1/800 second and f/8. AF microadjustment was -5 and the exposure was determined manually by moving the histogram data over to the right edge of the graph, shooting a shot, checking for blinkies, and going with the exposure that produced the first blinkies. To achieve excellent sharpness, my camera gear was attached to a Wimberley head mounted on a sturdy tripod and image stabilization was set to Mode 1. I knew green herons do not move much so I would not be panning with it, thus, I did not need Mode 2.*

Wildlife photography presents many challenges. One of the key skills you must master is capturing images that are truly sharp. Let us explain these techniques for making sharp wildlife images. While there are many factors to consider in achieving sharp images, once you adopt quality shooting techniques and apply them consistently, making sharp images becomes the rule – not the exception.

I demand high-quality images and know you do too. I do not cut any corners and continually seek techniques that deliver quality. Every time I buy a new camera, I carefully go through the menu options (and I do mean all of them) to see if some can help me shoot higher quality images. Here is what I am doing now to achieve the quality I seek.

### **1. Skip the Protection Filter**

Any time you add glass to the optical path, a slight and sometimes a significant loss of sharpness is lost in all images shot with the filter on the lens. While many high-quality protection filters are available, most photographers who use them use the least expensive brands and their images suffer.

It is questionable how much protection a filter provides anyway, so do your images a favor and do not use them. I have not even owned a protection filter in 45 years of full-time professional photography, and during that time, I have never damaged a lens. Perhaps I am more careful than some, but I **always properly install the lens hood** that comes with all my Canon lenses and that alone has prevented damage to a lens during the few times when I have dropped one.

By the way, over my career, I have tested the sharpness of an image with and without a protection filter several times and using a protection filter always produced images that were less sharp than images shot with no filter. Sometimes the loss of sharpness was not much, but I could always detect it. (I have a background in physics – and while I may not remember much of it anymore, I did learn how to run a careful test.)



*Figure 2 This lesser scaup duckling is cleaning up a bit after spending the last several minutes diving for its breakfast. I used a Canon 600mm lens with a 1.4x teleconverter to give me a focal length of 840mm. Image stabilization is on in Mode 2 as I often pan with swimming ducks. Exposure is 1/1250 second with f/7.1 and ISO 1000. Using the fast shutter speed and image stabilization helps considerably in helping me to capture a sharp image of this fleeting action. Notice the low viewpoint. For many years I have used a floating blind (article on my website) to stalk aquatic wildlife. The floating blind is not a boat. It has a camo cover and floats my camera gear, and I am walking along the margin of the lake in shallow water. Moving slow in the floating blind is the key to getting close. It is a fabulous wildlife experience to be out in wetlands full of birds and they pay no or little attention to you. Often birds swim by me with 10 feet and sometimes birds perch on my lens while I am in the blind.*

## **2. Do not use Teleconverters Needlessly**

First, I do use teleconverters when I have no other choice. I often use a Canon 1.4x teleconverter (latest version) on my Canon 600mm f/4 lens to optically make it an 840mm lens. When I need the 840mm reach, I use the teleconverter and my images meet my quality standards. That said, you lose some image sharpness anytime you insert another piece of glass in the optical path. With the pro quality gear I use (latest Canon 600mm and 1.4x teleconverter), the results are excellent, but the images are not quite as sharp as those made with my 600mm without the teleconverter. The bottom line, while teleconverter use



can still deliver acceptable results, they will cost you some sharpness so only use them when absolutely necessary. Do not use a 1.4x teleconverter on a 100-400mm lens, for example, when all the images you would shoot could be done with the 100-400mm zoom range without the teleconverter. Only use the teleconverter when you need it to increase the focal length longer than offered by the lens you are using.



*Figure 3 A pair of rufous hummingbirds feed at the sugar water feeder that is disguised with a plant. Four flashes light the two birds. Exposure is f/16, 1/200 second, with ISO 160. Using my Canon 100-400mm lens at 350mm, I had to zoom back a bit to capture both birds without cutting a portion of one off. My lens and camera needed a -9 AF microadjustment. That means my lens/camera combo was focusing further away that it should – called back focusing. The -9 correction makes the autofocus mechanism focus the combo a little closer, giving me sharp hummingbird faces. Fortunately, my new Canon R5 does not require any AF microadjustment because the focus mechanism is at the sensor plane and not up in the top of the camera and using eye detection, it will focus on one of the hummingbirds eye automatically.*

### 3. Get Close to your Subject

I prefer to photograph wildlife at reasonably close distances when possible. Of course, this means I do not frighten my subject and I am at a legal distance. For example, you legally must stay 25 yards away from elk, moose, and bison in both Yellowstone and Grand Tetons National Parks. Personally, I would never be that close to them anyway. Since I tend to use a 600mm lens, fifty yards is full frame and produces less distracting backgrounds because the small field of view of the 600mm covers less background. If the subject approaches closer than the legal distance, back up to maintain the legal and safe distance. For bears and wolves, then it is 100 yards unless a ranger is present who allows being at a closer distance. Being close to the subject means you are photographing through less air and that can produce clearer and sharper images. Also, if the subject is larger in the viewfinder, I find it is easier to put the active AF point right on its face.



*Figure 4 A mamma bison with her calf in Yellowstone. The park rules state you must not approach bison closer than 25 yards. I like to get close to reduce the amount of air between me and the subject. But a bison with a baby is not something I want to annoy! To stay safe and not bother this bison family, I stayed at least 50 yards away and use a Canon 800mm f/5.6 lens to fill the frame with bison! Exposure is ISO 640, 1/800 second, f/7.1, with a + 1/3 stop exposure compensation using Auto ISO. I find having to search through menus to get to the exposure compensation is far too slow, so I assign it to the SET button. Then to set EC, I press the SET button down while rotating the dial on top of the camera to select whatever exposure compensation I prefer. I find I must use exposure compensation more than 90% of the time.*

#### 4. Buy Good Lenses with the best Glass

Thanks to super financial advice I received from my 11<sup>th</sup> grade math teacher in 1971 that I followed through life, I can fortunately buy whatever I want today. I always buy the best Canon lenses, usually designated as an L lens. I believe L stands for “lots more money.” Anyway, when it comes to lenses, you get what you pay for. Fortunately, there are plenty of third-party lenses such as Sigma, Tamron, and Tokina that offer quality gear for much lower prices. And now even Canon is offering great lenses for the masses that are excellent quality and far more affordable than my 600mm f/4 lens (\$13,000). The 600mm and 800mm fixed f/11 lenses are two examples. Still, if possible, buy the lenses made by your camera maker. If I shot Nikon, I would buy Nikon. If Sony, then I would buy Sony lenses and so on.



*Figure 5 Quality lenses always help you achieve the super images you plan to capture. This rare duck was photographed with a high-quality Canon 200-400mm lens on a tripod with a Wimberley gimbal head. John James Audubon, a famous ornithologist who lived in the US over 100 years ago thought this duck was a new species and named it the Brewer's Duck, after one of his friends. He even painted it to add to his exquisite painting collection of the birds of North America. Though extremely rare, I found this one living on a pond in Southern California. Today we know it is not a true species, but rather a mallard/gadwall hybrid.*



## 5. AF Microadjust your Lenses

On a DSLR, the autofocus is controlled by a focus mechanism in the top of the camera and not at the sensor plane. This is done because the mirror and the shutter curtain cover the sensor prior to the exposure. Of course, the mirror can be moved up out of the way on most cameras, but the shutter curtain continues to cover the sensor until the moment of the exposure unless you use live view when the autofocus is then set by a focus mechanism at the sensor plane. Of course, normally wildlife photography and live view do not work well together as you must look through the viewfinder, not a live view image on the camera's rear LCD.



*Figure 6 Dixie found this rare spotted baby common zebra early one morning. I managed to compose it and shoot a few photo before the two wandered further away from the small dirt road we were on. Fortunately, both were the identical distance from me so even a shallow f/7.1 sharply focused both. Canon 5D Mark IV, 600mm lens, from a bean bag in Kenya..*

It is not surprising that it is difficult for camera makers to build equipment where the distance the light travels to the imaging sensor is the same as the distance the light travels to the focus mechanism in the top of the camera. Usually there is a slight difference in distances, and this results in small autofocus errors. That is why in recent years camera makers now provide a way to AF microadjust your lens/camera combo to make autofocus more accurate.

With my Canon gear, I find it is mandatory to AF microadjust every Canon lens I use with any of the Canon DSLRs I have used over the years for truly sharp autofocus. So far, all my camera/lens combinations have produced sharper images when AF microadjusted – some a little and others a lot! For example, with my Canon 1DX Mark II camera, my Canon 100-400mm lens required a -9 AF microadjustment to produce sharp focus (that is a lot) while my new Canon 600mm f/4 III lens only required a -1 adjustment and that is negligible. But when I add a Canon 1.4x teleconverter to the 600mm to make it an 840mm lens, then I need a +5 AF microadjustment and that is significant.

My detailed article on running an AF microadjustment test is found on my web site at [www.gerlachnaturephoto.com](http://www.gerlachnaturephoto.com) The only change to my method now is I use flash to light the target when running the test. This makes it possible to AF microadjust indoors and eliminates all sources of vibration to make sure only AF accuracy is tested. The vibrations are eliminated because I use flash at the ¼ power level to light my focus target. The short flash duration effectively eliminates any unsharpness due to possible vibrations from the wind, mirror, or shutter movement, and so on.

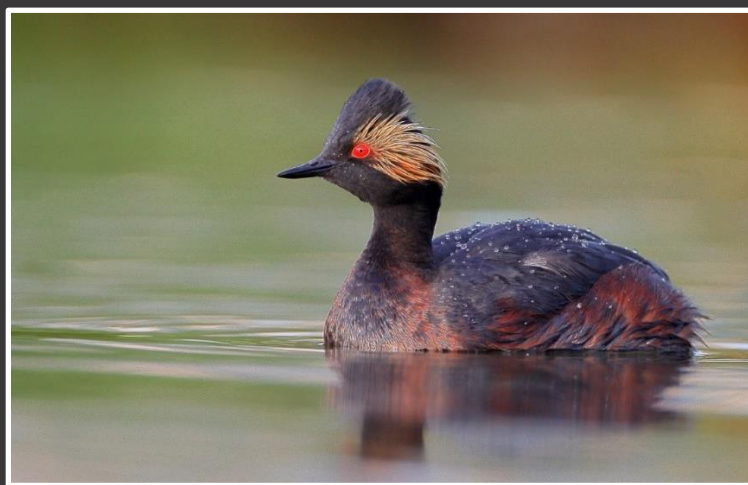
AF microadjustment is not necessary for mirrorless cameras since autofocus is determined at the sensor plane. That is a huge plus for mirrorless cameras like my favorite camera, the Canon R5. I am quite



thrilled that I no longer have to AF microadjust with my mirrorless camera and probably all future cameras I own. Why? I do not think I will ever buy another DSLR again as I now greatly favor mirrorless cameras!

## **6. Use a Stable Shooting Support Whenever Possible**

Never shoot handheld when it is possible to brace the camera. I admit handheld shooting is sometimes necessary, such as when photographing wildlife from rocking boats or birds flying overhead. But most of the time it is convenient to use a tripod for wildlife photography or a bean bag when shooting from vehicles. Sometimes I must handhold the camera because an object is in the way. I remember photographing a red and yellow barbet bird in Kenya and a leaf blocked my shot when my 600mm lens rested on the bean bag tied to the top of the safari vehicle. By standing on the rear seat, and holding the big lens 1 foot higher, I had a clear shot. I did get some super sharp images of this bird by increasing my shutter speed from 1/1000 second to 1/2000 second and shooting more images than normal to provide me with more chances of getting a super sharp image.



*Figure 7 A stable photo platform is always best whenever you can use it. Here I am in my floating blind, so a tripod does not work. Instead, I have a Wimberley gimbal head mounted on a plastic board at the front of my floating blind. When I am*

*photographing, I hold completely still and hope the water is calm too as even ripples make it difficult to make sharp images and even compose this eared grebe for that matter. Indeed, when the ripples begin to appear from the morning breeze picking up, I quit if it is bad enough, or seek out sheltered places along the lake shoreline where the water remains calm. This is made with a Canon 600mm lens and a 1.4x teleconverter. And you already guessed I composed this grebe and moved the single active AF point over to coincide with the ruby red grebe eye.*

## **7. The Tripod head must be Substantial for the Larger Lenses used by Wildlife Photographers.**

I use a robust Kirk BH-1 heavy duty ballhead or the Wimberley gimbal head (WH-200) whenever it is feasible to use. Be certain no joints in your tripod and head wiggle or wobble when things should be tight. Having something loose so your camera is not locked solid on the tripod is a common problem I find among my workshop clients. Nothing should wiggle when the tripod and head are locked!!!!



*Figure 8 I made this ruby-crowned kinglet image in my aspen forest using dripping water. They are not attracted to regular bird seeds, but water they relish. Using a robust Gitzo tripod with a Wimberley gimbal head on top of that, I easily get sharp images*

*if I keep the shutter speed fast. Here I used a Canon 200-400mm lens with the built-in 1.4x teleconverter inserted into the optical path to make the lens 560mm. ISO 1250 lets me use f/8 at 1/320 second and I used a +1/3 exposure compensation to produce the first blinkies in the light portions of the image.*

## **8. Image stabilization is a key tool!**

While it is great advice to turn image stabilization (aka vibration reduction) off when using a camera mounted on top of a solid tripod, it is useful to leave it active when photographing wildlife while using a tripod. What is the difference? Normally when shooting close-ups or landscapes with short lenses, you are using a remote release or perhaps the touch shutter with the camera set to 2-second delay. With long lenses and wildlife, normally the photographer has both hands on the camera and lens, even when shooting on a tripod, to pan with the critter and fire the camera. We humans are not steady! The blood pumping through our bodies and our breathing create vibrations in the camera that are minimized when vibration reduction is active.



*Figure 9 I am hiding in a blind that is ten feet up in the air on top of two sections of construction scaffolding. With all the wiggles and wobbles being on a scaffold and using a tripod on top of that, image stabilization is enormously important for helping to achieve sharp images of this male Cassin's finch. Exposure is ISO 2000, f/5.6, 1/640 second with a +2/3 stop exposure compensation using Auto ISO. By the way, to be clear, I set both the aperture and shutter speed manually. They are fixed and*



*cannot change unless I do that. But the ISO is Auto. So, what changes? With a +2/3 exposure compensation set, the ISO rises 2/3's of a stop automatically.*

Keep in mind most lenses have different vibration reduction modes. For example, Canon typically has mode 1 and mode 2. Mode 1 is best for still wildlife where you are not panning with it. This mode reduces vibrations in all directions. Mode 2 is for panning where only vibrations in the plane perpendicular to the direction of the pan are compensated for. Since I do a lot of panning, I normally use Mode 2. And many lenses have a Mode 3. This mode turns image-stabilization on as you press the shutter button. Since the camera is not trying to stabilize the image as you view the subject in the viewfinder, it is easier to pan with the subject.

## **9. Stop the Lens Down a Little**

Most lenses are sharpest 2-3 stops down from wide open. That means a lens with a maximum aperture of f/4 is particularly sharp between f/8 and f/11. While it often is not realistic to stop down to f/11 due to shutter speed requirements, if possible, try to stop down at least one stop from the maximum aperture for better overall sharpness, but do not be afraid to shoot with the maximum aperture if you have no other choice. The more expensive lenses made with special low dispersion glass work quite well when used at the maximum aperture.

However, Canon has recently introduced the 500mm and 800mm fixed f/11 lenses. While many panned these new lenses when they first heard about them as being too slow, to be honest, often they work quite well, especially when light conditions are bright. They are handholdable and far “friendlier” to your budget than the prime Canon 600mm f/4 III I use now. I still like being able to open up to f/4 when I must, due to low ambient light levels or a need for super-fast shutter speeds, but much of the time a fixed 800mm f/11 works fine. And new technology advances are making slower lenses (f/11 instead of f/4)

more useable. Better IBIS (in body image stabilization) and being able to use higher ISOs mean you do not need to use such fast shutter speeds as much and that makes it easier to use long and lighter-weight lenses.



*Figure 10 A drake red-breasted merganser slowly approaches my floating blind during early spring when my local lake is still mostly ice. A small open area near a warm spring is one of the few places on the lake where they can rest and hunt for food. I have been inside the floating blind wearing chest waders for four hours. Unfortunately, a tiny hole had developed in the waders over the winter and I was soaked, teeth chattering steadily, but the chatter did not scare them. Dozens of birds swam all around me and some swam by within ten feet – far too close to photograph. Whenever possible, stop the lens down a little to use a little sharper aperture, and in this case, since the merganser is already full frame, I need even more depth of field to produce more overall sharpness on the bird. This is made with a Canon 600mm and 1.4x teleconverter with ISO 1000 and f/11 at 1/320 second.*

## **10. Favor Fast Shutter Speeds**

Still, whenever possible, accurate focus and fast shutter speeds are the keys to producing sharp images. An old guideline for shooting handheld is to use a shutter speed equivalent to 1/focal length for sharp images. That means a 300mm lens or a 400mm lens can be

handheld at 1/300 second or 1/400 second respectively. While this guideline depends much on the photographer's steadiness, it is a useful guideline for shooting handheld. On a tripod I make a modification to the guideline. I feel confident of making sharp images with a 500mm lens by using 1/250 second and my 800mm lens at 1/400 second. And now that my Canon R5 offers IBIS, I feel I can shoot at even slower shutter speeds and consistently capture sharp images of still subjects. Keep in mind that IBIS does much to eliminate camera vibrations but does not help arrest subject motion. For that you need more shutter speed!



*Figure 11 While in my floating blind, I suddenly saw this American white pelican flying toward me along the lake margin. So, I quickly put the 840mm lens on the pelican and began firing away. Sometimes you do not get much time to adjust things when activity happens unexpectedly. Exposure is 1/800 second, f/5.6, ISO 200 with exposure compensation of + 1/3 stop. Had I known the pelican was coming sooner, I would have stopped the lens down to f/11, a three-stop loss of light with the aperture. But no worries! My Auto ISO would have changed to ISO 1600. It is usually best to use more depth of field when you can get it.*

## **11. Autofocus Accuracy does Vary a Little**

When photographing still wildlife, it is wise to autofocus on the face or eye of the critter, shoot a few images, then make the lens focus to another distance, either closer or further away, and then refocus on the eye and shoot again. Your chances of getting precise focus on the eye is better, even with a properly calibrated autofocus setup or with



mirrorless, if you try it more than once. Autofocus can simply vary a little from shot to shot, so I find it useful to shoot more images than I need. When editing them, I enlarge the animals face to 100% and select the sharpest image and the other go unselected and deleted when I passed through all of them.

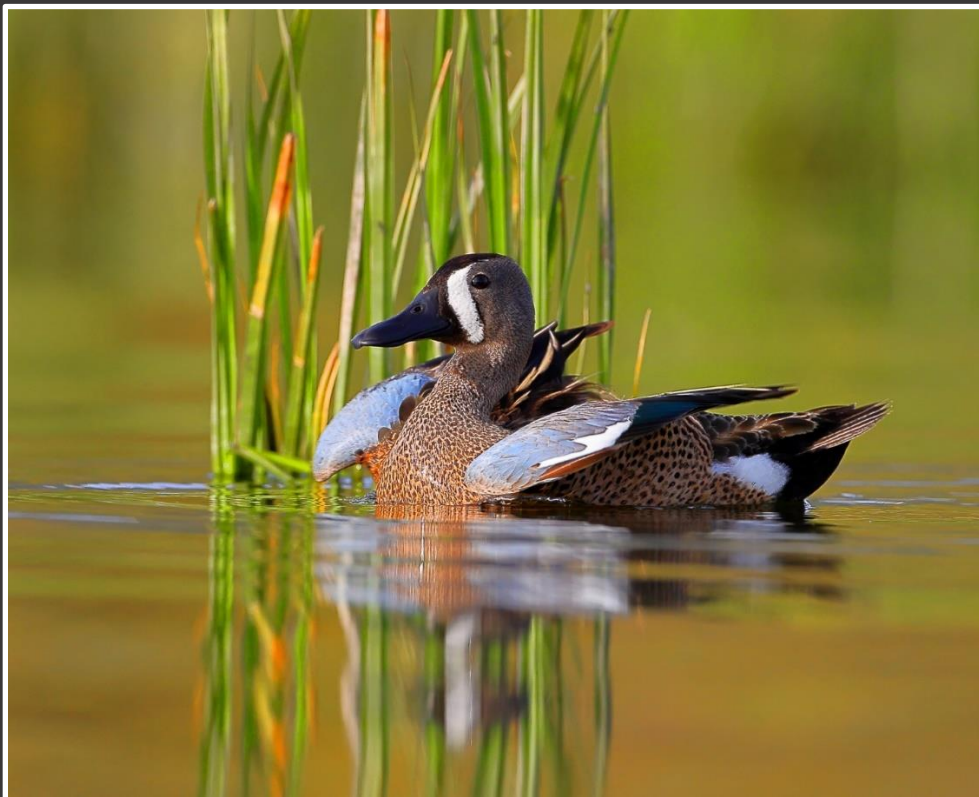


*Figure 12 The snowy egret enjoyed the early sunshine while it perched near a pond on a cool Arizona morning. This is a simple photo to take, but solid technique delivers the image quality I seek. I liked the egret perched in the tree in the slightly sidelight sunshine as that brings out more feather texture due to small shadows created by the sun angle. I set exposure manually to produce the first blinkies in the white feathers. Using a tripod, I locked the ballhead up when I had this composition and then moved the single active AF point to the upper part of this vertical composition until the active AF point was superimposed on the eye of the snowy egret. I shot a few photos, then manually focused my lens out of focus, and make the camera once again focus on the eye. Sometimes autofocus varies a little. By making the camera focus on the same subject a couple of times, your chances of getting a truly sharp image improve. Exposure was ISO 400, 1/1600 second, and f/7.1 with an AF microadjusted 600mm lens at -5 to correct for a little backfocus error that my lens and camera body had. I realize many shoot handheld and*

that probably would have worked for this white egret in bright sunshine, but nevertheless, *I always use a tripod or in some way stabilize my camera if possible.*

## 12. Increase Accurate Focus Odds

I typically shoot short bursts of 3-6 images when I photograph still animals, and longer bursts for active animals. Even when shooting conditions are far from ideal, the strategy consistently delivers a few truly sharp images. For example, when photographing animals in dim ambient light with my 600mm lens, I have done well even at 1/60 second on a tripod by shooting short bursts of images. While the shutter speed is far slower than I prefer and most images do not meet my sharpness standards, every once in awhile all the wiggles and wobbles are exactly right where I still produce a sharp image even at an undesirable slow shutter speed.



*Figure 13 Digital storage is cheap and it does not cost anything to shoot digital images once you have the equipment. Remember, I come from an era when every shot cost about thirty cents worth of film and processing, so I remember the cost per image well. Now, I always shoot more images than I need, and then edit them carefully to find the absolute best – composition, exposure, and sharpness – and then delete the rest. This is a blue-winged teal from my floating blind. On one incredibly special morning during June of 2020, I entered a tiny cove along the lakeshore and all three teal species found in the United States were*

*present simultaneously. It was amazing to photograph a blue-wing teal, cinnamon teal, and green-winged teal one after another. I call that a TEAL-rific morning!!!!*

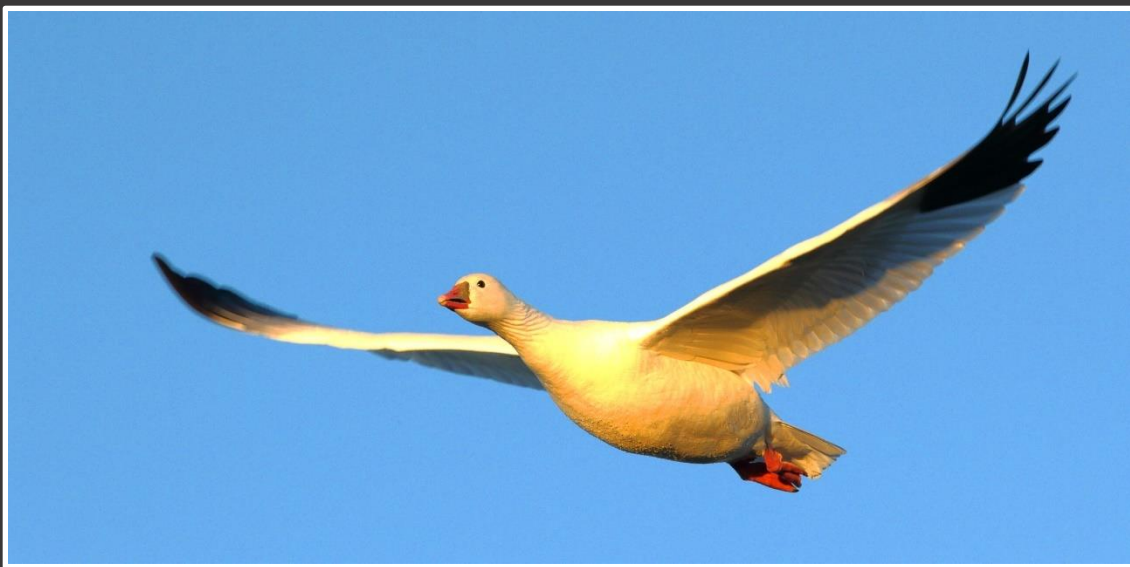
### **13. The Merits of Back-button focusing – Is it still Valid?**

This is a method where autofocus is removed from the shutter button and assigned to a button on the back of the camera. When this is done, the shutter button turns the meter on when you press it down part way and shoots the image when fully depressed, but it does not activate autofocus. It is enormously effective for achieving more accurate autofocus when switching between still and active wildlife rapidly. By setting the camera to continuous autofocus, you instantly enjoy continuous autofocus by pressing the back-button in to maintain continuous autofocus while also pressing the shutter button to shoot images. Should the animal stop moving, point the active AF point at its face, press in the back-button to focus the lens on the face, let up on the back-button to lock the focus, recompose and shoot. Since the autofocus is assigned to the back-button, and not the shutter button, the camera doesn't refocus on the wrong spot when shooting images. This is an immensely powerful technique that I promoted for decades beginning with Canon film cameras around 1992.

While it took years for many photographers to finally realize the merits of back-button focusing, it is not the best option for all wildlife situations. When photographing only wildlife in action – snow geese flying overhead, ducks swimming – then it is far more effective to keep autofocus on the shutter button and move the active AF point around to coincide with the face of the subject when you have the composition that pleases you. Obviously, if you use back-button focusing for active wildlife like a swimming duck, if you depress the back-button to make



the lens focus on the duck's face as it swims, then let up on the button to lock focus, the ducks swims to a different spot where the focus likely is no longer precise. In this case, you are far better off to move a single (or small group of active AF points) around to coincide with the subject's face once you have composed the image, keep the continuous autofocus on the shutter button, depress the shutter button halfway to initiate autofocus and fully depress the shutter button to shoot images when your composition is desirable. This eliminates the need to fuss with the back-button focus control. Some photographers argue that it is difficult to depress the shutter button only halfway without accidentally firing the camera, and perhaps it is a problem for some, but I have never had the slightest problem doing it, and with practice, I do not think you will either.



*Figure 14 Even when I once used back-button focusing, I would not use that for BIFs (birds in flight). For me, it is far easier to keep the autofocus on the shutter button, hold the button down partially to activate autofocus, keep the active AF point on the bird's head and fully depress the shutter button when the composition works. This snow goose was photographed using 1/1000 second at f/10 and ISO 1250 with a Canon 200-400mm lens handheld. Exposure is on manual and I set it to produce the first blinkies in the white feathers.*

After 27 years of using back-button focusing much of the time for wildlife and even landscape photography, I have abandoned it altogether. Why? Years ago, most camera's only had focus points

around the center of the viewfinder. If you need to focus on a spot near the edge of the frame, you had to use back-button focusing, focus on the spot, let up on the back-button, recompose and shoot. Today my Canon R5 has autofocus points that I can select everywhere in the viewfinder. To move an AF point around, I had to use a couple of buttons or dials to move an active AF point up or down or left or right. Then a joystick became available to do that job and that helped a lot. Now my Canon R5 offers eye-detection. With eye detection enabled and set to Animals, any time I photograph an animal with a clearly delineated eye, my camera finds the eye, focuses on it, and stays focused on the eye as the subject moves. That means all I must do is compose my critter and let the camera find and focus on the eye – perfecto!

However, some animals have eyes that blend into their fur next to the eye. Bison and moose come to mind due to their dark fur, yet bighorn sheep with their light fur means eye detection finds their eyes easily, so that is what I use. If the Canon R5 cannot “see” the eye, then usually it finds the shape of the head and focuses on that, and usually that is close enough anyway.

#### **14. Drag and Drop AF**

On my Canon R5, I enabled this incredible autofocus feature and set it to upper right and relative. When my eye detection does not work, this lets me use my right thumb to slide the active AF point around the viewfinder by touching the upper right portion of the LCD and sliding the active AF point to wherever I need it and that is the spot where I want the sharpest focus, usually the animal’s eye, though sometimes I pick a spot between the nose and the eye when it is looking directly at me. I do this by touch without removing my eye from the viewfinder.

It works tremendously well and is a key reason I no longer use back-button focusing!



*Figure 15 The eastern fox squirrel is colorful and common. That makes it a worthwhile animal to practice your photo techniques on like focus, sharp images, composition, and exposure. With a Canon 800mm lens, I used ISO 400, f/6.3, and 1/400 second with Auto ISO set to + 2/3 stop compensation.*

## **15. Active Focus Points Selections**

I prefer using a single AF point when photographing still animals and creatures that move in a predictable pattern – such as a slowly swimming mallard. For erratically active animals, I prefer using a group of five active AF points where the center one is the dominant AF point, but should this point move off the target, one of the adjacent points picks up the target. There are five active AF points in all, the center one

and another AF point above, below, and to both sides of the middle AF point. Canon calls this focus pattern Expand AF area.



*Figure 17 A single active AF point will work here. Just keep it on the head of the sandhill crane. However, I used an 800mm lens handheld with a Canon 1DX Mark II. Since I used the long lens, the crane was at infinity focus. Here a small array of active AF points work well because accidentally moving the AF points will not make the camera focus on the sky as there is no contrast in the blue sky, so the camera will only focus on the crane and at this distance, focusing anywhere on the crane means every portion of the crane is in sharp focus except for the wing tips and that is due to feather motion and not bad autofocus. Exposure is 1/2500 second at f/9, and ISO 1000. Notice I use ISO 1000 quite often for action.*

Most cameras offer many AF point patterns options. Try them to learn what you prefer and leads to success for you. I prefer to select where I want sharp focus, so I tend to use the Single AF point or small group for this reason. But if having a large array of AF points works for you, then feel free to use it.

## **16. Factors for Configuring Autofocus.**

Unfortunately, many photographers do not take advantage of these options to fit the situation that helps you shoot sharper images. For example, Canon offers three selectable AF parameters that help with various situations. These settings include three autofocus factors. Here is a summary of what I do.



1. Tracking sensitivity
2. Acceleration/Deceleration tracking
3. AF point auto switching

Tracking sensitivity is a way to adjust how quickly the camera will change focus distance when the active AF point or points moves from one area to another. Normally I use the most positive value to make the autofocus quickly change focus from one spot to another. Of course, this means you must keep the AF point exactly where you want precise focus. The most sensitive plus value works great for moving subjects against a low contrast background. Since the autofocus cannot see a low contrast background, you stay focused on the important foreground object, even should the AF point accidentally wander off the target and hover over the background. In the case where a background has contrast – clouds in the sky, ocean waves, or tree branches – then I prefer to set this option to the most negative value. If your composition wanders and the AF point is accidentally superimposed on the background, the camera waits before it refocuses giving you time to move the active AF point back to the intended focus spot.



*Figure 18 This snow goose is landing in a picked corn field at Bosque del Apache National Wildlife Refuge in New Mexico. Thousands of snow geese fill the field. Due to the texture of geese in the background, I set my tracking sensitivity to the lowest possible value. By doing that, if my active AF point drifts off the intended focus target, my camera waits a little to give me time to move the active AF point back on this incoming goose. With a high tracking sensitivity setting, moving the AF point off the foreground goose means the camera instantly focus on the background, and that is not what I want in focus.*

Acceleration/Deceleration tracking is useful for subjects that move quickly, and often I photograph such subjects. To make my camera react quickly to the changing speeds of my subjects, I use the most positive value possible. But, Canon says a positive value or even the 0 value can cause uneven focus, so it makes autofocus somewhat unreliable. When I am photographing slow subjects, then I use the most negative value.

AF point auto switching applies only when photographing a moving subject where multiple AF points are active. I often use a small group of five active AF points. The middle AF point is my primary one, but should my composition slip off the target a little and the middle one is not on the target at all, an active AF point adjacent to the middle one will keep me in sharp focus. If I am clumsy enough to let that happen, then I want my auto AF point selection speed to be fast to maintain sharp focus on the subject. Therefore, I have it set to +2. Note that most of the time I use a single active AF point, so then this third setting does not apply as there is no active AF point to switch to.

## **17. Flight Strategies – Lots of Subjects Present**

It really helps you capture pleasing flying bird photos while also getting lots of practice if you spend time at places where many birds fly within camera range. Perhaps the most well-known spot for this is Bosque del Apache in New Mexico where thousands of snow geese and sandhill cranes winter each year. Late November through December is often super productive. I have been there a few times for a week or more and find Bosque to be tremendous for flight photos.



*Figure 19 I have quite a few white pelican flying around my local lake during the summer. They do not breed at the lake but like to catch fish on it. I found a spot where every once in a while a pelican flies up the lake and lands in a small bay where I hang out a lot. Though I am hidden in a floating blind, and it is not real easy to pan with a subject in the blind, it is possible if the bird is flying toward me and I see it soon enough. I don't get 'em all. I remember one bright overcast day with a little fog and dead flat water. Suddenly I saw a white pelican sailing across the lake toward me two foot over the water and that produced a perfect in-flight reflection. The combination of the pelican in flight with the perfect reflection emerging from the fog was spectacular. I swung over to get on it and was about 1 second too late as it soon was more than filling my viewfinder – almost got that shot I will never forget. I will be looking for this photo in 2021 of those calm foggy mornings.*

## **18. Wind and Sun at your Back**

Ideal flight photo conditions are having strong morning or evening sunshine coming from behind you when you face the birds that are flying toward you. This means you have plenty of sunshine on the front of the birds. Front light illuminates the birds well and gives you more shutter speed to work with since the ambient light is brighter on the birds. Birds tend to fly and takeoff into the wind, so the wind at your back and in the faces of the oncoming birds is ideal. To sum it up, having the wind and sun at your back with birds flying toward you is a super photo situation.



*Figure 20 Having the wind and sun at your back with birds flying toward you is the ideal photo situation. As these snow geese flew my direction at Bosque del Apache in New Mexico, I tracked this group for quite some time as they approached me. Once the group were close and nicely occupying my viewfinder, I shot about 15 images at 14 shots per second. As soon as this group passed me, I immediately pivoted back to the direction where they came from to pick up other birds coming my way. Canon 1DX Mark III with a 100-400mm lens handheld. ISO 1000 at f/8 and 1/800 second. My group of five active AF points are right on the middle goose.*

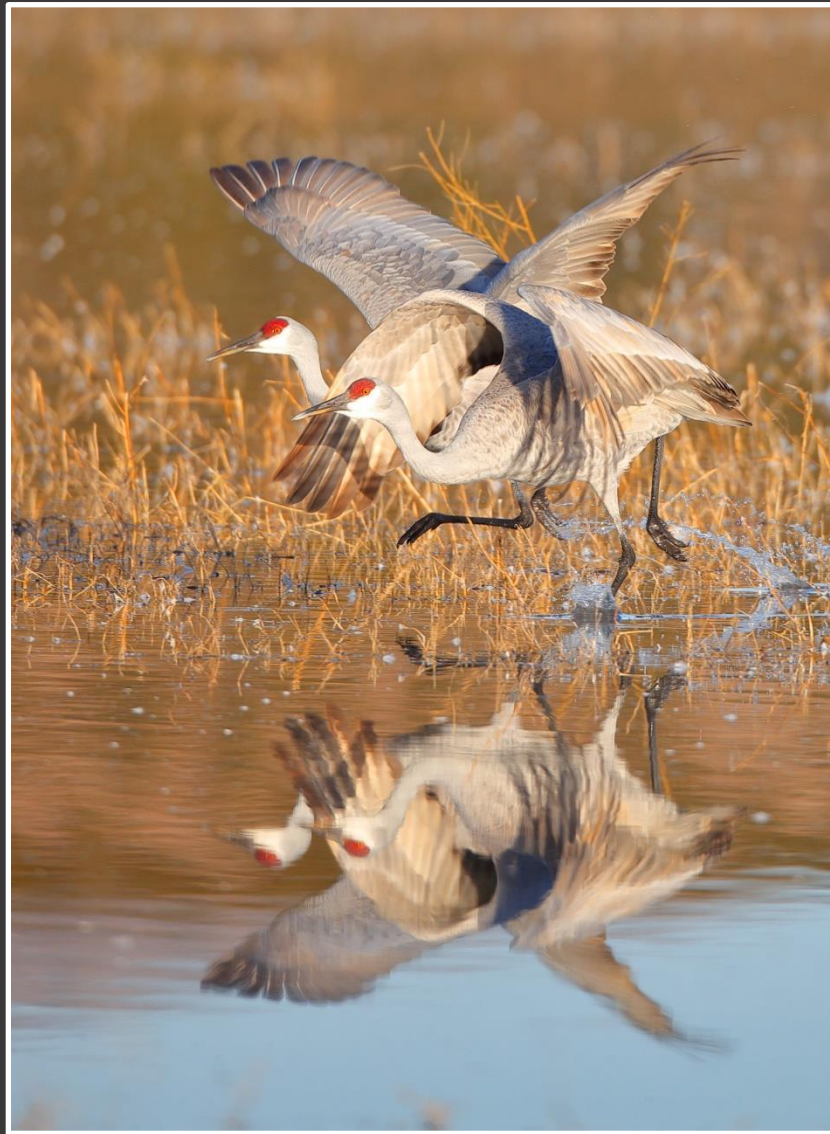
## **19. Select the Subject and Begin to Track it Early**

While photographing cranes and geese at Bosque, I watch as they begin to flush and then fly toward me. I find a single bird or small group and raise my camera up to my eye handheld and begin to track the bird(s) well before they are big enough within the viewfinder. I keep panning with the oncoming subjects. When I get a clear shot at a single bird that nicely fills the frame, or a group of birds that are also occupying most of the viewfinder and it appears they have all separated, I begin shooting using the fastest number of images per second possible.

This means I track a lot of single and groups of birds, and most of the time I do not shoot any images because they drift too far away, merge with too many other birds, or fly against a background I do not prefer



such as a bank of white clouds. When everything comes together, though, I shoot a 1 or 2 second burst of images at 14 images per second, and hope I get a good sharp pose out of the group. Most of my images are sharp but getting a super composition that is also sharp is the goal.



*Figure 21 These sandhill cranes are just beginning to take flight. Here I used a tripod and composed the birds while they were standing together in the marsh. I was focused on them, exposure set, vertical composition, and just waited and waited and waited. Finally, they sprang into action and my finger immediately pushed the shutter button down to capture images. This is a case where you are much faster on a tripod than handheld. Why? You could not handhold a big lens like my 800mm for ten consecutive minutes waiting for the action. Most photographers would put the gear down while waiting and then raise the camera when the birds jump into action and that cost you precious seconds and you do not get this shot. By having the tripod support the heavy gear while I wait for action, I catch many peak action images that are fleeting!*

## **20. Swing Smoothly – Twist at the waist and the knees**

A real key is to swing smoothly handheld or on a tripod with a Wimberley head. I shoot most photos on a tripod and do many flight shots too on a tripod. This works for large birds at long distances. But when birds are close and flying overhead, a tripod is useless, so handheld shooting is the best way.

When I know the birds will take flight out in front of me and then fly toward me, I position my feet so I am in perfect balance at the moment when I think I will shoot images. But, as mentioned earlier, I begin tracking the birds well before they come with photo range. This means I get my body in balance where I plan to photograph them, then I twist my knees and waist to pivot back to the direction where the birds are coming from. While I am not balanced, I can do this for a short time to begin tracking the oncoming subject. As the subject (single bird or small group of them) approaches the optimum position where they offer the best photo angle, I am now in perfect balance and that makes it far easier to keep the AF point on the head of the subject. I want to stress twisting at both the waist and the knees if you physically can because twisting in both places makes it easier to follow through and that helps you keep the AF point where it should be.



*Figure 22 The American avocet is my favorite shorebird. Fortunately, they are frequent visitors to my local lake. Normally they hike in the shallows searching for and eating lots of insects. But they can swim too, even with their super long legs. I do not get many chances to photograph them swimming, but when I do, it is special and not to be forgotten. Canon 1DX Mark II, 800mm lens, with ISO 800 at f/8 and 1/640 second.*

I learned to swing smoothly as a teenager when I shot skeet in competition and that helped me become a formidable competitor who routinely shot perfect scores of 100 straight. Most skeet shooters I saw only twisted at the waist, but the best shooters pivoted at both the waist and the knees. You are quicker and smoother doing it that way and you can pivot another 20 degrees before you must move your feet.

Little did I know learning to smash clay targets with a shotgun would help be so much with action photography fifty years later.

## **21. Shutter Speeds – A few Suggestions**

Now that higher ISOs are so good with modern cameras, especially the latest models, I tend to favor higher ISOs more than I once did. When photographing flying birds or swimming birds in my floating blind, I routinely use ISO 800 or ISO 1000. Indeed, in my floating blind where I am at the mercy of ripples on the water because that bounces my floating blind and therefore my camera too, I set ISO 1000 to get more shutter speed as a starting point and will go higher. For flying birds that are not especially fast and do not deviate from their course quickly - such as sandhill cranes and geese – I do fine with a shutter speed of 1/1000 second. For faster birds or erratic wildlife subjects, then I like to get close to 1/2000 second. You do that by planning to photograph when ambient light is brighter, increasing the ISO, and opening up the aperture, or a combination of all three. When in doubt, use a faster shutter speed if possible.



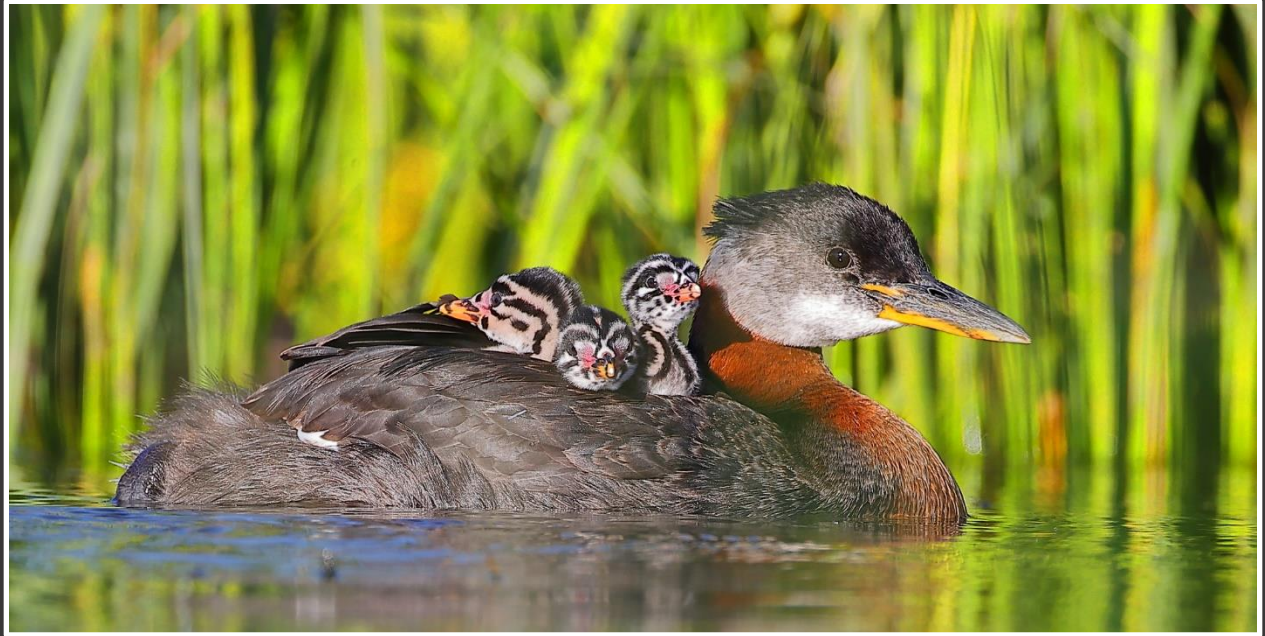
*Figure 23 Sage grouse visit traditional places called a lek to dance where they seek mates. This male, along with 30 others, arrived in the dark on a cloudy spring morning in southern Idaho. At first I could barely see them in the darkness and gradually as the sun rose, the ambient light became bright enough to photograph this bird from my truck window that was parked on a*



*tiny dirt lane beside the lek. Since I arrived and parked my truck in a suitable spot two hours before sunrise, they did not seem to notice I was there. Using a bean bag in the rolled down truck window, I rested my Canon 800mm f/5.6 lens on the bag. Naturally, I had image stabilization active in Mode 1, so all directions are stabilized and that helps achieve sharper images. Using 1/640 second at f/6.3, my auto ISO selected ISO 2000 for this image. Notice I stopped the lens down a little, from f/5.6 to f/6.3, and used a relatively slow shutter speed of 1/640 second with an 800mm lens, but the bean bag helped considerably in holding the lens steady for sharp images. Here is a case where Auto ISO is champ for exposure. Obviously, on a cloudy dawn day, the light gradually brightens. Auto ISO keeps track of the increase in ambient light and lowers the ISO automatically as the light brightens. If I used manual exposure here, I would have to continually monitor the exposure and make adjustments which is distracting when an auto exposure mode of Auto ISO will do that for me quite nicely.*

## **22. Use Auto ISO to Achieve a Fast Shutter Speed Quickly**

I like photographing wild ducklings diving and especially like to capture the entire series by shooting 14 images per second. From years of experience in my floating photography blind, I know that 1/1000 second will not freeze the motion of a diving duckling. I must use 1/4000 second and then I only get about six images between the beginning of the dive and no duckling at all because it is submerged. To use 1/4000 second, I must use more ISO than I prefer, such as ISO 4000, and I do not want to use that high of an ISO when the ducks are in front of my blind, but not diving. Then I do better with a less noisy ISO 1000. When diving duck ducklings begin to dive, I must change to the faster shutter speed instantly. The way I accomplish this is I use Auto ISO. As soon as a duckling dives, that generally means all of them begin to dive, so I instantly change the shutter speed from 1/1000 second to 1/4000 second and the Auto ISO increases the ISO by two stops. If I was at ISO 1000, manually setting the shutter speed to 1/4000 second forces Auto ISO to select ISO 4000 to compensate for the two-stop loss of light caused by me switching from 1/1000 second to 1/4000 second. When the ducklings stop diving after ten minutes of active feeding, then I move the shutter speed back down to 1/1000 second and that drops the ISO by two stops as well.



*Figure 24 I once used only manual exposure when photographing birds. Now I find Auto ISO is better for both accuracy and speed much of the time. Often the ambient light varies as birds move in and out of their habitat, and Auto ISO continually adjusts for this changing ambient light. The mother red-necked grebe carries her youngsters around for several days after they hatch. Canon 1DX Mark III, Canon 600mm lens with a 1.4x teleconverter, and ISO 1250 at 1/800 second and f/8.*

### **23. If you Cannot use a Tripod, Find a rest for your Camera and Lens Whenever Possible**

Once again the shooting sports I enjoyed as a teenager help me enormously in wildlife photography. Though I never shot pistols, I loved shooting .22 rifles and took shooting classes where I mastered four shooting positions – prone, kneeling, sitting, and standing. By far the prone position was the most stable and caused the least amount of gun wiggle. It is amazing to see how much the gun sights wander around the target unless you use the best possible shooting technique. The same holds true for photography. If I cannot use a tripod, such as when I photograph wildlife from a safari vehicle in Kenya, I use a big bean bag and rest the lens on the bag. This is far more stable than handholding the lens up in the air, assuming of course the vehicle is turned off.



*Figure 25 I saw these otters on Flat Creek near Jackson, WY early one morning. It was cloudy dark, but I had to try. My workshop group members got to photograph otters for quite some time earlier in the week, but I did not get any photos as I was helping them. I knew they might not stay long, so while in the car I set my camera to Auto ISO, 1/250 second, f/5.6 wide open as I was dealing with low light levels and set exposure compensation to +1 1/3 stops of light. They were no time or place to set up a tripod as there was a wire fence separating me from the creek with the otters. So, I rested the lens hood of my Canon 600mm lens on the wire, composed the otters, and without removing my eye from the viewfinder, I dragged and dropped the only active AF point right on the nearest otter's face. In eight seconds, I fired about twenty shots and then they dove into the creek and I did not see them again. Sometimes you must be quick and let camera automation help you!*

Recently I photographed otters near Jackson, WY where there was no way to use a tripod along the snowy creek, even if I had time to set one up. Rather than shoot handheld, I kneeled by a wire fence and rested my 600mm lens on the stiff wire fence, set a somewhat slow shutter speed of 1/250 second to avoid noise as that prevented my Auto ISO from going up too much, and fired off short bursts of images. I got lots of sharp images in the few minutes I had with the otters considering the tough photo conditions I had that dark cloudy morning. Even if I only had standing trees to work with while shooting handheld, I would press my left hand against the tree trunk, rest my lens on my hand, and

use my hand to reduce the vibrations that would have reduced my image sharpness if I just shot handheld without using any support. A little support to stabilize photo gear when doable is always better than none.

#### **24. Shoot Sharp Images on a Snowy Day**

Autofocus is amazingly sensitive and quick today. I love to photograph wildlife when snow is falling heavily. But autofocus tends to focus on falling snow in front of the subject and not on the subject. What to do?

Set the camera or lens to manual focus. With my Canon lenses that I use most of the time for wildlife, either the Canon 200-400mm or Canon 600mm, the autofocus switch is on the lens, so I move the switch to turn autofocus off. I used to be good at manual focus, but now as I age I find when I think I have manually set the lens to be precisely focused, it is indeed precisely in focus either behind or in front of the subject. In other words, when I think I manually set sharp focus on the animal's face, I am never correct. (I would get my eyes AF microadjusted if I could.)

I do better by enlarging the image of the critters face on my Canon R5 LCD and manually focusing on that. But falling snow means there is snow sticking to the LCD on the back of the camera and then it melts so now I am forced to manually focus through water drops and the ambient light usually produces a glare on the wet LCD. Both glare and water drops make it harder to see the LCD to hit sharp manual focus, even when the face is enlarged. There is a better way!





*Figure 26 Snow is a huge problem for autofocus as every camera I have used tends to autofocus on the falling snow in front of the subject. I use many ways to deal with this. Since this Yellowstone bison is not moving, it is easy enough to turn autofocus off to use manual focus. Magnify the face of the bison and do your best to sharply focus on the snow on its nose as that is easy to see among all the falling snow. Today with my mirrorless Canon R5, I would enlarge the bison face, focus manually, and peer through the viewfinder where it is easier to see the hair on the bison's face than looking at the LCD on the rear of the camera. Exposure 1/1000 second with f/5.6 at ISO 800. I used a Canon 100-400mm lens at 316mm. Although my camera combo has a -9 AF microadjustment, it does not matter when manually focusing, only when you use autofocus. Exposure is super easy too. I shoot thousands of winter images in the snow. Indeed, I live just outside Yellowstone National Park and have led photo tours in the park for more than two decades, so I get lots of snow photography experience. (I have a ton of experience shoveling snow too.!) Though I am a huge fan of Auto ISO, I **NEVER** use Auto ISO in snow. Manual exposure is far more reliable. All I do is move the live histogram over to the right till some data touches the right histogram wall, shoot an image to view it in playback, and look for blinkies. If no blinkies, I add another 1/3 stop and shoot another image and play it back. When the first blinkies appear in the snow, I go with that exposure. Since I shoot only RAW, the first blinkies do not mean a portion of my image is overexposed, but it is getting close. Remember both the histogram and the highlight alert are based on a JPEG embedded in the RAW file, and not the RAW data that covers a wider dynamic range.*

I bought my first mirrorless camera – the splendid Canon R5- during November of 2020. It took me a week or two to fully grasp the idea of the electronic viewfinder as I was so used to the optical viewfinders I used for the previous 50 years. But on a snowy afternoon when I was trying to manually focus on a big bull moose that was lying down in the snow by looking at the LCD, it finally dawned on me that I could see the same magnified image of the bull moose face by peering into the electronic viewfinder too. When I did that the glare problem went

away and there was less moisture in the eyepiece of the viewfinder. Being able to clearly see the hairs on the nose of the moose amid all the falling snow made it so easy to manually focus on its face and my sharp focus problem was solved, at least for still subjects.

Naturally, for a subject that is moving in the falling snow, it is not possible to enlarge the subject, track it as it moves, and manually hit sharp focus. On my Canon R5, under the AF tab in screen #2, I went to MF peaking settings. I turned peaking ON, set the color to Yellow and High. Now when I manually focus, objects that are in sharp focus turn bright yellow. As the subject wanders in the falling snow, I manually focus and shoot when the head of the subject lights up yellow. So far I have found this method gets me some sharp images and certainly gets me close to precise focus, but it is not quite as accurate as I would prefer. Perhaps I need to use focus peaking more to make the focus results consistently sharp.

Also, under the AF (autofocus) tab in screen #4, there is Lens electronic MF. I set it to One Shot – enabled (magnify). I find this setting useful for a moving subject in the snow because it lets me view the animal through the viewfinder and when I have the composition I seek; I press the shutter button halfway and the camera focuses the lens as best it can. Normally the subject is a little out of focus, but the focus is close enough to see the subject in the viewfinder and this setting instantly magnifies the animals head seen in the viewfinder and then I can turn the focus ring on my electronic focus Canon 600mm lens to quickly hit sharp focus on the animal. It takes a little getting used to it, but it does help a lot. You can also use this option for still subjects too!

## **25. Short Flash Durations Produce Sharper Images**

A typical electronic flash emits light almost instantly. The brief period the light is emitted is called the flash duration. At full power, the flash

duration might be 1/700 second. That is certainly less time than a 1/200 second shutter speed. Knowing this is important because when you photograph wildlife in dim light, flash can be used to provide the main or primary light on the subject. Using flash as the main light but combining it with weaker ambient light is effective at times. For example, imagine a yellow warbler bouncing about in the bushes on a dark cloudy day. The proper ambient light exposure might be f/5.6 at 1/100 second. With a long lens like a 500mm, it would be hard to capture a sharp image with the relatively slow 1/100 second shutter speed. So main flash to the rescue. Move the shutter speed up to 1/200 second and with the same aperture of f/5.6 and same ISO, the ambient light is one stop underexposed, but the background does not go too dark. Then with your hotshoe or bracket mounted flash set to a positive flash exposure compensation, it is possible to properly light the warbler. With the flash duration at 1/700 second, most of the light exposing the warbler produces sharp detail due to the short flash duration. Of course, the ambient light portion of this same exposure may introduce some softness, but often the sharp flash exposure created by the short flash duration masks this slight loss of sharpness from the ambient light portion of the exposure.



*Figure 27 This male rufous hummingbird is frozen in flight by using four Canon 600EX-RT speedlights at once. Each flash is set on manual exposure and the light output is 1/32 power. That short flash duration of over 1/20000 second easily freezes these rapidly beating wings. With four flashes, one is directed at the artificial blue background, two light the front of the*

*hummingbird and one lights the bird from the rear to produce better tonal separation between the bird and the background. ISO 200, 1/250 second, and f/18.*

Naturally, if all the light illuminating the subject is from a flash or multiple flashes, then it is super easy to make sharp images of the subject with short flash durations. Indeed, if you power the flashes down to a lower power, such as 1/16 power, the flash duration shortens down to perhaps 1/12000 second. This is exactly how hummingbird photographers freeze their rapidly beating wings. I do this a lot and have taught photo workshops on hummingbird photography for twenty years. Now I use even shorter flash durations found at lower power levels such as 1/64 power. This is terrific for achieving sharp images, and more importantly, I can also shoot images at a speed of over 10 shots per second to achieve well-exposed images. Eventually, the flashes cannot replenish their power and the reduced flash output leads to dark images. But with hummingbirds, normally you only get to shoot a continuous burst of images for a second or less, so running out of flash power by continuously shooting is not much of a problem. Once you stop, that gives the flashes time to fully restore their stored energy.

## **26. Pushing the Limits for Sharp Images**

While leading my photo safari in Kenya (I have led about 40 of them in the past – Kenya safaris are wonderful), we drove out before sunrise to photograph some shapely acacia trees against the rising sun and hoped some animals would be standing under the tree. On the way there, we found this male lion sitting right out in the open, so we had to stop. We hoped the lion would remain until sunrise, but it got up in a few minutes and walked over to some dense bushes that he laid down in and fell asleep. Fortunately, before the lion moved, I tried to make some images in the dim light. Remember this is 20 minutes before sunrise. In the low light, I knew my Auto ISO would push the ISO up



way higher than I wanted due to noise and a loss of color. Using a Canon 600mm lens on a bean bag in the safari vehicle, I set the lens wide open to f/4 and dropped the shutter speed down to 1/60 second. Still, the ISO zoomed up to ISO 16000. That is more than I am willing to use. My solution was to push the limits. I could not open up the lens more since its maximum aperture is f/4 and I was already there. To lower the ISO, I had to slow the shutter speed down considerably. So..... I knew this could not work, but I dropped the shutter speed to only ¼ second and I am shooting on a bean bag in a vehicle with three other people. If anyone moves during the ¼-second exposure, or even shifts their weight a little, nothing will be sharp. I rested the lens on the bean bag, turned on live view, turned off image stabilization, and when the camera seemed completely still, I gently touched the LCD to activate the Touch Shutter on my Canon 5D Mark IV. I also set the camera to 2-second delay. This allows any vibrations I might create by gently touching the LCD to dissipate. I knew this shutter speed was too slow for such a long lens in the conditions I was using it – a safari vehicle. But I thought I would try and shot about 30 images. When I edited the images in Canon's wonderful DPP4 software, I was mostly correct that nothing would be sharp and they were not, but two images were quite sharp, and you see one of them here. Sometimes, even though it seems there is no way to get enough shutter speed, when using excellent photo technique, you still pull it off!



*Figure 28 ISO 1000 at f/4 with a Canon 600mm f/4 lens at only 1/4-second shutter speed. Two out of thirty images were sharp! And I only needed one!*

## Summary

I realize there are many factors that ultimately determine how sharp your images are in the end. While this may seem like a lot of factors to consider, let me assure you that once you absorb each of these concepts into your photography workflow, it all becomes second nature, you will find it easy to do, and your image sharpness greatly improves! If you have any suggestions for me regarding this article, please pass them along. I am always looking for a better way to describe things or add more sharp shooting ideas to this. Indeed, I already have a few more issues to discuss in the next update of this

article, so be sure to check in for the update or any completely new articles I will post. Be sure to visit my website at [www.gerlachnaturephoto.com](http://www.gerlachnaturephoto.com) If you subscribe to my website, and that is free, you automatically are notified about future instructional information that I post – and I have a ton more to write about.

And one more special example.....

The series of the canvasback duckling diving was made with the power of Auto ISO. While I normally set my shutter speed and f/stop to whatever puts me close to Auto ISO 1000, when I see the ducklings begin to dive, I know they dive a lot for a few minutes, so I increase the shutter speed to 1/4000 second quickly to freeze the action as I know from experience 1/1000 second is not fast enough. Naturally, my ISO goes up with the increase in shutter speed, but I accept images at higher ISOs that I normally used to freeze the action of diving ducks. Then while they are diving, I scan the group of ducklings and focus on one that is parallel to me and begin shooting. It may dive right away, several seconds later, or not at all. And I must begin shooting as soon as they are parallel to me and at the right distance and with good light on them. That means I have a lot of images of the duckling sitting there doing, well..., nothing. But if I am shooting images at 14 images per second and it dives while I am shooting, I get the chance to capture a series like the one you see here. Ducklings are so quick that if you see them begin to rear up to start the dive, you already missed it!!!





The following images are from Dixie Calderone who teaches the workshop with me. She uses a Nikon D500 and D850 cameras and her two main long lenses are the Tamron 150-600mm and the Nikon 500mm with a Nikon 1.4x teleconverter.





*Figure 29 Bighorn sheep are adorable. We photograph them a lot on our early December field workshops in Grand Tetons National Park. Photo by Dixie.*





*Figure 30 Momma grizzly bear and cub*



*Figure 31 Baby Great-horned owl*



Dixie Calderone  
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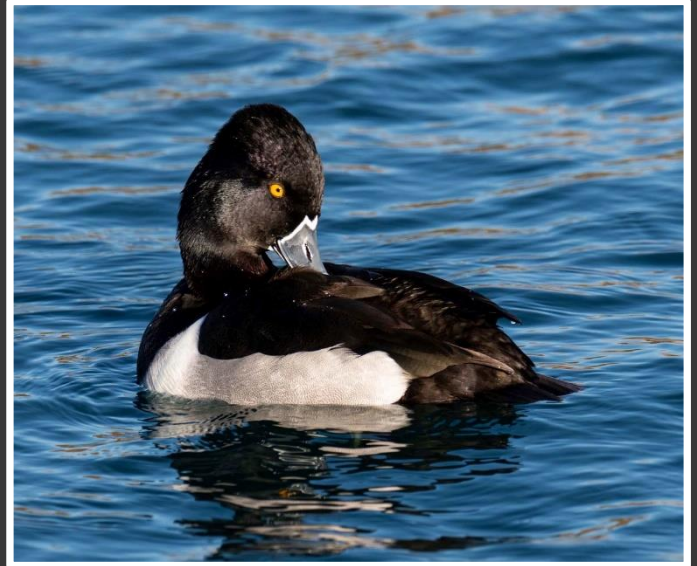










Figure 32 From top left corner clockwise: Eastern fox squirrel, cattle egret, anhinga, yellow-crowned night heron, , and little blue heron.







*Figure 33 This is the red and yellow barbet I spoke about earlier in this article. When I tried to photograph it from a bean bag on top of my safari vehicle, a leave covered most of the bird. So, I stood up on the back seat, handheld my Canon 600mm lens, increased my shutter speed to 1/2000 second, and fired away. I got plenty of sharp images. Isn't this a striking bird?*



*Figure 34 Purple gallinule happened to walk past me. The Canon 600mm lens with the R5 in the 1.6x crop mode captured the image.*