

Advanced Wildlife Exposure Technique

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Unlike most close-up and landscape photography, wildlife often requires photographers to react instantly, or miss the shot altogether. In many cases, there is precious little time to focus and compose the subject before the opportunity is lost. Being able to achieve the optimum exposure is critical, and doing it almost instantly is necessary to capture images of fleeting animals.

Let's explore the four most common ways used by wildlife photographers to capture images. These modes are Program, Aperture Priority, Shutter Priority, and Manual. In no way do I suggest there is only one way to expose wildlife, as there are many. A way that works for one photographer might be unacceptable for another, and some situations require different methods.



Figure 1 Pied Kingfishers regularly hunt for fish at Lake Nakuru in the rift valley of Kenya.



Figure 2 Reticulated giraffes get friendly at Samburu National Reserve in Kenya. Thanks to autoexposure, I could react instantly when the sun suddenly became diffused with cloud cover.

Program

Program is the least used by serious wildlife photographers. The mode sounds like it should be great, as it sets both the shutter speed and aperture. This mode detects the focal length of the lens being used to set a shutter speed fast enough to have a reasonable chance at making a sharp image when shooting handheld. But, what if the camera is firmly supported by a tripod, bean bag on a car window, or some other support? There is no point to using a faster shutter speed that you need when using more stable photography supports. Remember, using a faster shutter speed than needed

requires you to open the lens more with less depth of field as a result, or use a higher ISOs with the increased digital noise associated with them. Remember, setting a shutter speed to minimize or almost eliminate the negative effects of camera shake does not address subject motion. Flying birds, running cheetahs, and even walking deer require more shutter speed for sharp images.

Aperture Priority

As suggested by the name, this automatic exposure mode requires you to manually select the aperture you desire. Perhaps you want f/11 for more depth of field to photograph three deer standing close together, or want f/4 to use less depth of field to isolate the face of a squirrel almost hidden in dense foliage both in front of it and behind. The aperture choice is yours to make, and then the camera automatically adjusts the shutter speed to produce the standard exposure that is programmed in to the camera. The standard exposure is the one the camera sets if no exposure compensation is used to modify (brighten or darken) it.

Aperture priority is enormously popular among all types of photographers. They love it for its speed in letting the camera arrive at a suitable exposure in many cases, but certainly not all, and most importantly, it locks in the desired aperture. The camera automatically adjusts the shutter speed to maintain the exposure at the chosen aperture. And if you are photographing wildlife in a situation where exposure compensation is necessary, such as polar bears in a snowstorm, dark African buffalos in dark green vegetation, or a flock of migrating white snow geese against black storm clouds, then exposure compensation must be used with a dial or button on your camera to arrive at the ideal exposure. Again, in aperture priority, exposure compensation does not affect the selected aperture, but adjusts the shutter speed

instead. For example, if the scene requires exposure compensation of + 1-stop, and the standard exposure is ISO 400, f/8, and 1/250th second, then setting +1 EC changes the exposure combination to ISO 400, f/8, and 1/125th second. The shutter speed of 1/125th second brightens the image one stop more than using 1/250th second.

Nevertheless, despite all the aperture priority advantages, the constant problem among wildlife photographers is photographing wildlife when the light level drops quickly and considerably. I see it frequently on safari in Kenya. Here is what happens. The photographer is photographing a lion in an open field in gorgeous evening sunshine. Perhaps their exposure combination is ISO 400, 1/500th second, and f/11. When the sun drops below the horizon, the safari vehicle driver heads back to the lodge and passes into a woodland. As he drives slowly and carefully, the landrover suddenly stops, the driver whispers "leopard," and sure enough, there is a leopard standing on a low limb next to the vehicle within perfect photo range. Everyone in the vehicle thought they were done photographing that day, but their cameras are still available, so they grab their camera, jump up to the roof hatch, and fire away at the leopard. About a dozen shots are made in less than thirty seconds, and then the leopard drops to the forest floor and disappears.



Figure 3 African spoonbill hunting for food.



Figure 4 Manual aperture and shutter speed, with Auto ISO made it possible to react in seconds to capture this leopard during the four seconds it was in the open.

How does everyone do with the leopard? Everyone views their images on the camera's LCD. The exposure looks wonderful, composition is pleasing, and all looks good. But, later, on their computer screen, they notice nothing is sharp. What happened? Remember, with the aperture priority exposure mode, the aperture remains at the previously set $f/11$, and the manual ISO stays at ISO 400. But the camera's exposure meter reacts to the light level that had dropped five stops in the forest just after sunset, so the shutter speed switches automatically from $1/500^{\text{th}}$ second to $1/15^{\text{th}}$ second. It is virtually impossible to capture a sharp image at $1/15^{\text{th}}$ second with a lens 300mm or longer on a bean bag in a vehicle that can rock a little if anyone moves at all. And the leopard in the forest is not an isolated case. This happens all the time. When using aperture priority (and not using some other camera options), the photographer must pay attention to what shutter speed is being selected to ensure a sharp image.

Of course, if you were aware of the serious drop in the amount of ambient light, you could always open the lens up all the way (perhaps $f/4$) and increase the ISO to 1600. Had the photographers done this, they gained two stops by switching from ISO 400 to ISO 1600, and three more stops of light by opening the lens

from $f/11$ to $f/4$ – a gain of five stops of light and the shutter speed remains at $1/500^{\text{th}}$ second. But, did anyone do this in the moment of high excitement? Not likely, and if they did take a minute to make these changes, the leopard disappears by the time they are ready to shoot. When photographing wildlife, due to the speed that you must react to temporary situations, letting the camera make helpful changes for you automatically is highly desirable.



Figure 5 A fast shutter speed froze the head of this yellow-billed stork as it steadily moved its bill from side to side as it hunted for food.

Shutter Priority

This exposure is not nearly as popular or widely used as it should be. When photographing wildlife, long lenses are usually necessary, and they are prone to camera shake. This means keeping the shutter speed fast is mandatory. Shutter priority does exactly that. Whatever shutter speed is set, the camera keeps it locked in and the aperture varies. In the leopard example, the aperture would have automatically opened to the maximum aperture of the lens, from $f/11$ to $f/4$ in that instance, and you would gain three stops of exposure. The image remains two stops underexposed, though, but at least it would likely be a sharp image, and with digital photo processing, the exposure could be increased to make it suitable.

Of course, brightening an underexposed image usually means digital noise increases which may become visible in the image. Still, photographers are better off with a sharp image that has some noise visible, rather than an image where noise is subdued, but nothing is sharp due to using a shutter speed that is too slow for the situation.

The Primary Problems with Shutter and Aperture Priority

1. Let's review the problems. With aperture priority, all too often the shutter speed becomes too slow causing unsharp images. Seldom does it cause exposure problems, though, because there are so many shutter speeds for the camera to select – even down to 30 seconds on many cameras. With shutter priority, the aperture varies and the choices the camera can select is quite narrow. Often the camera runs out of apertures to choose from and cannot open the aperture enough, causing underexposure problems.
2. Another serious problem for all autoexposure modes, especially in wildlife photography, occurs when the foreground, and more likely the background reflectance, changes from moment to moment. If you have proper exposure set for the white feathers in a mature bald eagle against a medium blue sky, should the background become white clouds as the eagle flaps along, autoexposure modes will recalculate the exposure instantly and change the exposure without your permission. If the exposure meter suddenly sees many more light tones, it reduces the exposure to make it overall medium-toned and causes underexposure. Should the eagle drop

below the horizon and now the background is dark green evergreens, the opposite occurs and overexposed white eagle feathers are the result.

3. When recomposing a wildlife subject, or zooming in or out, a similar problem happens to the exposure. If the exposure is set ideally for a dark bison in Yellowstone standing in a field of fresh white snow, and the bison fills one-third of the image, then as long as the relative amounts of dark and light tones the meter measures remain the same, the exposure is ideal. But, if the bison wanders closer to you and now fills 2/3's of the image, the meter measures more dark tones, does its calculations, and brightens the image, severely overexposing the snow in the process. Conversely, if the size of the bison declines, metering more light tones off the snow causes underexposure.



Figure 6 The exposure system let the ISO Auto soar to make a sharp image of this young African buffalo in the dim dawn light at Lake Nakuru, Kenya.

Full Manual Exposure

In this mode, the photographer sets the exposure by manually setting the aperture, shutter speed, and ISO. All three controls are

locked in position and the camera cannot change them automatically. I am a huge fan of manual exposure and use for most of my photography. I determine the ideal exposure by observing where the index mark is on the metering scale inside the camera's viewfinder, set the exposure indicator to zero, take a shot, and view the image on the camera's LCD. I do not judge the exposure by how it appears on the LCD as that is adjustable for brightness with in-camera control making it unreliable, but rather look at the highlight alert indicator. My goal for the RAW Canon images I shoot is to set the exposure to produce the first blinkies and go with that. If I shot JPEG, then once I see the first blinkies, I reduce the exposure by 1/3-stop. For all the advantages of Manual exposure because the f/stop, shutter speed, and ISO are locked in place, there are times when some form of autoexposure is the better choice.

When an Autoexposure Mode works better

1. When reacting to a sudden photo opportunity and shooting quickly is crucial, automation has the advantage. If you must react instantly to changing ambient light levels, auto is much faster than manual. Manual exposure does not react to changing ambient light levels. The photographer must make the changes, and that takes time – even if only a crucial second or two. Autoexposure modes instantly adjust the exposure for sudden changes in the amount of ambient light.

Camera Options that Improve Autoexposure modes

Auto ISO

When this is set, the ISO changes when necessary to produce ideal exposures. When using shutter priority, if the ambient light darkens where the lens cannot open enough to compensate for the decrease in light, the ISO

will automatically increase to compensate for that. In aperture priority, very seldom does the camera run out of slow shutter speeds to select as most cameras can go to 30 seconds, but should the camera need to use a faster shutter than available, the ISO automatically decreases in value to accommodate the situation. In the Manual exposure mode, Auto ISO is incredibly effective. Set the desired aperture for depth of field, shutter speed for sharp images, and let the ISO adjust for ambient light and any changes to the light while photographing. The drawback with the Manual exposure and Auto ISO combination is Canon cameras did not permit exposure compensation. If you need to increase the exposure by one stop, for instance, there is no way to do it with this combination. Slowing the shutter speed down by one stop or opening the aperture by one stop does not do it, because in each case the camera adjusts the ISO one stop to compensate for the change.

However, some of Canon's latest cameras now offer exposure compensation when using manual exposure and Auto ISO. Keep in mind that this combination is really an autoexposure mode. True, the aperture and shutter speed are set manually, and do not change even when the ambient light does change in intensity, but the Auto ISO is certainly automatic and does adjust for changes in the brightness of the light. When you use exposure compensation, the camera adjusts the ISO to provide a brighter or darker image, depending on what you desire. As I write this, I am leading a wildlife photo tour in Kenya. I know I often need to use a +1-exposure compensation for lighter animals like oryx in light grass. If my manual exposure is set to 1/500th second, f/8, and the Auto ISO selects ISO 400, setting the exposure compensation to +1 increases the ISO one stop to ISO 800. And there are options. Should you prefer not to use ISO 800, then drop the shutter speed to 1/250th second, or open the aperture to f/5.6.



Figure 7 A faster shutter speed is necessary, along with continuous AF, to make a sharp image of this lion on the go!

Though I did not expect it, my Kenya safari profoundly changed how I use autoexposure with the two Canon cameras I use – Canon EOS 1DX Mark II and 5D Mark IV. Both offer exposure compensation with the manual aperture and shutter speed in conjunction with ISO Auto, something new for Canon and available on the 7D Mark II. And for users of other camera brands, many can do this as well. Here's how it works.

1. Set the exposure mode to Manual
2. Set the ISO to ISO Auto
3. In the default mode, to set exposure compensation, press the Q button, then push the quick control button to highlight the Exposure comp./AEB setting, and turn the rear control dial to select whatever compensation you desire within a range of plus or minus three stops. When the selection is made, press the SET button again to lock it in and dismiss the screen. This

works, but there is nothing quick about it.

4. Let's set exposure compensation a better and faster way. Under the C. Fn3: Disp/Operation choice in the Canon menus, highlight Custom Controls by moving the outlined box with the rear dial. Press set and a display appears showing several buttons on the camera. Highlight the Set button control, and press set. Now a screen appears showing several functions that can be assigned to the set button. Highlight the Expo comp button, press Set again to okay the choice. Now the set button fully controls exposure compensation when manual aperture and shutter speed are used along with Auto ISO.
5. So how is this faster? When photographing, to use exposure compensation, and without taking the camera from your eye, press and hold the set button in, rotate the dial on top of the camera, and monitor the exposure indicator seen in the viewfinder to set whatever exposure compensation works best. It really is super-fast this way.

With this setup, you get to use both the aperture and shutter speed you prefer, and let the ISO float to maintain the exposure. And exposure compensation is quick and accurate when needed. For this reason, I see little need for aperture or shutter priority going forward. And in those situations where full manual exposure is ideal, then take the camera off ISO Auto. Now you have full manual – perfecto!

I realize this concept may be new to you, but please try it as it is awesome. While I wrote specifically about Canon cameras, know that most cameras now offer this opportunity, so you may be able to do it with your camera, too,

should it not be a Canon. This capability to meter this way is likely if your camera is fairly new. And for the older cameras that can't, this is a major reason to upgrade!



Figure 8 Even for a still lilac-breasted roller, a fast shutter speed is needed to make a sharp image when using an 800mm lens on a bean bag on top of a landrover.



Figure 9 Eland are huge mammals in Kenya, and any exposure system would work here, but the system I used handles this well.



Figure 10 With this system, I knew I needed more depth of field to cover both little bee-eaters, so I stopped down considerably, and the exposure system increased the ISO to compensate for this. Remember, using a "floating" ISO, the aperture and shutter speed are equally given priority!



Figure 11 Needing more depth of field for both the white rhino and the cattle egret, it was easy to do with this manual A & S, Auto ISO, and EC combination.



Figure 12 Crowned cranes are fabulous, but they do tend to move their heads a lot as they hunt for insects. By being ready to shoot, and focusing on the neck, I got some nice images when it paused for a second, or maybe two seconds.



Figure 13 Egyptian goose is a common wetland bird in Kenya - and noisy too!



Figure 14 - Beisa oryx are desert animals that thrive at Samburu. Metering is easy. I use the EC (exposure compensation control) to get the very first blinkies in the white fur, and go with that.



Figure 15 Defassa waterbucks love moist areas. Notice the oxpeckers hunting for insect pests in its fur.