



Basic Digital Photography Course Notes

by Robin Lowry

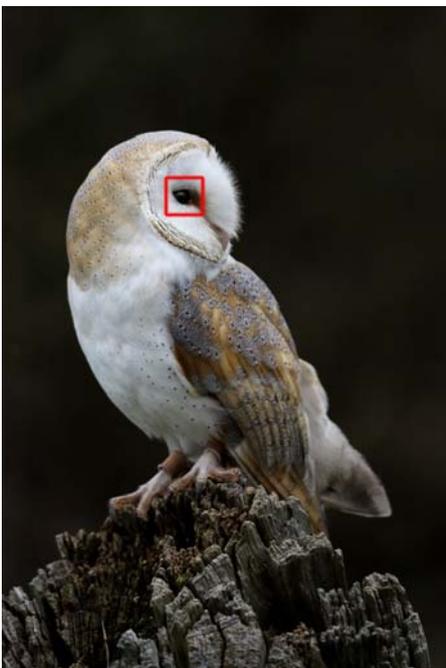
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Wildlife photography needs specific knowledge in order to achieve the best results. From the type of camera and lenses used, to making an image 'pop' using software editing tools on your computer. Like most things in life the more you do it the more confident and knowledgeable you will become.

Today's workshop is designed to give you an insight into how best to operate your camera, and also to provide the opportunity to get closer than normal to a Bird of Prey.

Today's workshop will incorporate a Basic Digital Photography Course. One-to-one tuition will be available throughout the day, to assist you in putting newly learned techniques into practice.

Focus Point of the Subject



The subject needs to be sharp in the right places. The eyes of the subject need to be the sharpest point. When using a minimal depth of field, it is not always possible to have both eyes in sharp focus at the same time. In this situation you should always focus on the nearest eye.

Be wary of modern cameras using random multi-focus points as they will invariably focus on something other than the eye. Left to their own devices, most cameras will focus on the nearest point of your subject. The nearest point of a subject will often be its nose or beak, resulting in "an out of focus" eye. A centre focus point will often sit on an animal's or bird's chest or stomach, once again resulting in "an out of focus" eye.

A single-focus point should be selected and this should be placed over the eye. There is always twice the amount in-focus behind a focus point, than there is in front of that same point. Therefore if you focus on the eye, both the eye and the nose / beak are unlikely to be sharp. In this situation focus approximately half way between the eyes and the nose / beak. A greater depth of field (f8 or f11) should also be used.

Different types of focus available on modern DSLR's

One Shot Focus

For stationary subjects, One Shot Focus consistently produces a higher percentage of really sharp photographs. This is due to the fact that your camera will not fire until confirmation of sharp focus has been achieved. This can be a frustrating option if the subject is moving quickly, as the shutter regularly refuses to release.

Predictive Focus

For a moving subject, AI servo, continuous or predictive focus is generally used. In this mode the camera predicts the focus point that the subject will move to, even while the shutter is fully pressed, providing the focus points are kept on the same area of the subject at all times. Sharp results can be obtained using this method while panning. In this mode, however, your camera will continue to capture images regardless of whether your subject is in sharp focus.

Manual Focus

This involves continually adjusting the focus ring as the subject distance changes. If you are using manual focus it is best to pre-focus on the point you expect the subject to move to, and to take three shots just as the subject approaches that point. It is a particularly useful method for capturing birds in flight.

Different types of metering modes available on modern DSLR's

Spot metering

Spot metering is an excellent option if the colour of the main subject is consistent. If the subject has contrasting colours (regularly found in wildlife photography) it is, however, not a good option. The amount of compensation needed for that photograph to be correctly exposed will be infinitely variable, depending on the brightness / darkness of the area you have focussed on.

Multi Segment metering (or) Evaluative metering

Multi Segment metering (or) Evaluative metering is a much better option in this instance, and is my preferred choice. The camera assesses the entire scene and exposes accordingly. The histogram is then employed to indicate whether any compensation is required. With this option exposures become much more consistent when photographing a subject of contrasting colours. Evaluative metering also has the option on many DSLRs to be biased towards the actual focus points used in each shot, and can even take into account subject colour and distance from the camera.

Manual Metering

Another option is to use spot metering to take a reading of a neutral subject, set your camera to manual metering and dial in those readings. Providing the ambient light does not change dramatically, the camera will not be fooled by light or dark subjects. Grass is an excellent provider of a neutral reading. This is an excellent option when shooting birds in flight. The camera will then be set to correctly expose the subject, and will ignore the differing shades of brightness / darkness of the backgrounds.

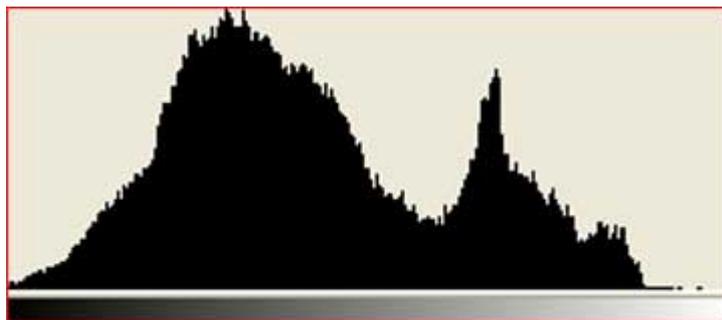
Histogram

The histogram is possibly the most useful tool available in digital photography. Virtually every digital camera, from the simplest point-and-shoot to the most sophisticated digital SLR has the ability to display a histogram either directly, or superimposed upon the image just taken. When I am taking photographs I frequently look at the LCD after taking a shot. I am barely even aware of the image on the LCD. It is the histogram that always commands my attention.

On the following page is an example of a near perfectly exposed picture and corresponding histogram. The small gap on the right of the histogram represents an underexposure of about one third of a stop. This is widely recommended throughout the photographic industry and is the accepted “margin for error”. You should always aim to leave a similar gap on all your histograms in camera.



Canon EOS 1DX



This histogram shows an almost perfect distribution of tones covering almost a 5 stop dynamic range — from deep shadows on the left to just short of bright highlights on the right. This fits comfortably within the approximately 5 stop dynamic range capability of most digital imaging chips.

The histogram is a simple graph that displays where all of the brightness levels contained in the scene are found, from the darkest on the left, to the brightest on the right. The vertical axis (the height of points on the graph) shows how much of the image is found at any particular brightness level. It does not matter if the peaks at the top the graph appear to be “chopped off”. Rest assured that they are just not visible on your camera and no information is lost here.

Exposure

Over recent years we have seen a vast improvement in the metering capabilities of cameras. They are, however, far from perfect. The readings they take are a reflected light reading, as opposed to an incident light reading. Cameras see all subjects as various shades of grey. They attempt to make both a subject that is black, and a subject that is white, turn out grey. If you are aware of these flaws, and you know how to compensate, you can take perfectly exposed photographs at all times. Therefore we have to manually increase exposure for light subjects and decrease exposure for dark subjects. Most cameras now have a histogram incorporated, which will greatly assist you in capturing the correct exposure. The other thing of which to be aware is that the camera can only detect and capture just over 50% of the range of light that is recognised by the human eye. High contrast situations should therefore be avoided. Highlight warnings are now present in the majority of digital cameras.

Using Exposure Compensation



Auto-exposure isn't perfect. It is designed to accurately capture a scene that has an average reflectance of middle grey, and one that does not contain a range of in excess of 5 stops of light. It is puzzled by setups that don't fit this ideal. In those cases you have to override the auto-exposure system to get the results you want.

The contrast or difference in brightness between the subject and the background can fool an exposure system, particularly if the subject occupies a relatively small part of the scene compared to the background. If the main subject is darker than the background, it will be underexposed and too dark (e.g. birds in flight).

The range of brightness that is in the area you wish to photograph (the naked eye can see 10 stops of light) may exceed the range that can be captured by the camera, typically 5 stops of light (towards 6 stops in the latest "high end" cameras).

To lighten a picture, you increase the exposure (+). This is useful for setups where the background is much lighter than the subject.

To darken an image, you decrease the exposure (-). This is useful for setups where the background is much darker than the subject.

Aperture Priority

Wildlife photography is almost invariably a compromise. The main purpose of using aperture-priority mode is to control the depth of field. Aperture priority is useful in landscape photography, where a narrow aperture is necessary if objects in foreground, middle distance, and background are all to be rendered crisply, while shutter speed is often immaterial. It also finds use in wildlife photography, where a wide aperture is desired to throw the background out of focus and make it less distracting and having the fastest shutter speed available.

ISO Speeds

Some cameras are built for high ISO performance. Canon's 1DX and Nikon's D4 are to good examples.

Most modern cameras are happy with ISO 400 and even 800 without too much quality degradation. This is more useful in capturing a bird in flight, where a fast shutter speed is needed to capture a sharp image.

For static portrait work in good light an ISO speed of 200 is typically used. It is often difficult to make the right choice with ISO. The lower the ISO setting means the higher the quality of your image. However each time you double your ISO setting, you halve the time needed to take your picture (i.e. you double your shutter speed). For this reason (except in really bright conditions) 200 rather than 100 is often employed.

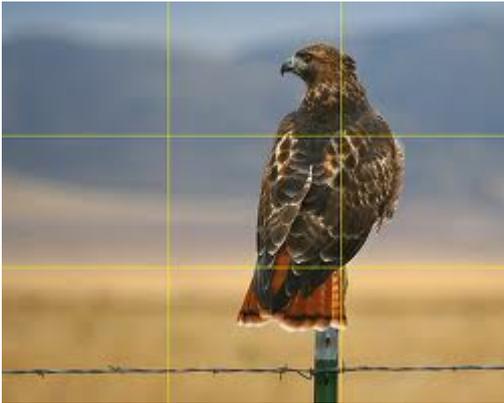
Just remember an image with some grain is better than a blurred image!

Keeping the Camera Steady

The most common cause of un-sharp pictures is camera shake. The longer the lens, the more likely you are to suffer from this malaise. As a guide, your shutter speed should always exceed the focal length of the lens. For example, if you are using a 300mm lens, then the shutter speed needs to be at least of 1/300th of a second. Using tripods, monopods, bean bags, image stabiliser lenses and also changing your ISO setting in order to achieve a higher shutter speed will greatly assist in avoiding this problem.

Composition

There are no hard and fast rules with wildlife photography. The rule of two-thirds that applies to landscape photography works well in many cases with wildlife. When composing or cropping your pictures, the eye of the subject usually works best if placed on one of the four focal points of the picture. Do not, however, get hung up on this, as it is often impossible to achieve. Far better results can be achieved by catching that special moment, as opposed to where the subject is actually placed within your photograph. To achieve both would be fantastic but we are dealing with wildlife! Try to capture movement, behavioural traits and emotion in your photographs. This makes for far better results than a perfectly composed sedentary subject.



Rule of Two Thirds

The Rule of Thirds is a principle of composition used for centuries by artists and photographers. The underlying principle is easy to understand and use. Using The Rule of Thirds places the main subject off centre and away from the centre of the frame. As a result, photos can look more dynamic and interesting. Try to leave some space for the subject to look into, rather than crop too tightly. Your subject should ideally be looking into space within your picture, as opposed to looking out of shot.

Backgrounds

The most common failing of a budding photographer is his / her failure to observe undesirable objects behind the main subject. Compose your pictures so that they do not show fences or posts behind the subject. Your pictures want to give the impression that they were truly shot 'in the wild'. You may find that you need to change your position regularly as the subject moves. The background should not contain items of hugely contrasting tones or colours. Especially try to avoid patches of light behind the main subject. If this is unavoidable, and sometimes it is, then use a longer lens or zoom in tighter and take a close-up of just part of the subject.

Also be aware that if you take a photograph of a dark subject against a bright sky, one or both will be incorrectly exposed, however you set your camera. Avoid shots with high contrast contained within. Taking just a part of that shot with similar tones will give superior results.

Remember that a subject invariably looks more prominent in your picture if the background is of equal tone or preferably darker than the subject itself.

RAW versus JPEG

My recommendation is, if you are going to edit or retouch the image, shoot in RAW. If you do shoot in JPEG however, turn off the sharpening parameters inside the camera and sharpen the image in post afterwards, as you can't un-sharpen a JPEG. Anyone looking for the best possible image quality -- especially if relatively large prints are the images' final form -- shoot in RAW mode. It is also very important to make sure the white balance is set correctly when shooting in JPEG, as again this cannot be fixed easily afterwards, where a RAW image can be.

The one most common setting used in Wildlife Photography is

APERTURE PRIORITY set to f5.6

