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Digital Wildlife Photography A Beginner's Guide

Contents

1	Before you go	3
1.1	Simple rules	3
1.2	Choosing a camera	4
1.3	Choosing the right digital camera	6
1.3.1	Camera body	6
1.3.2	How many pixels?	6
1.3.3	Other features to consider	8
1.3.4	Checklist for choosing a digital camera	9
1.4	Lenses	9
1.4.1	Different types of lenses	10
1.4.2	Choosing the right combination	10
1.4.3	Comparing lenses	11
1.4.4	Tips for choosing a lens	14
1.4.5	Filters	15
1.5	Supports - Tripods etc	15
1.6	Digital film - File storage cards	17
1.7	Storage / backup	18
1.8	Brushes, blowers and bags	19
1.9	Bags and cases	19
2	Before you start taking photographs .. setting up your camera	20
2.1	File types	20
2.2	White balance	23
2.3	Colour space	24
2.4	Sharpening	25
2.5	ISO	25
2.6	Noise and noise reduction	26
2.7	Auto Focus	27
2.8	Metering modes	28
3	Understanding Exposure	28
3.1	Shooting modes	30
4	In the field	32
4.1	Taking care of your equipment in the field	32
4.2	Preparation, Positioning, Patience	33



Wildlife Photography Africa

Amazing wildlife experiences .. custom made for you

4.2.1	Preparation	33
4.2.2	Positioning	34
4.2.3	Patience	35
4.2.4	When the moment comes, grab the shot	36
5	Composition	36
5.1	Position within the frame	36
5.2	Cropping	37
5.3	Depth of field	37
5.4	Background	38
5.5	Movement	38
5.6	Lighting	39
5.7	Vertical or Horizontal	39
6	At the end of the day	40
7	Back Home	41
7.1	Sorting	41
7.2	Post processing – Image manipulation	41
7.3	Selling your photographs	42



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Introduction

This is not intended to be a comprehensive book on digital photography or wildlife photography. It is a simple, easy to read guide that you can carry with you when you are out in the field and refer to whenever you think it might help. I've tried not to get too bogged down in technical jargon and explanations, there are plenty of books that revel in the technical aspects of photography, but there are some occasions when a small amount of technical explanation is unavoidable. Don't worry; I've kept it to a minimum.

There will almost certainly be some sections of this guide that are not relevant for you. For example, I have started with some guidelines on choosing equipment, but if you already have your equipment you may wish to skip this section.

1. Before you go

1.1 Simple Rules

With any activity or pastime you intend to pursue on a regular basis, choosing the right equipment is critical. Photography is no different.

With such a wide choice of cameras and lenses available it can sometimes be hard to know where to begin so keep it simple. Don't let yourself become confused by endless lists of specifications, ask yourself the simple question; 'what am I going to use it for?' Then, just as when buying anything for your personal use, the most important consideration is 'does it feel right?' 'will it feel comfortable in use?'

The answer to that is entirely subjective. There is no point buying a camera because 'so and so uses one and he takes great pictures'. In the right hands almost any good camera is capable of capturing excellent images so choose one that feels right for you.

Successful photography, and wildlife photography in particular, demands that you are familiar with your equipment. It needs to feel comfortable in your hands and the controls that you will need to use on a regular basis need to be where you can easily find and operate them by touch alone.

You'll find yourself in situations where things happen quickly. You need to be able to make adjustments to your camera without moving your eye from the viewfinder. On good cameras all the information you need is displayed in the viewfinder, but you need to know where the controls are and how to operate them.



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1.2 Choosing a camera

The array of cameras available is bewildering and, with manufacturers bringing out new models every year it won't get any less so.

Let's try and simplify things.

One of the key requirements for most wildlife photographers is the ability to get close to your subject. If you cannot get physically close to your subject you need a lens that can bring your subject closer to you.

Therefore you will need a telephoto or zoom lens.

The question now is do you go for a camera that allows you to fit different lenses as the situation demands or one which has a built in lens that – on the face of it – can achieve the same result with just one versatile lens built in?

The DSLR

A DSLR (Digital Single Lens Reflex) camera is the digital version of the old Single Lens Reflex (SLR) film camera. The simplest way to explain what this means is that when you look through the viewfinder you are looking at your subject directly through the lens.

What you see is what you get.

Buying a DSLR involves selecting a manufacturer and then choosing which of the various models will serve you best.

Some people will do this by simply reading reviews and choosing the model that has the highest rating. Personally, whilst this is a logical starting point, it is a high risk strategy. Would you buy a car on the basis of a review, without even seeing the car itself or sitting in it? Unlikely.

To get the best results from your camera you need to be comfortable with it. It might sound a bit nebulous, but it needs to feel right. You can only find this out by handling the camera yourself.

If you have a friend who uses a particular brand or model then that is also a good start point. Not only can you test how the camera feels for you, but you also have the possibility of trying out or sharing lenses later on.

Most leading manufacturers – Canon, Nikon, Olympus, Sony, Fujifilm, Pentax – will have a similar range of lenses available.

For wildlife photography you will need to consider buying a selection of lenses that will allow you to photograph subjects close to you and subjects farther away.



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The Mirrorless Camera

A DSLR has a lot of advantages but the mirror mechanism of a DSLR is complex and noisy and adds to the weight of the camera. That's where the mirrorless camera, or compact system camera comes in.

These cameras retain the twin advantages of a large sensor and interchangeable lenses of DSLR cameras but do away with the mirror to produce a smaller and lighter simpler camera.

Because there is no mirror you lose the ability to 'look through the lens' at your subject. To overcome this, mirrorless cameras employ an electronic viewfinder (EVF). When they were first introduced, electronic viewfinders were often slow and clumsy and did not give a very accurate representation of the image. They have evolved hugely and now the EVF on a good mirrorless camera will show a very realistic image.

One real plus point with an EVF is that they work well in low light; as the light on the subject diminishes, the EVF compensates by brightening the image in the viewfinder, making it very easy to see what you're shooting.

The quality of mirrorless camera systems is now so good that a lot of professional photographers are choosing them. Fujifilm, Sony and Olympus have excellent models.

The Bridge Camera

Modern bridge cameras have evolved from compact cameras and are widely available with built in lenses that range from wide angle to telephoto. So in one compact unit, you have camera and a zoom lens covering an equivalent range to at least 2 zoom lenses on a DSLR.

Importantly, your bridge camera will weigh a lot less than a DSLR with lenses to cover the same focal length.

Most bridge cameras have an electronic viewfinder (EVF). You are not looking at your subject directly through the lens but are instead looking at an electronic rendition of the image. Electronic viewfinders used to be a bit clunky but they are now very good indeed and this is not necessarily a drawback.

There are some excellent bridge cameras available and they are getting better year on year. If you do a lot of travelling and like walking and you do not want to lug around 10-15kg of camera gear then a bridge camera offers a great solution.

When push comes to shove though, it is widely acknowledged that a DSLR or mirrorless camera with a decent lens will achieve a better result than a bridge camera.

If photographing wildlife is your passion, the versatility of a DSLR or mirrorless camera is unbeatable. Bridge cameras tend to offer fewer setting options and therefore less



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control over the way the photograph comes out and instead of being limited to one lens you can choose a variety of lenses to meet all your photographic needs and you can carry a spare camera body. Also DSLR & mirrorless cameras tend to be more robust than compact cameras and have larger sensors, which can capture more detail.

1.3 Choosing the right digital camera

1.3.1 Camera Body

Bearing in mind that one of the key reasons for choosing a Digital SLR (DSLR) or Compact System Camera is the interchangeability of lenses, you should choose a model for which a wide selection of lenses is available. In practice this means sticking to one of the major manufacturers, Canon, Nikon, Olympus, Fujifilm, Pentax or Sony. In addition to the manufacturers own lenses you will have access to a wide choice of lenses from third party manufacturers like Sigma and Tamron.

Before purchasing your camera take the time to research the selection of lenses that will be available to you and remember that once you've started you will almost certainly wish to buy additional lenses at some point in the future. Also bear in mind that technology is racing ahead and cameras are getting more and more sophisticated so you will quite probably wish to upgrade your camera body at some point in the future. A new body from the same manufacturer will almost certainly be compatible with whatever lenses you have.

I use Nikon. I started years ago with Nikon 35mm film cameras and when I switched to digital it made sense to stick with the same manufacturer as I was able to use most of my old lenses with my new digital camera body, albeit with limitations. Over a period of time, as more new lenses were developed specifically for use with digital cameras, I have phased out my old lenses. A key consideration when upgrading my camera bodies is that they remain compatible with my collection of lenses.

1.3.2 How many pixels?

It is common for digital cameras to be rated according to the number of megapixels they can capture. A megapixel is 1 million pixels. A pixel is the smallest unit of a picture which can be controlled.

If you have a digital TV you will almost certainly have experienced occasions, maybe during heavy rain or snow, when the picture breaks up. Instead of the usual smooth image you see a jumpy jagged collection of little squares, as if the picture was a jigsaw and the pieces have been shuffled out of order.



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A digital camera works in a similar way, capturing the image as a number of pixels. Millions of minute images, fragments of the overall image, which combine to create your picture.

In simple terms the number of pixels a camera is capable of capturing the greater the resolution.

Top of the range cameras can have in excess of 50 megapixels, though for most practical purposes anything from 16 – 26 megapixels should be enough.

Although it is tempting to go for the highest number of pixels, you should be aware that the more pixels you have, the larger each image file will be. This means you'll get fewer images per memory card, though with modern cards this is rarely an issue. More importantly the bigger your files the more processing power your computer will need when it comes to post processing.

In the camera – the sensor

Instead of film, digital cameras use a sensor to capture images. If you remove the lens from your DSLR and look inside you can see the sensor. The sensor is essentially a computer chip covered with photosensitive detectors (photosensors), each of which contribute one pixel to the final image. When light hits the sensor an electrical charge is emitted which the camera's processor analyses and translates into a digital image.

Sensors vary in size and broadly speaking the larger the sensor the better because a larger sensor has more space for its pixels.

The whole subject of sensors and crop factors can be very confusing so I'll oversimplify.

The more expensive DSLRs have what is called a full frame sensor. This is the same size as an old 35mm film (24mmx36mm).

DSLRs of a slightly lower specification than the professional models mostly use a sensor referred to as crop frame sensor or APSC.

Bridge cameras use a smaller sensor.

Because a bigger sensor handles more light than a small sensor it is able to give the camera a much wider exposure range and deal with low light situations much better.

Another issue to take account of with regard to sensors is what is known as the 'crop factor'. We'll cover this when talking about lenses.

Your aims

Having established that the greater the number of pixels the greater the resolution, you need to decide what you intend to do with your photographs. The bigger the size of prints you wish to make, the more megapixels you will need.



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A camera with a high megapixel count and a full frame sensor will undoubtedly be able to capture more detail and deal with highlights and shadows better. But these cameras come at a high price, as do the lenses that match them.

Another factor to consider is that the more megapixels you have the larger your file size will be. Large file sizes demand not just more disk space but also significantly more processing power from your computer. I am sure I am not the only person who has upgraded my camera only to find that my poor old computer struggles to manage the files the new camera produces.

It is important to achieve a balance. Your camera is a combination of body and lens. There is no point spending all your money on an expensive body to get the greatest number of megapixels and then buying a second rate lens. Far better to settle for fewer megapixels and **get the best lens you can afford**. Good optics will stand you in good stead for many years whilst camera bodies are getting better and better all the time. Today's top of the range will be superseded by new models within a couple of years. Whereas in the past professional photographers happily used the same film cameras year after year it is quite common for them to upgrade their digital camera bodies every couple of years to take advantage of new developments.

1.3.3 Other features to consider

Depth of Field preview button

Depth of Field refers to the amount of your subject matter that will be in focus when you take your picture and is controlled by the aperture setting on your lens.

In order to let the image you see in your viewfinder remain as bright as possible your camera keeps the lens aperture wide open until the moment you press the shutter release, at which time it applies the aperture and shutter speed settings you selected. A Depth of Field preview button allows you to see how much of your photograph will be in focus before you commit to taking your picture. This is covered in detail later in sections on Exposure, Aperture and Shutter Speed.

Frames per Second (fps)

Because wildlife is a moving subject and it does not always do what you want when you want, the ability to shoot a rapid sequence of photographs is very useful.

Most digital cameras offer the ability to take multiple or continuous picture sequences, simply by keeping the shutter release button pressed down. Broadly speaking, higher specification cameras have a higher fps rate because they are able to process and store the images more quickly than lesser models. A key factor in determining this ability is the camera's buffer size or burst depth. What this refers to is the camera's ability to process and store images whilst still capturing new ones. When you take a single photograph the camera processes the image and stores it on the memory card. When



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you take a rapid succession of photographs you are asking your camera to process and store images whilst simultaneously capturing new ones. There is a limit to how long your camera can keep doing this before the buffer becomes full and it can handle no more. As well as the camera's burst depth the number of photographs you can take in a continuous burst will be affected by the type of files you have elected to shoot - the larger the file the fewer it will take to fill the buffer - and the speed at which your memory card can accept the files. File types are covered later.

1.3.4 Checklist for choosing a DSLR/Mirrorless

- Choose a brand that gives you access to a wide choice of lenses
- Choose a body that is comfortable in your hands
- Try it with a variety of lenses to see how they affect the balance and handling - it should still feel comfortable to use no matter which lens is attached
- Make sure you choose a camera with sufficient pixels for your needs
- Check the number of frames per second and the buffer size
- Check that there is a 'depth of field' preview button
- Don't be tempted into buying from an overseas store on the Internet. Nothing wrong with using the Internet, just choose a company based in your own country so that if you have any issues they can be speedily dealt with. A helpful, knowledgeable consultant is worth more than saving a few pounds.

1.4 Lenses

The greatest advantage of being able to combine a huge variety of lenses with your camera body is that allows you to tackle any subject.

However it is simply not practical to carry too many lenses. Quite apart from the weight, the more lenses you have in your bag the more time you are likely to waste changing lenses, creating more opportunities for dust to get into your equipment and maybe even missing the shot you want.

In practice you will only need a small collection of lenses to meet your needs.

Professional photographers rarely carry more than 3 lenses with them. The reason for this is twofold; (i) they tend to specialise in a particular type of photography and will have lenses specifically suited to that type of photography (ii) because they know in advance the type of photographs they will be shooting they do not carry with them lenses they are unlikely to use.



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Our focus is photographing wildlife and so we too can make certain decisions in advance about the lenses we will carry based upon what we expect to encounter. That does not mean that you will take the same 3 lenses every time you go out.

1.4.1 Different types of lenses

I have listed 4 broad categories of lens below based upon their core attributes. It is entirely possible that a single lens could fall into more than one category.

Telephoto

A lens that enables you to photograph far away objects by making them appear closer. Indispensable for wildlife photography.

Wide Angle

Most lenses capture a much narrower field of view than we can see with our eyes. A wide angle lens will allow you to capture the full breadth of a landscape or the interior of a room.

Zoom

A lens of variable focal length that, in effect, combines several lenses into one. Rather than having to carry a 50mm, a 100mm and a 200mm lens you can combine all of these focal lengths and more into one zoom lens. Zooms can either be long or short. A long zoom lens (sometimes referred to as a super zoom) is one that extends to a focal length of around 300mm or 400mm whilst a short zoom (sometimes referred to as a standard zoom) is one that begins at a wider angle and ends around 70-80mm. For obvious reasons zoom lenses are very popular with wildlife photographers.

Macro

A macro lens is any lens that allows you to focus on objects very close to the lens. Particularly useful if you are keen to photograph fauna or flora that allow you to get up close.

1.4.2 Choosing the right combination

Almost every photographer has a favourite lens. The one he/she keeps on the camera most of the time because it's the one they use the most frequently.

It is worth spending a bit of time thinking about what lenses you are likely to need before you rush out to buy them. Think of each lens as part of a set.



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When I am on safari I almost always carry 2 bodies. At the start of each day I will almost always begin with the same two lenses attached: one of them has my 300mm telephoto lens and the other has an 18-140mm zoom lens.

I have found that this is an ideal starting combination as the 300mm allows me to capture birds or animals that are far away and the 18-140mm will cover almost anything that is closer.

Having said that please don't assume that you will need a zoom or telephoto lens for your wildlife photography. It is far more satisfying to take your photographs from close up than from a distance and you can get wonderful photographs with a standard lens, it just requires a bit more patience.

Working up close to your subject is far more intimate and you can focus on particular features or movements that might not be discernible from a distance.

For practical reasons I prefer a short zoom to a fixed focal length lens and find that my 18-140mm Nikkor perfectly compliments my telephoto.

The third lens in my bag is usually either a 70-200mm zoom lens or a 10-20mm wide zoom. It depends on what is planned for the day.

With this combination in my bag there are few eventualities that catch me out.

A lot of people think that they will need a really long lens for shooting wildlife, 500mm or 600mm. Lenses of this length undoubtedly have their uses but they also have drawbacks.

Although a long lens is great for small subjects like birds or animals that are farther away, it is not as versatile as a lens with a shorter focal length. The longer the focal length the more vulnerable you are to vibration or camera shake and the shallower the depth of field. They can also be very heavy.

It takes practice to be able to use a 500mm lens without some kind of support and you will find yourself struggling in poor light when you are forced to use a slower shutter speed.

In many instances you will be better served with a shorter lens that allows you to capture a more shake free photograph which you can then crop when you get home.

1.4.3 Comparing lenses

Once you have established the combination of lenses you believe will meet your needs you can set about choosing specific lenses.

Here again you'll find yourself faced with a wide and confusing choice so it is worth keeping in mind the very simple adage, 'you get what you pay for'.



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Unless you are really cash strapped, don't settle for an inferior lens just because it is cheaper. Far better to buy one really good lens than two lesser ones and, as a rule, you will find that the lenses made by same manufacturer as your camera will give you better results than those made by third party manufacturers, if only because they have been designed specifically for your camera whereas a third party lens has been designed for use with several different makes of camera. That's not to say that there aren't some excellent third party lenses out there.

Let's say, for example, that you have done your research and decided that the most useful lens for you is likely to be a 70-200mm zoom lens. You visit your local camera shop, or go online, and discover that there are 3 lenses with that focal range that will fit your camera. Ignoring price for a moment, how do you choose between them?

Like camera bodies, lenses can come with a number of clever features. These include Auto Focus, Image Stabilisation or Vibration Reduction and Macro.

Auto Focus

Almost all digital camera lenses allow you to select either manual or auto focus and one of the menu options on your camera will allow you to decide how the Auto Focus operates. The two most common alternatives are that (a) the photograph cannot be taken until the camera is satisfied that the subject is in focus or (b) the camera allows the photograph to be taken whether the subject is in focus or not. There will be occasions when both these options are appropriate.

What is relevant here though is the speed and accuracy with which the auto focus works. Try the different lenses on your camera body – or a similar one in the shop – and see how the lenses feel. How smooth is the operation of the auto focus? How quickly does it achieve focus?

Image Stabilisation

One of the most common causes of blurry photographs is camera shake. In plain English, you are not holding the camera steady as you take the picture. With short lenses this is rarely an issue but as the lens gets longer so the risk of camera shake increases. You can easily experience the effect of camera shake with a pair of zoom binoculars. Look through them at a low magnification, 7x or 8x, and the subject will appear steady. But if you increase the magnification to bring the subject closer, to say 12x or 14x, you will notice that although the subject appears larger/closer it is harder to hold the image steady. Of course you are holding the binoculars just as steady as before but the increased magnification is making the shake much more evident and much more of an inconvenience. Exactly the same thing happens as you use longer lenses and the shake or vibration manifests itself as blurred images.



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What is the use of having a telephoto lens that brings the subject closer if you cannot hold the camera steady enough to take a sharp photograph?

Image Stabilisation or Vibration Reduction technology is designed to help overcome the camera shake. In practice this will allow you to get away with a slower shutter speed than you might otherwise have done. This in turn means you can take photographs with less light available.

(Note: to better understand how image stabilisation/vibration reduction works read this post on our blog: [When is the right time to use VR \(Vibration Reduction\)?](#))

Maximum Aperture

The other thing to look for is the maximum aperture the lens is capable of. The aperture on a lens is what determines how much light the lens allows to pass through it onto the camera sensor. For this sort of zoom lens (70-200mm) the maximum available aperture is likely to be $f2.8 - f4$. We'll take a closer look at aperture a bit later on but, in optical terms, the more light your lens allows through the greater your shooting options.

Exposure - we'll go into more detail a bit later on - is a combination of lens aperture and shutter speed. The lens controls how much light is allowed into the camera and the shutter speed determines for how long that light is allowed to reach the sensor. It follows therefore that if you let less light through the lens, you will need to keep the shutter open for longer to achieve the same result. So the greater the maximum aperture your lens is capable of the better as this then allows faster shutter speeds.

There are two other factors to consider; weight and price.

In order to achieve that wide maximum aperture a large piece of glass is needed at the front of the lens. This adds a lot of weight to the lens and it adds it at the farthest point from the camera body, making it more difficult to hold the camera steady. It also raises the price significantly.

A 70-200mm lens with a maximum aperture of $f4$ will be considerably smaller, weigh a lot less and be a lot cheaper than one with a maximum aperture of $f2.8$. You lose one f -stop but if you are carrying the lens around for long periods of time the lighter weight will more than compensate for the small number of shots you'll miss out on.

Price is obviously a factor too and you'll find that the cost of a 70-200mm zoom lens can vary from under £150 to over £2000.

Crop Factor

Just to confuse the issue even more there is one other thing to consider, if only because you are likely to hear it talked about and it is better to have at least a basic understanding.

The crop factor is directly related to the sensor size. In practice what this means is that a 100mm lens designed for a full frame sensor will become a 150mm lens when used with an APSC (crop frame) sensor. Because the sensor is smaller than the maximum



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size the lens was designed for and is not able to receive all the light than the lens collects it is said to have a crop factor (in this case a crop factor of 1.5). This has the effect of narrowing the angle of view (cropping it) so that what you see correlates to what you would expect to see with a higher magnification lens.

This is why compact and bridge cameras are able to offer such large zoom ranges within such compact lenses; because they have small sensors which exaggerate the zoom properties of the lens.

(Note: if you would like to understand a bit more about the 'crop factor' this post on our website may be helpful. #PHOTO TIP – What is the difference between FX format and DX format?)

So how do you choose?

I tend to read as many reviews as I can find to help me narrow down the search. Then, once I have a short list I will visit a camera shop and try each lens on my camera body to see how it handles.

In this respect you will almost certainly find life easier if all your lenses are from the same manufacturer. It may sound like a small thing but knowing that the focussing ring and the zoom control work in exactly the same way on all your lenses is a big plus point when you are in the field as it is one less thing you need to think about.

I have one lens from a third party manufacturer on which the zoom ring turns in the opposite direction to all my other lenses. Whenever I change lenses I inevitably begin by zooming out when I want to zoom in. It's only a small thing, certainly not something that will make me give up a favourite lens, but it is irritating.

How many times have you driven a hire car that has the indicator and wiper controls on the opposite sides from the car you drive at home? Didn't it drive you nuts that every time you wanted to indicate you switched the wipers on instead? Like I said, it is only a little thing and eventually you get used to it but it is really irritating.

Once you have chosen the lens, or lenses, that you like best from your shortlist it comes down to cost.

1.4.4 Tips for choosing a lens

- Gather as much information as you can on the lenses available for your camera
- Decide which features are most important to you, for example would you rather have macro or image stabilisation?



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- Make a shortlist of possible choices and then try them out on your camera. The great thing about digital cameras is that you can take a couple of photographs with each lens while you are in the shop and compare them easily.
- If you are buying a long lens, choose one with a tripod collar. A tripod collar allows you to attach the lens directly to the support. Commonly found on long, heavier lenses it allows the weight of the mounted camera to be more evenly distributed. The heavier the lens the more important the tripod collar is.
- If the extra weight is not an issue, go for the widest maximum aperture you can afford
- Remember that lenses from the same manufacturer will make your life easier
- Lenses that have a lot of features will use more battery power. The auto focus and image stabilisation features on a large zoom lens can use up a freshly charged battery within a couple of hours. If you are going to use this kind of lens make sure you carry spare batteries or you will get caught out.

1.4.5 Filters

Before we finish the subject of lenses it is worth briefly mentioning filters.

Filters are mounted pieces of glass that screw onto the end of your lens. In the days of film, photographers would use filters to alter the colours of their photographs and create effects. Today we can do all of that and more on our computers.

But filters still have a place on your equipment list. They are perfect for protecting your expensive lenses. Just think of it; you've invested several hundred pounds in a good lens and every time you take it out you expose it to all manner of things – grubby fingers, dust, rain and scratches to name a few. Fitting a UV or Skylight filter to the end of your lens will have minimal impact on your photographs other than to give a very slightly warmer hue to the colours but its real value is that instead of marking your expensive lens those grubby fingers, dust, rain and scratches will end up on the filter. Because it is removable the filter is much easier to clean than your lens and, in a worst case scenario, much cheaper to replace.

Whatever effect the filter has on the colours in your photograph can easily be adjusted in post processing. But make sure you choose the best filters you can get.

1.5 Supports – Tripods etc

Due to the nature of wildlife photography you will probably be using a telephoto or zoom lens for 80% of your photographs. As mentioned earlier, this means that camera shake



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is much more of a risk than with shorter lenses. The way to eliminate shake is to use a support.

The other benefit of using a support is that you will be able to shoot using slower shutter speeds than you would if you were hand holding. This in turn means that you can keep shooting in poorer light conditions than would otherwise be possible.

The most effective way to minimise or eliminate camera shake is to use a support of some kind and you can't beat a solid, sturdy tripod. Don't waste your money on a flimsy tripod just because it is light weight. A tripod that cannot hold your equipment steady is little better than no tripod at all.

But unless weight is not an issue, or you won't have to carry it far, the problem is that the best tripods are heavy and not easy to lug around.

If you are setting yourself up in a hide or intend to remain stationary and let the wildlife come to you then a sturdy tripod is ideal but if you want to be mobile or you will be shooting from a vehicle you'll need an alternative solution and there are several for you to consider.

Monopod

A monopod is usually a single telescopic leg with a mounting plate on the top. They are unobtrusive and versatile and can be used on the ground or in the back of a safari vehicle. If you are walking in search of wildlife they are easy to carry and quick to get ready. They'll also fit easily into your check in baggage. If you decide to invest in one check the manufacturer's guidance on the weight it can support and consider the weight of the camera + lens combination you will be using. Also check the maximum height it will extend to. Ideally you want one that you can use standing in a comfortable position, not one you have to crouch over uncomfortably.

Door and Window mounts

With so much wildlife photography carried out from vehicles special mounts have been designed for use on open windows. Typically these supports fit over the partially open window and can be very effective. The downside is that they are not particularly versatile or manoeuvrable and are of limited use in other situations. It is also worth remembering that any support which is attached to a vehicle will be susceptible to the movements of the vehicle caused by you, other occupants or the engine.

Bean Bag

As simple as it sounds; a small bag filled with rice or some kind of artificial beads. It can be used anywhere as a rest for your lens, softening the contact between it and whatever you are leaning upon and absorbing the vibration. You could also use a travel pillow.



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Clamps

It is possible to buy clamps which can be attached to various parts of a vehicle. These offer similar pros and cons to the door and window mounts.

As with so many aspects of photography your choice of support will be determined by the needs of your situation. Unless I am driving my own car I very rarely travel with a tripod. Instead I carry a soft bag and a monopod.

Tripods

If you do decide to buy a tripod there are two key areas to look at. The legs and the head.

A good set of legs should allow you to work at any level, on any kind of ground. You should be able to adjust the legs to give yourself a steady platform on a hillside, in a confined space or low to the ground. To achieve this it is wise to avoid tripods with an extendable central column. When the central column is raised it is often unstable and when it is not raised it prevents the tripod being used close to the ground.

There is quite a choice of heads for tripods, ranging from quite cheap to very expensive. The simplest is probably a ball head. Ball heads offer smooth movement in both horizontal and vertical planes. There are no handles and movement is achieved by moving the camera.

Next up are pan and tilt heads. Pan and Tilt heads have two handles, each controlling movement in a different plane that can be used independently or together.

At the top end are the gimbal style heads. They are expensive but offer exceptional control over both horizontal and vertical movements, ideal for panning and tracking, and are particularly suited to longer, heavier lenses. The two best types of gimbal head are the Wimberley and the Dietmar Nill heads.

A tripod is essential for macro photography where because you are focussing so close to the subject the slightest movement can throw it off.

1.6 Digital Film – file storage / memory cards

Whereas photographs used to be captured on film, they are now stored digitally on small cards inside your camera.

The type of card you use will be determined by your camera. By far the most common card in use is the SD card. Although there is a large choice of write speeds for these cards. Both card capacity and write speed are increasing all the time.

There are two things to consider when buying memory cards; capacity and write speed.



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Capacity does not need much explanation, the larger the capacity of the card, the more photographs it can hold. The size of card you use is a matter of personal preference, some people like to use several smaller capacity cards so that their 'eggs are not all in one basket'. Others find it simpler to use one large capacity card.

The number of photographs you will be able to store on a card depends on the file size and this in turn depends on the format you choose for your photographs. File formats are explained in more detail later but in simple terms the higher the resolution you set for your photographs the more space each file will take up.

A 1 Gigabyte card in a 10 megapixel camera will hold about 135 JPEG files at the highest quality setting. If you reduce the quality setting you can more than double the number of photographs that will fit on the card. The same card would hold about 80 files in RAW format.

It therefore follows that a 2 Gigabyte card in the same camera will hold about 270 JPEG files or 160 RAW files and a 4 Gigabyte card 540 JPEG files and 320 RAW files.

You might think that it makes sense to choose to save your photos as JPEGs because you'll get more pictures on your card but, as we'll discover later on, there are pros and cons for both formats.

If you know what format you will be shooting in and you know how many photographs you can get on a single card – when you insert a new card your camera will tell you how many photographs it will be able to hold - you'll just need to estimate how many photographs you think you will be taking and bring enough cards to store them.

Write Speed refers to the speed at which the card is able to store the information being sent to it by the camera. The faster the photographs are written to the card the sooner it is ready to accept another one. Therefore you should always opt for cards with the fastest write speed you can find.

1.7 Storage / Backup

One of the great things about digital photography is that you can re-use your storage cards. You can review your pictures and delete unwanted files at any time, freeing up space on your cards. Many photographers are perfectly happy to travel with a number of SD cards and then transfer the files onto their computer when they get home.

Others are more wary of the risk of losing their precious pictures and like to back up their photographs on a daily basis. This is easily done by transferring them to a laptop or a portable hard drive.



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1.8 Brushes, Blowers & Bags

One of the biggest problems faced by photographers, especially those who work outdoors, is dust. It manages to invade the insides of cameras with alarming ease. We can take steps to try and prevent it but 100% success is impossible to achieve. If it gets inside the mechanisms of your camera dust will impair their efficiency, if it gets onto the sensor it will cause you a lot of additional work in post processing. Therefore it is important that you regularly remove dust from the camera sensor. Unfortunately the sensor in your camera is a very delicate item so you must be careful when cleaning it. The best method is also the simplest. A bulb brush or blower brush. This is a soft brush attached to a rubber bulb. Squeezing the bulb blows a gentle gust of air. Blow off the dust first then gently brush the sensor. To avoid simply blowing the dust particles to a different location inside your camera it is wise to hold the camera upside down whilst blowing so that the dust can fall free.

A blower brush can also be used for removing dust from your lenses.

Compressed air cans are not recommended, nor is blowing with your mouth, as minute drops of moisture can hit the sensor and be even harder to remove than the dust.

Many photographers carry a small supply of re-sealable or Ziplok bags with them. If they are travelling in dusty conditions they will seal their equipment in these bags to protect it from dust until they are ready to use it. The same bags can be used to make a waterproof housing for your camera if you have to photograph in the rain.

1.9 Bags and Cases

Now that you've invested in the equipment to take great photographs you need a good strong waterproof bag or case to carry it all.

Cameras and lenses are expensive and delicate and need a bit of TLC. They don't take kindly to being chucked into any old bag where they can rattle around and bang into things, they need protection.

Once again, choosing a camera bag or case is a matter of personal preference but there are a few very basic guidelines.

- Your bag should be easy to carry.
- It should comfortably accommodate all the equipment you expect to take with you when you go out and have a bit of extra space in case you want to add a flash gun or extra lens
- It should offer easy access so that you can reach every item of equipment quickly
- A few side pockets are useful for keeping your memory cards and spare batteries



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- It needs to be waterproof enough to protect your equipment from rain showers and splashes
- It should be padded so that it protects your equipment from knocks and falls
- You will be taking your camera bag as hand luggage when you fly so it needs to fit in the overhead lockers

2. Before you start taking photographs

Setting up your camera

Unlike the original SLRs where you simply had to insert the film and set the film speed, digital cameras offer you many more opportunities to set your own preferences before you begin taking photographs.

Even though different manufacturers present their menus differently and there are variations between models, there are some settings that you will find on all digital camera menus. It is worth looking at them briefly to make sure we understand what they do and how they can affect your photographs.

The information here is not intended to replace the manual that came with your camera, rather it is intended to make some of the sections in the manual a bit more understandable by using plain English. Whilst most camera manuals tell you how to change the various menu options they do not often adequately explain how the different options will affect your photographs.

2.1 File Types

Your camera stores your photographs as digital files. It can store these files in a number of different formats so before you start taking pictures you need to tell your camera what format you want to use.

At first this section might appear complicated but an understanding of the various file formats is essential if you are to get the best from your camera so it is worth persevering.

There are 3 basic file types – JPEG, RAW & TIFF

JPEG

Almost all digital cameras can store images as JPEG files.

JPEG is an abbreviation for Joint Photographic Experts Group and is regarded as the standard file type.



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A JPEG can be viewed using almost any kind of image viewing software, including those that are bundled free with most computers.

One of the most important things to understand about JPEG files is that the image data they store has been compressed so that the file takes up less space. To achieve this a small amount of the data captured by your camera is discarded.

You can decide how much the files are compressed. One of the menu options allows you to set the compression ratio that your camera will use for JPEG files. The options are Fine, Normal and Basic.

- **Fine** gives a compression ratio of 1:4 and is the highest quality setting for JPEGs.
- **Normal** gives a compression ratio of 1:8 and would be perfectly acceptable if you to print your photographs no larger than A4 size
- **Basic** compresses by a ratio of 1:16, creating smaller files that are well suited to use on the Internet.

The greater the compression ratio you select the smaller the file size and the more photographs you'll be able to store on your cards. Conversely, the greater the compression ratio the lower the quality of the image.

In addition to the compression ratio you can also choose the image size. The image size is measured in pixels and you will usually have 3 options: Large, Medium and Small. The information shown here is for a Nikon D80 camera which shoots at 10 megapixels.

Don't worry too much about the details, they are just included to give you a rough idea of how file sizes are affected by the choices you make.

- **Large** – uses all your camera's pixels – 10 megapixels on the Nikon D80
- **Medium** – uses half your camera's pixels – 5 megapixels on the Nikon D80 - and will therefore allow twice as many pictures to be stored on the same sized card
- **Small** – uses one quarter of your camera's pixels – 2.5 megapixels on the Nikon D80 – and will therefore allow four times as many pictures to be stored on the same sized card

For our purposes, and I am assuming that you want your wildlife photographs to be as good as they can be, if you want to save your pictures as JPEGs I recommend that you **select Fine and Large**.

In addition to JPEGs most good digital cameras, can also store the images as RAW or TIFF files.



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RAW

A RAW image is just as it sounds, the raw data captured by your camera sensor. The data is not compressed so the file size is larger than all JPEGs. Different manufacturers handle RAW files differently and a Canon camera will not recognise a RAW file created in a Nikon camera.

Post processing RAW files requires specialised software. Some manufacturers include the necessary software with their cameras, others do not.

TIFF

TIFF stands for Tagged Image File Format. TIFFs are also a common format that can be widely recognised. TIFF files are also uncompressed and therefore large. Before sending RAW files for publication they are commonly converted to TIFF format.

Choosing a File Format - JPEG vs RAW

We'll look first at the differences between JPEG and RAW files as this is one of the most important choices you will need to make; although it is worth emphasising that there is no right or wrong file format to use. Many professionals use RAW format and many others use JPEG. Others will use both formats, according to the type of work they are doing.

On the face of it, from what has been written above, the choice between JPEG and RAW is a choice between a compressed file and an uncompressed file. Unfortunately it's not quite that simple.

The various menu settings you make all have an effect on the way your camera processes your photographs. Because a JPEG is a compressed file, it needs to apply those instructions to the image data before it is saved. When you open the file on your computer you will see your photograph as it looks after all your chosen settings have been applied. You can use post processing software to make changes to the way the photograph looks but you can never uncompress it or restore the data that was discarded before the file was saved. If you make changes and re-save your JPEG you are saving the amended file. If you open that file again you cannot return to how it was before you made the changes.

A RAW file is handled differently. When your image data is saved none of the settings you selected are applied, they are saved as a separate set of instructions. When you open your RAW file you can choose to apply those instructions, change them or apply a completely different set of instructions. When you save the file again the RAW data is saved together with a new set of instructions. You can adjust your RAW file as often as you like without any deterioration in quality.



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Based upon the above you can see that there are advantages and disadvantages to both formats.

If you want to be able to use your photographs immediately, without the hassle of post processing then maybe JPEG is the format for you. You can print your photographs straight away or send them to others to look at whereas if you had saved as RAW files you would have to manipulate your images and then convert them to JPEG or TIFF before you could print them or pass them on to others.

Against the convenience of the JPEG file is the versatility of the RAW file. JPEGs are great if you get all your settings spot on and your photographs do not need a lot of adjustment. But with a RAW file you can amend or override any of the in-camera settings. If you got your white balance wrong you can correct it. You can experiment as much as you like with colours and sharpening without harming your original image.

If you plan to create large prints and will always apply post processing to your photographs then RAW format allows you the greatest flexibility.

If you send your photographs for publication you can create a JPEG or a TIFF from a RAW file. You cannot create a RAW file from a JPEG.

In practical terms, most people would not be able to tell whether an A3 print came from a JPEG or a RAW file.

For most people the choice between JPEG and RAW comes down to convenience. If you are confident of your ability to get your settings right in-camera then JPEGs are fine. If you need or enjoy post processing then RAW files give you much greater control.

What about TIFF?

Like RAW files, TIFF files are uncompressed, so they are large files. Unlike RAW files however all the in-camera settings are applied to TIFFs before they are saved. This combination of large file size and processing means they are slower to save than either JPEG or RAW.

Although they are the preferred file format for sending photographs to publishers you can create a TIFF from your RAW file - but you can't create a RAW file from a TIFF.

It is hard to think of any reason why you would want to save your photographs as TIFF files at the shooting stage.

2.2 White balance

This is the setting the camera uses to make sure that white elements in your photographs look white and that all other colours are accurately displayed in relation to white. Our eyes automatically compensate for changing light conditions without us even



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being aware of it but the camera needs to be told how to handle varying light conditions. This is achieved using the White Balance setting.

There are a number of pre determined settings you can choose from: Auto, Sunshine, cloudy, shade, fluorescent, flash & auto, or you can set a specific value that you think is appropriate.

If the light source is consistent you can set the White Balance to take account of this. For example; if you will be taking a lot of photographs under fluorescent lighting you can tell the camera this and it will apply a correction to prevent all the pictures having a yellowish cast.

If you will be taking photographs in a wide variety of light conditions and don't have the time - or are worried you might forget - to adjust the White Balance accordingly you can set it to Auto.

Until you become familiar with how it affects your pictures it makes sense to leave your white balance set at Auto, if only because it means you won't forget to change it back when the light conditions change.

If you are shooting in RAW you will have the opportunity to make adjustments to your white balance settings on your computer.

2.3 Colour space

Most of us can recall walking into an electrical store that has dozens of TVs arrayed on the wall; all are tuned to the same channel yet no two pictures look the same. This is because each screen represents colour in a slightly different way. Some saturate the colours, others increase the contrast. What they are all trying to do is produce a picture that you the buyer find appealing, one that closest matches your view of how the colours should look.

Similarly the same photograph will look different on different monitors according to how the monitors have been calibrated.

What we want of course; is for our picture to look the same no matter where it is viewed. If you have just gone to great lengths to process your photograph so that all the colours are accurate you want others to see it that way. You want to be sure that if you send your photograph for printing the printer will reproduce it accurately.

To maximise the chances of this happening International Colour Consortium (ICC) profiles are used to calibrate devices like monitors so that they will display the same colours in the same way and your picture will look the same wherever in the world it is viewed.



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The two choices for colour profiles available in most digital cameras are Adobe RGB and sRGB. Each handles colour in a slightly different way. Adobe RGB has a wider colour range allowing more colours to be reproduced.

When you view your photographs on a computer or send them to someone else for processing it is important that you know which colour profile has been used. A photograph shot using Adobe RGB which is viewed in a version of Photoshop or other program that has been set for sRGB will not represent the colours accurately. Because it can handle fewer colours than Adobe RGB, sRGB will have to make some assumptions and convert the 'extra' colours into ones it recognises, making subtle changes to the overall look of the photograph in the process.

Most good photo printers that you can buy for home use can handle the full range of Adobe RGB colours. Therefore if you intend to print your own photos you can set Adobe RGB.

If you will be sending your photographs to a lab for printing – say into a photo-book – it is generally safer to use sRGB.

Generally speaking photographs uploaded to the Internet look better if they are in sRGB but it is a straightforward process to convert from Adobe RGB to sRGB in Photoshop.

2.4 Sharpening

One of the few controls that does exactly what you would expect it to do. It gives you the ability to instruct the camera to make your photographs look more or less sharp. The level of sharpness you choose is entirely a matter of personal preference and is best decided after some trial photographs so that you can see for yourself the effect the sharpening control has.

If you are planning to shoot JPEGs it is wise to take the time to find your sharpness preference.

If you will be shooting RAW you can ignore the sharpness setting – just leave it set at Normal - as you will be able to adjust it in post processing.

2.5 ISO

The ISO setting determines how sensitive your camera's sensor is to the light reaching it.

ISO, the International Organisation for Standardisation, is a method for rating film speed which has been adapted to measure the sensitivity of the sensor in your camera. The higher the ISO setting the more sensitive to light the sensor is and greater sensitivity allows you to use faster shutter speeds.



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Under normal daylight conditions you might select an ISO of 100 or 200. If you are shooting in dull conditions or using a long lens that needs more light, you'll probably want to raise your ISO setting to 400, 800 or even 1000.

Many cameras have an Auto ISO setting - you can usually set a minimum and a maximum ISO - this lets your camera set the ISO depending on the prevailing conditions. It will usually use the lowest ISO setting possible to give the least graining pictures.

Why not use a high ISO setting all the time?

Increasing the ISO setting raises the sensitivity of the camera's sensor. Although that means you can continue to capture images in poorer light it also means that the sensor is more likely to pick up unwanted background interference known as noise.

This noise can make your images appear less sharp.

A good analogy is listening to music. If you are close to the speakers you don't need to turn the volume up high to hear the full range of notes clearly. If you are further away from the speakers you need to turn the volume up higher. With the volume turned up, you will hear noise from the speakers when no music is being played. This is the same as digital 'noise' in your photos. The noise will be most noticeable in areas of dark solid colour. As you increase the ISO your camera is compensating for a lack of available light.

2.6 Noise and noise reduction

How can a photograph have noise? At first it seems a strange concept but you need to remember that digital photographs are electronically created. Think of your stereo or television when no music is playing. Even if you are not playing music, or if your TV is not tuned into a channel you can still hear a hissing sound. If you increase the volume the volume of the hissing increases.

Because it creates its images electronically, a digital camera is susceptible to the same kind of electric hiss or static except that instead of manifesting itself as sounds, the noise manifests itself as randomly coloured dots in your photographs. Noise can be caused in two ways. (i) In the process of recording your image the sensor produces electrons which then contaminate the electrons created by light striking the sensor. These extraneous electrons show up as noise, known as thermal noise. (ii) the second cause of noise is high ISO. As the sensitivity of the sensor is raised the signals being received by the sensor are amplified. Unfortunately all electrical devices - and your camera is an electrical device - produce background noise. As the signals are amplified so is the background noise and it shows as randomly coloured dots or specks on your image.



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If you are using ISO settings of 800 or less you are unlikely to be troubled by noise. If you need to use higher ISO settings noise could become an issue. Most cameras offer some kind of noise reduction settings that will help reduce noise as you take pictures. The downside of letting the camera handle noise reduction is that it is a rather blunt tool. Instead you may prefer to wait until you can see your photographs on your monitor and handle noise reduction as part of your post processing.

2.7 Auto Focus

Your digital camera can handle the way it focuses in a number of different ways

Continuous AF

Using this setting, once you depress the shutter release halfway your camera begins focussing on the subject. If the subject moves whilst you have your finger on the shutter release the camera will continuously adjust focus until you take the picture. It will also allow you to take the picture even if focus has not been achieved.

This is useful if you are following a subject that is moving too fast or too erratically for the camera to be able to focus or if you take continuous bursts; if the camera had to achieve focus before each exposure you'd miss the action.

Single AF

Using Single AF the camera will focus when you depress the shutter button halfway and it will then lock the focus. As long as you keep your finger on the shutter release the camera will hold that focus. This can be very useful if you want to place your subject off centre. You can point the camera at the subject, achieve focus, and then compose your shot whilst keeping your finger on the shutter release.

If you select Single AF most DSLRs will prevent you from completing the shot until focus has been achieved.

Manual

Just as it sounds. If you set to Manual you disable the camera's auto focus and you will have to focus manually by turning the focus ring on the lens. If you have older lenses in your collection that are not capable of auto focus this is the setting you would use.

Focus Area

Auto focus technology has become very clever and lets you choose which part of the frame your camera uses to find focus, you can select single or multiple focus points. You can elect to use a single point for focus; this would most typically be at the centre of the frame but you could select a different position within the frame. Alternatively you can let the camera analyse the subject and decide which parts should be in focus.



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For wildlife photography I prefer to use single point focussing. When your subject is amongst a herd of other animals or bushes it is essential to be able to make sure that the camera is focussing on what you want.

2.8 Metering modes

In order to achieve a correct exposure your camera measures the light at pre-determined points in the frame. It can do this in three distinct ways.

- Matrix metering – When matrix metering is selected the camera measures across the whole frame measuring brightness, contrast, colour and composition. For most subjects this method is very accurate.
- Spot metering – spot metering means that the camera takes its reading from a small spot equal to roughly 2% of the total frame. Spot metering is very useful if there is a particular part of your composition that you want to ensure correctly exposed in preference to the rest of the picture that might not be picked up by the other metering methods.
- Centre weighted – centre weighted metering gives 75 percent priority to the reading from a small central circle and 25 percent to the remaining areas of the frame. Centre weighted metering is great when you know your main subject will be in the centre of the frame or when you are shooting subjects against contrasting backgrounds eg, white subject against a black background.

Unless your primary subject is very different from its surroundings you will probably get the best results using matrix metering, it really is very accurate.

3. Understanding Exposure

A camera is a combination of camera body and lens. The camera body and the lens each perform a role in the taking of your photographs. In very simple terms, the lens controls the amount of light that is allowed to reach the camera's sensor or film plane and the camera uses the shutter speed to control the amount of time light is allowed to hit the sensor.

Aperture

Aperture refers to the lens opening that allows light to reach the sensor. Aperture is measured in *f*-stops which typically range from *f*2 – *f*32, with *f*2 being the largest/widest aperture and *f*32 the smallest/narrowest.



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A wider the aperture allows more light to pass through the lens, a narrower aperture allows less light through. Depending on which way you rotate the dial, changing an f -stop either halves or doubles the amount of light through the lens.

Depth of field

Understanding how the aperture functions allows you to use it to control the depth of field in your photographs. As discussed earlier, the depth of field is the portion of your picture, from front to back that is in focus.

The wider your aperture, the shallower your depth of field, the smaller your aperture the greater the depth of field, or the greater the distance, from near to far, over which the subjects in your photograph will be in focus.

If you are photographing a herd of buffalo it might be important to you that as many of the herd as possible are in focus; so you would want to maximise the depth of field by stopping down to a narrower aperture. If you wanted to have just one animal in sharp focus and leave the others in soft focus you would open up the aperture to achieve a shallower depth of field.

If you want your subject to stand out against the background you can open up the aperture so that the foreground is in focus but the background is out of focus.

(Note: this post on our website helps illustrate [The relationship between Aperture and Depth of Field](#))

Shutter speed

Shutter speed is measured in fractions of a second. These fractions of a second represent the length of time the camera's shutter remains open to allow light to strike the sensor.

Each alteration in shutter speed either halves or doubles the time the shutter remains open.

When photographing stationary subjects it might be difficult to see how a change in shutter speed affects the picture, except for the effect it has on the aperture used and consequently on the depth of field. When it comes to moving subjects though, it is the shutter speed that determines how your image will be captured.

You could choose a fast shutter speed that would freeze the action or a slower shutter speed to achieve a more blurred effect to suggest movement.

Correct exposure requires the correct combination of aperture and shutter speed. Although there is only ever one correct exposure, there are several ways of achieving it. If your camera suggests an exposure of $f8$ at $1/500$, and you decide that you'd like a faster shutter speed, say $1/1000$, you need to open up the aperture to $f5.6$ to compensate for the fact that less light is being allowed through the shutter.



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Alternatively, if you want greater depth of field you might decide to change the aperture to $f11$, in which case you will need to use a slower shutter speed, $1/250$, to allow a longer time for the sensor to absorb light.

Effective combination of aperture and shutter speed can dramatically alter the way a subject is captured. The shutter speed can be varied to freeze or blur movement whilst the aperture can be altered to bring the background more or less into focus.

Image Stabilisation

Different manufacturers use different terms for it – Image Stabilisation, Vibration Reduction – and sometimes it is a feature built into the lens, sometimes it is built into the camera body.

What it does is to reduce the blurring of an image that is caused by the motion of the camera. The most common cause of blurring in still camera photography is known as camera shake, most commonly experienced when you are unable to use a fast enough shutter speed and a slower shutter speed is affected by the minute shaking of the hand during the moment of exposure.

Image Stabilisation is designed to overcome this and can allow the use of a much slower shutter speed or wider aperture than might otherwise be possible.

3.1 Shooting Modes

Now that you have an understanding of how aperture and shutter speed relate to each other we can look at the various shooting modes your DSLR offers and decide which one will be best suited to the kind of photography you will be doing.

You can change your shooting mode at any time, as often as you want. It is perfectly normal for photographers to select different shooting modes for different types of photography.

The basic shooting modes found on just about every DSLR or mirrorless camera are as follows:

- P – Programmed Auto
- A – Aperture Priority
- S – Shutter Priority
- M – Manual

P – Programmed Auto

Often unflatteringly referred to as 'point and shoot', the Programmed Auto mode on most digital cameras is capable of capturing first rate images. However, by choosing it you are letting the camera make the decisions about your exposure for you.



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Basically the camera's on-board computer analyses the subject in the frame and sets what it considers to be the best combination of aperture and shutter speed. The down side of this is that although the camera will usually get the exposure correct it cannot know how you want to handle depth of field or movement meaning that it falls short when it comes to creative photography.

A – Aperture Priority

Selecting the Aperture priority setting means that you will manually decide what aperture you wish to use and the camera will adjust the shutter speed as necessary to maintain a correct exposure.

If you set your aperture to be $f8$, because it gives you the desired depth of field, as you move into different lighting conditions your camera will automatically change the shutter speed to ensure your photographs are correctly exposed, using a faster shutter speed in brighter conditions and a slower shutter speed when there is less light.

Aperture priority is commonly used by photographers for portraits or landscapes or any kind of photography where the depth of field is critical. It is used less frequently by sports or wildlife photographers.

There are two main reasons why Aperture Priority is less well suited to sports or wildlife photography. (i) You can find yourself in a situation where, because of failing light, the shutter speed chosen by the camera is not fast enough to freeze the subject's movement, resulting in blurred images. (ii) Similarly, sports and wildlife photographers frequently use long lenses. These long lenses need faster shutter speeds to avoid blurring due to camera shake.

S – Shutter Priority

Selecting Shutter Priority means that you will manually decide what shutter speed to use and the camera will adjust the aperture as necessary to ensure correct exposure. This is really useful if you need to ensure a fast shutter speed to capture movement or because you are using a long lens.

There is a very simple rule of thumb used by photographers which states that if you are hand holding, ie; shooting without a support, your shutter speed should be as fast as your lens is long. For example, if you are using a 500mm lens you will need a shutter speed of at least $1/500$. If you are using a 250mm lens your shutter speed should be $1/250$ or faster. By using these shutter speeds, and assuming you have a steady hand, you should be able to avoid camera shake.

Shutter priority exposure is ideally suited to sports and wildlife photography because you can fix your shutter speed according to the length of lens you are using or the speed of movement of your subject.



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Another type of photography where controlling the shutter speed is important is when you want to use a very slow shutter speed, as you would when photographing night time scenes.

M - Manual

With your exposure mode set to Manual, you will need to select the aperture and the shutter speed based on the information in your viewfinder display or a separate handheld light meter.

Once you have made your settings the camera will not make automatic adjustments if the light conditions change. This is very useful for studio photographers who want to have complete control over their lighting and ensure that all the photographs in a session are exposed in the same way.

Choosing Manual mode also allows you to use older – non CPU – lenses on your camera.

4. In the Field

4.1 Taking care of your equipment in the field

Now we are ready to start taking photographs. But before we get caught up in the action here are some basic tips for taking care of your equipment.

- Keep your camera bag closed when you do not need access to it, especially when in a moving vehicle or on foot. Moving vehicles create a huge amount of dust that can contaminate your equipment.
- Never leave camera bodies or lenses lying around uncapped. If you have no lens attached to your camera, use a body cap to prevent dust getting onto your sensor
- As far as possible, avoid changing lenses in dusty conditions. It is not always possible, but try to change lenses when the vehicle is stationary not when it is moving
- Change lenses with your camera switched off. When your camera is switched on the electric charge in your sensor will cause it to attract dust far more easily
- In a moving vehicle keep your camera in your bag or hold it firmly, do not leave it on a seat where it can bounce off onto the floor or worse still, out of the vehicle.



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- If you get dust on your lens do not rub it off, blow and then gently brush it off
- Ensure that all memory/storage cards not being used in your camera are kept in sealed containers
- If the weather is cold, keep spare batteries in a pocket where they will stay warm. Cold batteries lose their charge far more quickly.

4.2 Preparation, Positioning, Patience

When you see the fantastic wildlife programmes on TV and see the stunning photographs in magazines it is easy to think that all you have to do is drive into a wildlife reserve and the animals will line up in front of you. If only it were so. For every great shot there are loads of discarded ones and for every hour spent watching wildlife there are hours, sometimes days, spent searching so it makes sense to do everything you can to stack the odds in your favour.

4.2.1 Preparation

Just about everything we have covered up to this point could be considered part of the preparation for your photographic trip.

One of the great rewards of taking a wildlife safari in Africa is that there is almost always something to see. The diversity of animal and birdlife is astounding and even though you'll be accompanied by an experienced wildlife guide your visit will be greatly enhanced if you can take a bit of time before you go to give yourself a very basic introduction to some of the creatures you might encounter.

At first the sheer number of birds and animals will seem overwhelming but once you start looking more closely and concentrate only on the ones that occur in the area you will be visiting the number becomes much more manageable.

Knowing a little bit about the behaviour and habits of the animals you're hoping to see can both enhance your chances of seeing them and of enjoying a better quality sighting when you do.

For example, if you know that in the dry season the animals in a particular area will make their way to a waterhole around dusk each day you can make sure that you get yourself set up in a prime position before they arrive. By doing this you will allow them to follow their normal routine without disturbance. If you approached the waterhole whilst they were already there, there is a real risk that you could frighten them and drive them away.



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If you have the opportunity, charge your camera batteries up each night so that you don't get caught out with batteries going flat whilst you are out taking photographs.

When you set off on your safari each day don't be shy about asking your guide what he/she expects to see. The information he/she gives you will help you decide which lens to attach to your camera so that you are ready for action.

4.2.2 Positioning

As mentioned in the preceding section, being able to get yourself into position before your subject arrives can give you a great advantage when it comes to getting the best photographs.

But even if you are not able to manage that, the position you take up will enhance or inhibit your photographic possibilities.

In most cases you will be seeking photographs that capture the animals in their full splendour so, apart from a few more creative shots around sunset when the sky is full of colour you'll want to make sure that don't find yourself shooting directly into the sun. Depending on the time of day you may prefer to have the sun lighting your subject from over your shoulder or from the side. It is therefore important to take account of the sun's position and the terrain before you approach your subject.

The other thing that your positioning should try and anticipate is the subject's probably direction of travel if it moves from its current location.

Using the same example mentioned above, if you know that a herd of elephants make their way to the waterhole every day at dusk and you happen to find them feeding an hour before dusk you have a terrific opportunity to plan how you will photograph them over the next hour or so.

You can photograph them in their current position, then move close to the waterhole where you can see their likely line of approach. This will allow you to get great shots of the herd approaching the waterhole.

Photographs of animals moving directly towards the camera are almost always more satisfying than those taken from the side or rear.

If you want to approach an animal that you know to be nervous of humans or vehicles, take the time to work out which way the wind is blowing. Try and approach with the wind in your face, otherwise it will blow your scent straight to the animal and it will smell you long before you get anywhere near it.

Remember that animals with young will be much more nervous than they would otherwise be.



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If you are in a vehicle you will most likely be sharing it with other people in 2 or 3 rows of seats. The vehicle will either have open sides or a roof hatch that lets you stand to take pictures. When you locate animals they will almost certainly be on one side of the vehicle or the other so it is worth taking a moment to work out how you will shift your position in the vehicle if they are spotted on the opposite side from where you are sitting. In doing this you need to be considerate of others in the vehicle, your movements will cause the vehicle to rock and will affect everybody else trying to take photographs. The next sighting could be on your side so show the person beside you the same consideration you'd expect them to show you.

4.2.3 Patience

Wildlife photography can involve a lot of searching and a lot of waiting. Above all be patient. Let events unfold in front of you.

If you find a pride of lions there is a good chance they will be sleeping, its how they spend most of their time, particularly in the heat of the day. But it is certain that as the day cools down they will stir and begin to move, either to drink or to hunt. Often both. Your guide will know which direction they are likely to move in and where they will go to drink. You can move into position and wait for them to arrive.

One benefit of sitting quietly, with the vehicle engine off, is that it allows you to become accustomed to the sounds of the animals around you. That in turn will help you notice when their calls change or if they fall silent, a sure sign that something is about to happen.

4.2.4 When the moment comes, grab the shot

We all want to capture a beautiful memorable image. But sometimes we only get a fleeting glimpse of animals and birds.

Always take a shot at your first opportunity, even if it is not the one you'd ultimately like. Better to get a poorly composed picture than none at all. Then, once you know you have at least captured the subject in camera, you can take time to get a better shot. As often as not the chance for that perfect shot may never materialise; the animal may simply disappear into the bushes.

I can't count the number of times I have heard people around me in a safari vehicle ask "did you get it?"



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5. Composition

Apart from that 'grab it before it disappears' shot, our aim is to take pictures that not only capture the subject in all its glory but also to create memorable images we can be proud of.

That means that unless you are taking photographs for some kind of reference purpose, you will relish the opportunity to demonstrate your individuality.

Don't forget that if you're hoping to sell or exhibit your photographs they need to be interesting and attractive to other people. It's all very well having a 600mm lens that can pick out the nose hairs on a warthog, but that is unlikely to appeal to anyone else. Good composition is about striking the right balance.

This is particularly important for users of bridge cameras. Many bridge cameras now have a zoom lens that extends up to the equivalent of 1200mm. That is one hell of a zoom. It is terrific for capturing images of birds and distant subjects but there are 2 very important things to remember: (1) It is often a good idea to leave a little bit of space in the frame around your subject. It is all too easy to find that you've chopped off the end of a tail by zooming in too close. (2) Even though bridge cameras are generally very light, it still takes practice to be able to hold a camera with a 1200mm lens steady. If your image is out of focus or blurred because of camera shake, there is not much you can do to rescue it. If you get a sharp image by only zooming to 600mm then you still have the option to crop your image later.

We've touched on most of these in earlier sections but let's take a look at some of the ways you can make your pictures special.

5.1 Position within frame

When photographing something, most people's immediate instinct is to place the main subject at the centre of the frame. There are lots of good reasons to do this.

Unless you've set it to do otherwise, your camera will weight its focussing and metering around the centre of the frame, so what is in the middle should benefit from the best exposure and sharpness.

You want to ensure that your main subject stands out from the background so that your viewer's eye is drawn to it.

There is nothing wrong with this and even with the subject matter in the centre of the frame there are still many ways to ensure that it is not lost against the background but you can also often use the background to good effect.



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However, by shifting the position of your main subject within the frame – to one side or top or bottom – you are far better able to convey its place within its environment. An easy example; A close up photograph of a leopard's face may illustrate in fine detail its beautiful features but only you will ever know where you took the picture. If you open the frame up a bit you can include the leopard's immediate surroundings and bring much more atmosphere to the photograph.

By careful positioning of your main subject within the frame you can evoke space or lack of it, movement or lack of it and you can draw the viewer's eye to follow a direction that you have decided.

When photographing a lone animal on a wide African plain it does not need to fill the frame. Instead why not place it in the bottom third and let the top two thirds be filled with sky to illustrate the contrast between the lone mammal and its vast surroundings?

Don't be afraid to experiment. If it works you can show everyone, if it doesn't you can delete the pictures and no-one will ever know. That's the beauty of digital.

5.2 Cropping

Of course it is much more satisfying if you are able to compose your picture and take it with all the elements perfectly balanced. But, for any number of reasons, that may not be possible. You may not be able to get close enough, the background may be really unattractive or simply too distracting.

As long as the photograph you take is of good enough quality – correctly exposed and focussed - you can crop it on your computer at a later stage to improve the composition. The amount that you crop does not need to be drastic, it may be sufficient to simply use cropping to adjust the position of your subject within the frame or you may wish to eliminate the background entirely and let your subject fill the frame.

5.3 Depth of Field

We've already looked at Depth of Field in earlier sections. Effective use of Depth of Field – either increasing or reducing it – can dramatically alter the way a photograph looks. When photographing a group of animals you can use Depth of Field to bring just one animal or the entire group into focus.

You can choose to make the background a feature of your picture by either keeping it in focus or by throwing it totally out of focus with a very shallow Depth of Field so that it becomes no more than blurred background colours.



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If you are photographing a bird in a tree you will usually find that to make your subject stand out you need to throw everything but the bird and its immediate surroundings out of focus.

Most DSLRs have a Depth of Field preview button that allows you to see how much of your photograph will be in focus before you actually take it. Become familiar with how this works so you can use it quickly in the field.

One essential thing to remember about depth of field is that it is one of the few things that you must decide at the time of taking your photograph; it cannot be adjusted in post processing. You can create blur but you can't bring an out of focus subject into focus.

5.4 Background

Take control of the background. If it is interesting or complimentary, use it, if it is unattractive or distracting, lose it.

There are various ways you can achieve this from cropping to creative use of Depth of Field.

You can also change your own position or angle of view to bring a different background into play.

You need to get to the stage where your eye automatically scans all corners of the frame for discordant elements when you are composing your picture.

One of the biggest annoyances in wildlife reserves is other vehicles. Just like you the occupants of these vehicles want to see the animals and want to get good photographs. That means they can often encroach into your field of view. We do everything possible to minimise this kind of interference by doing our game viewing in private concessions wherever possible but it is almost impossible to guarantee that it will never happen.

5.5 Movement

We have already mentioned how shutter speed can be used to freeze or exaggerate movement in a photograph. When considering the composition of your photograph, subject movement and its position within the frame are inextricably linked.

A picture of a cheetah, caught mid stride, can look very dramatic, but the overall effect can be enhanced if, instead of filling your frame with the cheetah itself you zoom out a bit and include the terrain it is running over or, better still, the prey it is chasing.

Though on most occasions you will want to photograph animals from the front, there are occasions where shots of the animals moving away from the camera can be very effective.



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5.6 Lighting

Shadows, reflections and the changing colour of light all play a part in your final composition.

You can create some stunning images by using the rich oranges and reds of an Africa evening to silhouette your subject.

When photographing near water you can decide how the reflections may enhance your composition. Consider a bird perched on a piece of wood in a body of water. If you wish to photograph just the bird you might place the subject in the bottom third of your frame so that it is in the foreground of your image. Alternatively you might prefer to capture the bird and its reflection in your photograph; in which case you would move the subject to a more central position. A third possibility might be to concentrate on the reflection and the water in which case you would move the subject to the top portion of your frame.

Shadows too can play a part in your composition. They do not always need to be thought of as the dark areas of the picture where there is no detail.

I always remember seeing a photograph of a group of camels walking across the desert. Their bodies were almost the same colour as the sand but the photographer had used an elevated viewpoint to brilliantly capture the image so that even though there was little contrast between the camels and the sand it look as though their shadows were walking in line across the desert.

5.7 Horizontal or Vertical

It may sound obvious but something as basic as the way you hold your camera will affect composition.

For taking portraits the camera is traditionally used in a vertical position, so the image is taller than it is wide and for taking landscapes the camera is traditionally held horizontally so the image is wider than it is tall.

There is a logic to this as each orientation allows the dimensions of the subject matter to be best accommodated within the frame.

With wildlife photography there are no hard and fast rules, it is for you to decide which orientation best suits your composition.

Most four legged animals are longer than they are tall. Therefore if you are photographing a lion from the side and wish to fill the frame you will most naturally hold the camera in a horizontal position. But if it is looking straight at you from a front on position a vertical format would be more natural.



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If you want to show your lion in the context of the wide African landscape you might still choose to use the horizontal format or you might choose to turn the camera and use an area of sky to reinforce the impression of space and openness.

For many people the choice of horizontal or vertical will be made primarily to allow their subject to fill as much of the frame as possible but it can be used much more creatively than that.

(Note: you'll find a number of PHOTO TIPS on our website to help you. [PHOTO TIPS](#))

6. At the end of the day

At the end of your game drive you will naturally be excited to review the photographs you have taken and there will be plenty of time for this. But before you head off to the bar there are a few good habits you should adopt in regard to caring for your equipment.

- Take camera and lenses out of your bag and give the bag a shake to remove any dust or debris that might have got in during the day
- Remove dust from your camera and lenses – using a blower - then replace lens caps
- Before returning camera and lenses to your bag make sure that your preferred lens is on the camera ready for the next outing
- Recharge your camera batteries, even if they are not empty
- Sort out your memory cards. Make sure you separate the ones that have been used from the ones that have not.
- Make a mental note of how many pictures you have taken and how many you have remaining. If you think that you might be running out of space then you may need to go through the pictures you have taken and weed out the poorer ones.
- If your bag or any of your equipment got wet, dry it thoroughly. Don't just leave it to dry by itself.

7. Back Home

Once you get home you have the pleasure of looking through all your photographs and reliving your trip. You also have the task of sorting and cataloguing your pictures.



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7.1 Sorting

The first task is to transfer them from your memory cards onto your computer. You'll find inserting the card directly into your computer or using a card reader is much quicker than connecting your camera to the computer by cable.

No matter what you intend to do with your photographs you should go through them carefully and sort them according to quality; from the best ones which you might want to enlarge or try and sell to the worse ones that you feel have no potential. Place them in appropriately named folders and use a system of file naming that will enable you quickly find and identify the images you want.

Once you have sorted according to quality you can then sub-sort according to subject. Some people prefer to sort by subject first.

7.2 Post Processing – Image Refining

Some form of photograph viewing software is packaged with almost every digital camera. Though these are great for viewing and cataloguing your pictures most of them do not offer extensive image manipulation features. For this you will need a program like Adobe Photoshop or Adobe Lightroom.

If you regularly shoot your pictures in RAW format you will almost certainly have Photoshop or an equivalent.

Once you have opened your photograph in Photoshop or Lightroom you will be able to adjust it to an almost infinite degree. You can find many books available that are dedicated exclusively to Adobe Photoshop or Adobe Lightroom if you are interested in learning more.

7.3.1 Selling your Photographs

A question I am often asked is "Will I be able to sell my photographs?"

It is very difficult to give an absolute answer.

Participation in a Wildlife Photography Africa workshop will arm you with all the knowledge you'll need to take outstanding pictures and the wildlife encounters you will have experienced should have given you ample opportunity to capture some stunning images.

But, and there is always a but, wildlife photography is a competitive field and there are a great many people out there who make their living at wildlife photography so the



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competition is fierce. That doesn't mean you won't succeed, but don't be too disheartened if success does not come at the first attempt.

If you have ambitions to try and sell some of your photographs it is well worth studying the publications you plan to submit them to so that you understand the kind of subject matter they will accept.

It is also worth remembering that you may have greater success with pictures of the animals and birds that are less photographed or events that are less common. To sell a picture of a lion, or even a pride of lions, it will need to have a special something that sets it apart from every other photograph of a lion. It could be the pose, it could be the light but there needs to be something about it that makes your picture special.