



TAKE BETTER PHOTOS IN NAMIBIA A step-by-step Online Training Course

Claudia & Wynand du Plessis

www.take-better-photos-in-namibia.com

The essential requirements & specifications that camera equipment should ideally have for wildlife & landscape photography in Namibia / Africa



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1. Introduction

The aim of this publication is to explain in easily understandable language the essential requirements & specifications that camera equipment should ideally have for wildlife and landscape photography in Africa, with specific reference to Namibia.

Understanding these essential aspects will make it much easier for you to evaluate any camera system and help you decide on the gear that will meet your specific needs.

We have seen many nature enthusiasts that are new to photography struggle to understand their own photographic needs and to make sense of the overwhelming range of modern camera systems.

By focussing on the essential requirements a camera system should have, we aimed at putting together a publication that will truly help you, dear reader, to make the right choices **before** you buy any camera equipment or go on your photo safari.

To make the most of your photographic trip to Namibia/Africa, you need appropriate equipment for travel, landscape and wildlife photography. As we are now in the digital age, this means a digital camera, **preferably a DSLR camera** with interchangeable lenses, or at least a top quality mirrorless camera.

DSLR cameras in general offer the best performance, image quality, options & durability, but are generally heavier and more expensive than mirrorless compact cameras. However, compact cameras are catching

up and in certain cases surpass DSLR equipment in new technologies, for example regarding the shooting of videos.

We'd like to point out that it is important that new and established photographers understand the meaning and application of the basic technical aspects of photography like exposure, shutter speed, ISO, aperture, depth of field, exposure compensation, AE bracketing, the meaning of full stops, camera shooting modes, exposure metering modes, white balance, autofocus (AF) types & focussing modes, etc.

We talk about various technical aspects when we discuss the essential requirements of your equipment without explaining them in too much detail, as we assume that you have a basic and practical understanding of these terms already.

However, if you need refreshing of some photographic terms & technical aspects, here is a link to a website that explains them in an understandable manner:

<http://www.exposureguide.com/photography-basics.htm>

(we do not take any responsibility for the accuracy and reliability of information presented there)

How do you choose from the overwhelmingly large selection of camera equipment?

Today's huge variety of camera makes, models and interchangeable lenses makes it often difficult to make the best choice to suit your needs.

If you have unlimited funds, buying the most expensive professional equipment may go a long way to ensure you are covered for all

situations, but this is not always the case. Digital photographic systems are advancing so fast that specifications, which used to be available only in top rated equipment, are now often found in entry-level gear. Also, cheaper equipment may have features that are more desirable and easier to work with for you.

Not too long ago the main question in deciding which camera system to choose was mainly: ‘Which camera gives you the best image quality’? The answer used to be: ‘A DSLR camera with a full format sensor’. This has changed. **Nowadays the main question has become: ‘Which camera is best for me’?**

To answer this question you need to clearly define your photographic needs & aspirations and then decide on which **key specifications** of camera equipment will meet your particular requirements. All other “gimmicks” or even advanced features of equipment are then of lesser importance for you. **This is the main focus of this publication.**



2. Essential requirements & specifications of camera equipment (mainly focussed on camera body specs).

2a) Reaction time: Shutter lag and autofocus lag

The ability of the camera system to activate with the least delay before focussing & capturing the shot is essential for serious photography, especially for wildlife photography.

The acceptable shutter lag should be less than 0,5 seconds for start up to first shot, and less than 0,08 seconds when the camera is ready and pre-focussed. The autofocus lag should be less than 0,15 seconds during continuous focussing mode.

Shutter lag and autofocus lag, together with poorer image quality and a slower capture speed, are some of the biggest drawbacks of using compact cameras for serious wildlife & landscape photography.

2b) Capture speed (or: frame rate) & number of continuous shots at fastest capture speed

For wildlife photography (WP), the faster the capture speed the better. Ten frames per second or more is very desirable and necessary to capture the best moments during fast action.

For landscape photography (LP) a high frame rate is in most cases of little importance.

The ability to capture as many images as possible in raw format continuously without interruption [during which the processor downloads

the images to the memory card and clears the buffer] is another important consideration.

The minimum number of continuous shots should be at least 35 photos in raw mode without interruption, but many cameras are already offering 100 or more continuous shots.

This is very desirable for wildlife photography, when capturing action, but of little consideration for landscape photography.

The interruption until the buffer is cleared should also not last longer than about 3 seconds maximum. This is also influenced by the processor speed and speed of memory card used.

2c) Processing chip

We recommend that you choose a camera model with the latest generation processors, as each generation gets better and faster. But do not forget about other essential aspects when buying the latest model, as new models often have little or no improvements in performance, but just more “gimmicks” added.

Cameras with dual processors give meaningfully better performance, such as very high continuous capture speed.

2d) Raw format

We advise you to always shoot in raw format as post-processing is nearly always necessary for serious photography uses, and the raw format gives you the most options.

If you consider buying a new camera, we advise you to not buy a camera that does not support raw mode.

Most cameras that offer raw mode also offer to capture jpg files at the same time. It is helpful to select the jpg files (that are optimized in-camera already and need less work in the computer) for less serious uses, and only post-process the raw files that will be needed for more serious and professional uses. Be aware that shooting in raw and jpg reduces space on your camera's memory cards considerably.

2e) ISO range

The ISO controls the sensitivity of your camera's sensor to a given amount of light. By increasing the ISO you increase the sensitivity to light, but also the 'noise' level [colour & brightness errors].

A camera with high maximum ISO values that still produces high image quality - and little noise - is very desirable.

For wildlife photography this gives you the ability to shoot in very low light conditions and still get sharp shots with little noise, which was not possible in the days of film cameras.

For landscape photography this allows you to shoot in low light using a high ISO but also a small aperture for maximum depth of field when needed.

Very good sensors have relatively little noise at ISO 6400, but all sensors show lots of noise at about ISO 25000 or higher, some much more than others. Images taken with such extreme high ISO levels are

useful and may be artistically intriguing, but the noise level is extremely noticeable, especially in darker & smoother tones.

For photographing in low light, full-frame cameras have meaningfully better quality at higher ISO settings (ISO 3200 to 6400) than cropped frame cameras, but this is only an important issue for photographers with very high professional standards relating to image quality.

In general, nearly everybody will agree that a dramatic action that is well exposed and sharp, but shows high ISO noise, has much greater appeal than a static & rather boring shot, that's been taken in great light and that is perfectly exposed and sharp with fine & smooth details.

2f) Sensor Resolution, Individual Pixel Size & Sensor size

Sensors with very high pixel resolution (= the number of picture elements per sensor) are great for capturing fine detail. This allows for bigger enlargements without significant loss in detail.

Full-frame cameras have usually higher pixel resolution than crop frame sensors, but not always. The top Nikon & Canon full-frame cameras have sensors with fewer pixels than many mid-range DSLR cameras. However, the individual pixels are also much larger, which results in much sharper and cleaner images with less noise.

The sensor size of full-frame cameras (24 x 36mm) is much larger (about 2,5 times larger) than the sensor size of cropped frame cameras, e.g. APS-C sensors (15 x 22,4mm) or DX sensors (15,7 x 23,5mm).

However, for wildlife photography it has many advantages to use a camera with a cropped frame sensor, as the comparative field of view is narrower on a given lens. Therefore, a 400mm telephoto lens on an APS-C camera gives a field of view equivalent to a 640mm lens on a full-frame camera. This magnification factor is desirable, considering that large telephoto lenses with wide maximum aperture settings are very expensive and very cumbersome to work with.

In contrast, for landscape photography a full-frame sensor is often more desirable. Firstly because of the better image quality and secondly, when using a wide-angle lens, a full frame sensor gives you the exact angle of view of your lens and not a cropped angle of view. For example a 24mm lens, which is traditionally a very popular lens for LP, becomes a 38,4mm equivalent lens on a cropped frame camera, which is often less optimal.

The fact that full-frame sensors are larger and therefore allow for shallower focus depth is excellent for setting the background in an animal portrait shot out of focus. An out of focus background helps to isolate the main subject and focus attention on the essential aspects in a photograph.

When using a camera with a cropped frame sensor, it is often more difficult to get nice 'out-of-focus backgrounds'. This becomes even more of a problem with sensors that are much smaller [8 times smaller] than full-frame sensors. Therefore carefully consider how important 'out-of-focus-backgrounds' are to you before buying, and rather choose a full-frame camera or at least a camera with an APS-C size sensor or DX size sensor, which are only 2.5 times smaller than a full-frame sensor.

2g) Image Dynamic Range & Exposure Latitude

The dynamic range (DR) is the limit of what a person can see, from bright to dark, within *the same exposure* or scene. If a specific scene that you framed in your viewfinder has a smaller DR than the camera's ability to "see" DR, it gives you the possibilities to recover detail from too dark or too bright areas with little loss in quality in post-processing.

The exposure latitude of a captured scene is the difference between the camera's DR and the scene's DR. Positive values tell you that you have options to recover details through post-processing, and negative values tell you that you have fewer options to recover detail, and that you should have used (for example) artificial lighting to add light to the darkest areas, thereby reducing the scene's DR value to be in line with your camera's (limited) DR.

In real-world tests cameras with full-frame sensors and larger pixel elements usually have a higher ability to recover detail in very dark or very bright areas with less noise than cameras with cropped frame sensors.

2h) Colour Depth

Colour depth is especially important for photographers shooting (human) portraits because a camera with an extended amount of colour depth produces smoother transitions between different skin tones.

The higher your sensor's colour depth value, the better. However, colour depth is less important than DR values, and most serious cameras have a high-enough colour depth values to meet most requirements in wildlife and landscape photography.

2i) Image Stabilization & Vibration Reduction

There are different systems, when it comes to image stabilization.

Canon & Nikon cameras, for example, offer lens-based stabilization, whereas some other makes offer sensor-shift stabilization. Each has pros and cons, which are discussed in greater detail in this publication:

<https://www.technobuffalo.com/2012/05/06/lens-vs-sensor-based-image-stabilization-which-is-better/>

In general lens-based stabilization is usually better when using long telephoto lenses, but camera systems that offer sensor-shift stabilization are often smaller & cheaper.

If you consider getting new equipment, it's important that your camera or your lens incorporates stabilization.

The traditional rule of thumb for capturing sharp, handheld imagery without image stabilization recommends that you shouldn't handhold a camera at shutter speeds slower than the equivalent focal length of the lens. This means a 400mm lens shouldn't be handheld at speeds slower than 1/400-second, a 200mm lens not slower than 1/200-second, etc.

Nowadays, image stabilization allows 2 to 5 stops advantages, meaning you may still be able to get sharp shots with a 500mm lens at shutter speeds of 5 stops lower, therefore at a 1/30th of a second. This was unthinkable 10 years ago.

However, it is still advisable to rather use faster speeds than in this example, and if your subject is not dead still you cannot get sharp shots at a 1/30th of a second, even if the camera is on a tripod.



3. The right lens to bring to Namibia

Cameras & lenses need the highest standard in autofocus to meet the requirements of demanding sports & wildlife photographers. This does not mean that there is not a place for manual focussing anymore, but in most situations autofocus is of a distinct advantage. Therefore, we focus here only on lenses that do have autofocus.

3a) Focal length:

Discussions on the focal length of lenses are related to full-frame digital cameras:

(For cameras with cropped frame APS-C / DX sensors the same lens will result in an image magnification of at least 1,5 times larger than when using a full-frame camera.)

- a typical 'normal' lens has a 50 mm focal length (the image perspective is similar to how we view everything around us)
- wide-angle lens: typically 35 mm or wider
- standard telephoto lens: typically 70 mm to 200mm
- long telephoto lens: 300mm or longer focal length

Recommended for WP:

- long telephoto lens with at least 300 mm focal length, as the wildlife is keeping its distance
- a very long telephoto lens of 600mm or longer may sometimes be needed too

- at waterholes with large herds of elephants a standard telephoto and even a wide angle lens should also be kept ready

Recommended for LP:

- wide-angle e.g. 16mm to 35mm
- 24mm or wider lens often better for grand landscapes
- macro lens: for close-ups
- medium & long telephoto lenses: for tighter landscape shots & abstracts

3b) Autofocus speed:

- For WP the faster and more accurate the autofocus the better. “Laggy” autofocus is often the reason why the best moments are being missed.

- We also use autofocus extensively in LP, but there speed is less important than accuracy.

3c) Number of autofocus points & number of cross-type sensors available:

- The more focussing points that are available, the more options you have to focus accurately and also compose, bracket & expose your shot most pleasingly.

- Most DSLR cameras use what’s called a phase-detection focusing system, whereas most mirrorless cameras, point-and-shoots, and mobile phones use a separate system called contrast-detect.

- Normal phase-detection sensors are better with focussing on pattern and horizontal or diagonal lines, and less accurate detecting vertical lines. The higher the number of normal phase-detection sensors the better, especially when people or animals are moving parallel to you or come towards you.

- A cross-type sensor is a horizontal line sensor and a vertical line sensor at the same AF point, meaning that point is able to detect lines in both orientations - that makes it more likely that the AF point will be sampling a feature that has the correct orientation to activate the sensor. The higher the number of cross-type sensors the better.

3d) Optical quality, lens design & sharpness of autofocus lenses:

- Not all lenses are made equal in performance, optical quality and sharpness. The measure of excellence in all aspects of photography is constantly increasing, and this also applies to optical quality and image sharpness that lenses can achieve.

- What used to be considered as excellent lens quality 20 years ago would now be considered as average lens quality. Photographers expect crisp and sharp lenses, and may switch to another camera make that offers better quality and performance. This is because overall lens quality and performance are still a major factor influencing the image quality and the ability to capture the right moment during demanding situations.

- Many camera manufacturers offer medium and top quality for the same focal length or zoom range, but with considerable price differences, with the top quality lenses being up to 3 or 4 times more expensive than the

medium quality lenses. Always try to get the sharpest and best performing lens you can afford.

- Third-party lenses made for Canon & Nikon are most often not as sharp and accurate in focus as the original lenses. But there are exceptions and it is worthwhile to investigate alternatives. Original lenses usually cost more than third-party lenses, but rather get the best lenses and a medium priced camera than the best camera and a medium quality lens.

3e) Internal focus & internal zoom function:

- The ability of lenses to focus and zoom internally reduces the size of the lens and increases the usability in real life. This is especially important for long lenses used in serious WP.

3f) Light-sensitive lenses / Fast lenses:

- Lenses with very wide maximum aperture settings (f/1.4 for wide angle or standard lenses, f/2.8 for mid-range telephoto lenses and f/4.0 to f/5.6 for very long telephoto lenses) are very advantageous as they provide maximum levels of light to enter when you need it, and allow the shallowest depth of field which is often desirable in all types of photography.

- Light-sensitive lenses are a must for serious wildlife and sports photographers.

3g) Telephoto lenses with fixed focal length vs. telephoto zoom lenses:

- Traditionally, fixed focal length lenses had better quality and often wider maximum apertures at a given focal length than zoom lenses, but this is not always the case anymore.
- The advantage of quality zoom lenses over fixed focal length lenses is numerous in wildlife photography. Most WP will take place from a car, where you often don't have the option to move around much, and where being able to zoom in or out to frame your subject as desired has great advantages.
- When on foot, especially when hiking in demanding terrain, having a quality long range zoom lens (100 to 400mm) is mostly all you need to get great photos for most situations where a telephoto lens is needed.
- For LP, zoom lenses offer just as many advantages over fixed focal length lenses, for example an ultra-wide angle zoom may often give you the best framing options where it is not possible to move closer or further away. The quality of high end wide angle zoom lenses is also extremely good.

3h) Number & versatility of lenses available for your camera make:

- A very important factor in choosing your camera make is the range of lenses to choose from for that camera. Canon & Nikon offer meaningfully more choices than Sony and most of the other camera makes.
- The handling, performance and "feel" of a lens are just as important as the specifications on paper. Many Canon users prefer staying with

Canon cameras because of the excellent variety, quality & performance of lenses to choose from, even though Nikon may be slightly ahead in terms of image quality of their camera sensors when compared to similar-class Canon cameras, especially in low light.



4. Additional features of modern cameras that are desirable or essential for serious wildlife photography (WP) & landscape photography (LP):

(The common “standard settings” found on most cameras are not listed here)

4a) Auto Exposure Bracketing (AEB):

Cameras with a wide AE bracketing range of +/- 5 stops (and not just the standard +/-3 stops) are a plus as a wide bracketing range is very useful for challenging light conditions and for HDR creations in post-processing. However, most entry-level cameras have good enough AE settings and functions, and this important aspect of photography is not further discussed here.

4b) External Flash:

Choose a new camera that has a “hot shoe” fitting for an external flash. If not, don't buy it. It is also great and very practical to have a built-in flash, but it is more important for serious photography to be able to add a powerful external flash.

4c) Viewfinder:

For serious photography, you need a camera with a viewfinder, not just an electronic LCD display screen. DSLR cameras have optical viewfinders, but mirrorless cameras have electronic view finders (or cheaper models just have LCD screens). The latest generation of mirrorless cameras offer great electronic viewfinders that compare well with optical viewfinders.

4d) Camera shooting modes:

Your new camera should have advanced shooting mode dials such as Aperture Priority, Shutter Priority, Manual & BULB modes. If not, don't buy it. Auto & Pre-Programmed modes are useful, but fall short for serious photography.

4e) Maximum Exposure Times:

Cameras for serious WP & LP should support long exposure times of at least 30 seconds, and also have a BULB setting to leave the shutter open for as long as you choose (and the batteries will last).

4f) Time lapse photography:

It's great if your camera already incorporates this function. Time lapse is a wonderful tool to liven up the presentations of your photography in your blog or website. A stand-alone intervalometer is not cheap, and another piece of equipment to drag around.

4g) Image Quality better without the Low-Pass Filter

A low-pass filter is also referred to as an anti-aliasing or "blur" filter. It is incorporated in most cameras to eliminate the problem of moiré by blurring the image reaching the sensor slightly. Extreme details are lost in the process but the problem of moiré is resolved. For nature photographers that hardly see moiré problems, it is a negative aspect.

However, the latest generations of some full-frame and cropped frame cameras now have removed the low-pass filter, resulting in sharper and crisper images. This is a great advantage and an important aspect to consider when buying a new camera.



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5. Other camera accessories & tools that should be part of your photo gear on your photo safari to Namibia / Africa:

5a) Memory cards (CF or SD cards):

Get the fastest memory card you can afford and that your camera supports. Take at least 3 fast cards of 32GB capacity each with (rather than just one large card). Download and format every night to be ready for the next day. CF cards are usually faster than SD cards, but most cameras only support one type.

5b) Laptop computer to download and view photos / External hard drives with card reader:

Serious WP & LP in great locations can generate more than 1000 photos (in raw mode) per day, and unless you plan to take 2-3 memory cards PER DAY with (a very expensive choice), you need to be able to download your photos and clear out the cards on a daily basis.

Download the photos onto a laptop computer, then delete the ones that are obviously unsharp or of poor quality. Additionally make a back-up onto an external hard disk.

If you do not want to take a laptop computer with, there are now external hard disks on the market with built-in card readers. They have the advantage of being much smaller than a laptop. However, the disadvantages are that they are nearly as expensive as a laptop, you will most likely only use them when on remote photo trips, and you will only be able to review your photos when back at home.

5c) Batteries and charger:

Take 3 rechargeable batteries per camera with, and don't forget the charger! Recharge every night.

5d) USB & charger cable:

Do not forget all the cables and chargers needed for all types of equipment.

5e) Camera bag for all equipment:

Select a large enough & sturdy, but light-weight bag to fit all your cameras, lenses, batteries & memory cards. You should ideally carry this as carry-on baggage when flying, so it cannot be too heavy or too large.

5f) Camera day backpack:

Take an additional smaller empty backpack with you to use as a day backpack to hold the essential equipment that you need on a short hike or in the car next to you. The large camera bag should also be in the car on a drive, e.g. on the back seat, and not left behind at your accommodation!

5g) Clear UV protection filters on each lens

A clear UV filter is very important to protect your valuable front element of your camera lens against scratches, and should be left on permanently. Rather choose a better quality than a cheap one.

5h) Neutral Density (ND) filter and Graduated Neutral Density filter for landscape photography

An ND filter is a filter with a uniform coating over the entire filter that does not influence the colour, just reduces the brightness. This is useful

to be able to get slow enough shutter speeds for longer exposures e.g. when you want to blur movement, and still being able to correctly expose your photo.

A Graduated ND filter is a filter with one half coated neutrally to reduce brightness, and the other half being clear to let in as much light as possible. This filter is most often used for scenes with bright sky and dark foregrounds to reduce the level of contrast and brightness in the scene for better exposures.

5i) Bean bag:

When taking wildlife photos from a vehicle in Etosha for example (and in most other wildlife areas in Africa), an alternative to a tripod is using a large bean bag that drapes over the open window. Animals often just stand a few seconds in an attractive pose before they turn away or move off. When anticipating an animal's behaviour in advance, the camera and large lens can quickly be rested on the bean bag, so that when the vehicle stops you are ready to start shooting. Bean bags can be of any flexible material, ideally cotton like a pillow case, and are filled with hard beans, lentils or even rice. Bring the empty bag with you and buy the ingredients in Namibia.

5j) Tripod:

For landscape photography a sturdy but light-weight **carbon fibre tripod** with a **ball-head system** and **quick release plates** are important for obtaining sharp images when shooting in low light with slow shutter speeds, when the camera's image stabilization cannot counter handheld shaking anymore (shutter speeds under 1/30th of a second depending on lens used). A tripod is also necessary for doing time-lapse photography

or for very long exposures, where for example water or star movement is blurred, but the rest of the image stays sharp.

For wildlife action photography on foot in low light carrying a heavy full format camera and large lenses, a tripod is necessary to prevent handheld-induced blur when taking photos and helps counter fatigue when holding the equipment for a long time.

But tripods are slow and tedious to use, and not well suited for action photography in general as the best moments are often missed.

The good news is that modern camera systems are already extremely effective in their image stabilization, and photos in many situation can easily be taken without a tripod and still be extremely sharp.



6. Examples, evaluation & comparisons of some cameras grouped according to criteria such as sensor size, resolution & shutter speed.

(for Wildlife & Landscape photography):

Also have a look at the website of “Camera Decision” to compare many cameras against each other. We agree with most of their evaluations:

<http://cameradecision.com/>

6a) DSLR cameras with cropped frame sensors in APS-C /DX-format:

Cameras compared are:

Canon EOS 7Dii (15,0 x 22,4mm sensor) & Nikon D500 (15,7 x 23,5mm sensor)

<http://cameradecision.com/compare/Nikon-D500-vs-Canon-EOS-7D-Mark-II>

Both these cameras are extremely well suited for action photography like sports, kids & wildlife. Their main advantages are:

- very fast continuous shooting speed (**frame rate**)
- very fast shutter and focus reaction times (therefore no noticeable lag)
- high sensor resolution
- high dynamic range & exposure latitude
- good image quality at low light and high ISOs (the Nikon is slightly better than the Canon)
- very good image quality at good light and low ISOs

6b) DSLR cameras with full-frame sensors: (24,0 x 36,0mm size)

Cameras compared are:

Canon EOS 5D Mark iv, Nikon D810A, Sony Alpha 7Rii & Pentax K-1

These cameras are extremely well suited for landscape as well as studio photography. Their main advantages are:

- medium continuous shooting speed (frame rate)
- fast shutter and focus reaction times (therefore no noticeable lag)
- very high sensor resolution
- very high dynamic range & exposure latitude
- very good image quality at low light and high ISOs
- excellent image quality at good light and low ISOs

<http://cameradecision.com/compare/Nikon-D810A-vs-Canon-EOS-5D-Mark-IV>

<http://cameradecision.com/compare/Sony-Alpha-7R-II-vs-Nikon-D810A>

<http://cameradecision.com/compare/Pentax-K-1-vs-Canon-EOS-5D-Mark-IV>

6c) Top of the range DSLR cameras with full-frame sensors (24,0 x 36,0mm size):

Cameras compared are:

Canon EOS 1DXii, the Nikon D5 and the Sony Alpha A99ii

These cameras are extremely well suited for action sports & wildlife photography, as well as studio photography. The Sony Alpha A99ii has been placed here because of the high continuous shooting capture speed. It could also be compared in many ways with the cameras in the above group. Their main advantages are:

- extremely high continuous shooting speed (frame rate)
- extremely fast shutter and focus reaction times (therefore no noticeable lag)
- high sensor resolution (the Sony has a very high resolution)
- very high dynamic range & exposure latitude
- extremely large sensor pixel area (the Sony has a large sensor pixel area only)
- very good image quality at low light and high ISOs
- excellent image quality at good light and low ISOs

<http://cameradecision.com/compare/Nikon-D5-vs-Canon-EOS-1D-X-Mark-II>

<http://cameradecision.com/compare/Sony-Alpha-A99-II-vs-Canon-EOS-1D-X-Mark-II>

6d) Superzoom Compact Bridge Cameras (*compete with DSLR camera systems for wildlife photography*):

Cameras compared are:

Panasonic Lumix DMC-FZ2500 and the Sony Cyber-shot DSC-RX10 III

Superzoom Compact Bridge Cameras have a crop sensor size of about 8.8 x 13.2mm (therefore 7 or more times smaller than full format sensors), and an image resolution of around 16 to 20 MP. They only have fixed-lenses, but with a very wide zoom range and ultra-telephoto capabilities. They are meaningfully smaller & lighter than DSLR cameras.

- extremely fast continuous shooting speed (frame rate)

- fast shutter and focus reaction times (therefore little noticeable lag)
- medium sensor resolution
- high dynamic range & exposure latitude
- medium image quality at low light and high ISOs
- good image quality at good light and low ISOs

<http://cameradecision.com/compare/Panasonic-Lumix-DMC-FZ2500-vs-Sony-Cyber-shot-DSC-RX10-III>

A note of caution: As a new photographer you may be tempted to go for cheaper modern super-zoom bridge cameras with optical zoom ranges of 50 to 60 times, and an astounding range of modern and tempting specifications, all in one camera. Examples are the Canon PowerShot SX60 HS, the Sony DSC-HX350 and the Nikon Coolpix P900. However, for photographers serious about image quality and performance, cheaper super-zoom bridge cameras are not a good choice. The sensor size is very small, the image quality is poor in low light and at ISO settings above 800, the largest aperture of the lenses at the longer focal lengths does not let in enough light, and the lenses are comparatively slow in focussing.

6e) Mirrorless “SLR-like” Cameras with interchangeable lenses

Cameras compared are:

[Olympus-OM-D-E-M1-Mark-II](#) and [Fujifilm-X-T2](#)

Mirrorless SLR-like cameras with interchangeable lenses are slightly larger than compact bridge cameras with fixed lenses, but meaningfully smaller and lighter than DSLR cameras. The Olympus has a four thirds sensor size of 13.0 x 17.40mm, and the Fujifilm has an APS-C size

sensor. The image resolution is 20MP for the Olympus and 24MP for the Fujifilm. The number of lenses available is very limited, especially for the Fujifilm cameras.

- extremely fast continuous shooting speed (60 fps for the Olympus!)
- fast shutter and focus reaction times (therefore little noticeable lag)
- high sensor resolution
- high dynamic range & exposure latitude
- medium to good image quality at low light and high ISOs
- good to very good image quality at good light and low ISOs

<http://cameradecision.com/compare/Olympus-OM-D-E-M1-Mark-II-vs-Fujifilm-X-T2>

Also check out the Panasonic Lumix GH5 against the Panasonic Lumix G81(G85 in the USA)

<http://cameradecision.com/compare/Panasonic-Lumix-DMC-GH5-vs-Panasonic-Lumix-DMC-G85>



7. Best lenses for Canon & Nikon cameras to choose for your photo safari *(for Wildlife, Landscape & Macro photography):*

7a) Canon (Canon has a very wide range of lenses available, which are often cheaper for the same performance & quality than similar Nikon lenses):

Canon EF 16-35mm f/2.8L III USM Lens (5 stars – very expensive)

Canon EF 24-105mm f/4L IS USM Lens (5 stars)

Canon EF 70-200mm f/2.8L IS II USM Lens (5 stars)

Canon EF 100-400mm f/4.5-5.6L IS II USM Lens (5 stars)

Canon EF 500mm f/4L IS II USM Lens (5 stars – very expensive)

Canon EF 100mm f/2.8L Macro IS USM Lens (5 stars)

7b) Nikon: (Nikon also has a very wide range of lenses available, but they are often more expensive for the same performance & quality than similar Canon lenses. Nikon lenses are often a bit heavier than Canon lenses, but are arguably a bit more durable):

Nikon 16-35mm f/4 G ED (5 stars)

Nikon AF-S NIKKOR 24-70mm f/2.8E ED VR Lens (5 stars)

Nikon 70-200mm f/2.8G VR II (5 stars)

Nikon AF-S NIKKOR 200-400mm f/4G ED VR II Lens (5 stars – very expensive)

Nikon 500mm f/4G VR (5 stars – very expensive)

Nikon AF-S VR Micro-NIKKOR 105mm f/2.8G IF-ED Lens

7c) Other camera makes: Other camera makes like Sony, Olympus, Pentax, etc. also have excellent lenses available, but in general offer less options & variety than Canon or Nikon. Therefore use the list here of Canon & Nikon as reference to compare lenses with similar specifications from other camera makes to help you choose the best lens.



8. What about cheaper options in cameras and lenses than listed so far? Are they any good?

You do not need a Euro 5000 camera and a variety of lenses costing Euro 15 000 or more to take great shots. The top equipment listed above should be used as a guideline of the best specification available in their groups, and to compare and judge cheaper equipment with, especially in terms of image quality and performance.

A Euro 550 camera with mid-range lenses can in most cases take excellent photos, but as soon as the situation becomes more challenging in terms of contrasting or very low light, or very fast frame rates needed to capture the best moment, the top equipment will give consistently better results.

If you are on a very limited budget, buying a cheaper camera with mid-range specs, and the best lenses you can afford is often a better choice than spending your entire budget on a very expensive full format camera, and then buying the cheapest lenses available. This is seldom a good idea.

Mirrorless cameras are constantly improving in image quality & performance, but one of the main advantages of DSLR cameras from for example Canon & Nikon over mirrorless cameras is that it is often quicker and easier to make changes to settings when you need to act fast. The ability to capture precisely the right moment often makes the difference between a good image and a great image. However, even on this aspect mirrorless cameras are catching up very fast, and being smaller and lighter gives them many advantages over DSLR equipment.

This is also important even for photographers making their living from taking photos.



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THE END