How To Shoot

almost anything with your Canon EOS

2nd edition

By Nina Bailey

About this book

The idea for this book came from a discussion I was having one day with a group of photographers about their need a recipe book, to look up the settings needed for specific types of photography. It stemmed from a general conversation about the fact that amateur photographers shoot a much wider range of subjects than the majority of professionals, making it much harder to remember the settings that work.

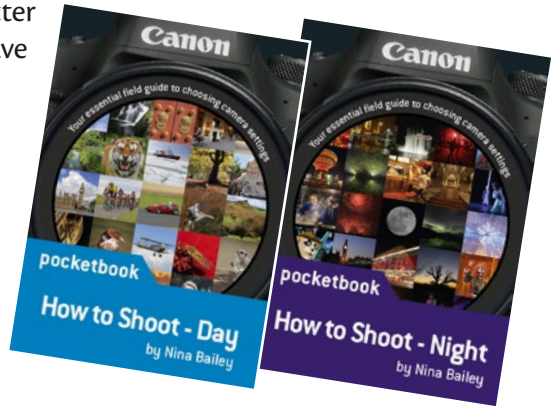
Most professionals have specialist areas for which they know the settings and controls that work for them and their business. A wedding photographer will be an expert in reading the light, in dealing with difficulties of white dresses and black suits, but may not be as sure of the settings needed for capturing high-speed action. Amateur photographers like to tackle every conceivable aspect, especially whilst learning, and specialisation tends to come later.

This book also complements a couple of my EOS Pocketbooks, How to shoot: Day and How to shoot: Night, (below) which are designed as small, portable and pocketable guides that give you the 'recipes' you need to shoot specific types of photography. With more space in this book, I have added an additional 12 topics to the ones found within the Pocketbooks, which may be useful for more specific types of photography. This book also provides a more comprehensive volume, explaining the techniques in more depth.

In this second edition of **How to Shoot almost anything with your Canon EOS**, there is now a comprehensive reference section, plus a features and functions section that looks at the key camera features talked about in more detail. It has also been updated to reflect the changing technology with the new ranges of EOS M-series and R-series cameras, so if you own a mirrorless camera then there's up-to-date information for you. For more specific camera advice, check out my range of EOS camera guides at: **www.eos-magazine.com/ebooks**

So here it is – a photographic recipe book to help you get better images of almost anything you choose to shoot. I hope you have many happy hours of pursuing your photographic dreams.

Nina



About the author

Nina started her career in the retail sector of the photographic industry and then moved to Canon UK where she had a successful nine years looking after training, exhibitions and marketing both in the UK and also within Europe. This gave Nina an unrivalled knowledge of not only the Canon EOS system but also how to develop and enhance the skills of photographers of all ability levels.

Nina started her own business in 1999, concentrating on training for amateur photographers. She is also at the forefront in developing the EOS Training Academy both online and within its practical day courses. In 2014 Nina started producing her own range of ebooks to bring photography training to an ever wider audience. In 2015 Nina became Technical Editor for EOS magazine and produces articles and images for each issue. In 2017 Nina launched the every growing range of Pocketbooks, which are small A6 pocket sized guides designed as aide-memoires to go with you when out shooting.

Nina started taking images when she was very young and is still a very keen photographer, both professionally and personally. Nina loves travel, landscape and wildlife photography and still shoots occasionally commercially though most of the images she shoots these days are for her own extensive range of books.

How to use

This book splits into five main chapters. There are links set up on the front page of each section that allows you to jump quickly to any other section. Each chapter has its own index at the start which are linked to the other pages – this will make the book easier to use. I have also put in links on the main chapter heading pages that link to the other chapters and at the bottom of each page are links to go to the index of that chapter and the main index.

The **Reference chapter** gives you the basic knowledge you need to understand the techniques that are being explained within the book. It will also act as a useful reminder if you have not shot any images for a while and need a refresher as to what some of the topics are.

I spend a lot of my time teaching photographers of varying levels of experience, and on a lot of the intermediate and advanced events we recommend that you have a good understanding of the basics of photography. What often emerges on the courses, is that what I consider to be the basics, is a much wider field of topics than most photographers expect. Although most photographers understand some of the basic terms their understanding of those settings, what they do to images, how the settings work together and how they are affected by the light levels we are shooting in, is lacking in a high proportion of photographers, especially those that are mostly self taught. It is most often the lack of understanding or misunderstanding of these basics, which is responsible for photographers not getting the results they want to achieve. So you might find it useful to read this section first before trying to put some of the techniques into practice

Light levels vary immensely. I spend some time talking about this in the reference section and so although I can say that a certain shutter speed or aperture might be needed for the effect, other things such as the ISO needed to get those settings are not so easy to provide, as it depends on the light levels you are shooting in. To help with this I have included in the reference section a collection of exposure charts for the different weather and lighting conditions you are likely to come across, to allow you to look up the range of settings you are likely to need.

ISO 10000, EOS 5D Mark IV

ISO 12800 , EOS 5D Mark III

ISO 12800, EOS 5D Mark IV

ISO 16000, EOS 5D Mark III

The **How to shoot** section is formed of 56 different sections sp **Day, How to shoot Indoors**, which has its own reference section a **Night**, all of which are indexed from the second page as well as from t book. Each section consists of a settings table, an explanation of what is list of things you need to think about and a collection of images and the setti were taken at to give you a little inspiration.

The thing that is important to realise when settings are given is that they are right for that place, time and shooting conditions. For some images there will be a wide range of settings that will give identical looking results, whilst there are other subjects where the settings needed are very specific and it may only be the ISO that varies from one image to another. Some of the ISO settings may seem to be very high. Modern cameras are capable of giving incredible quality at the higher ISO settings and by far the biggest cause I see on training courses for images that do not come out as expected is the ISO setting is too low. The choice is simple in low light: either get blurred images due to camera shake or subject movement, or use the right ISO and accept small amount of picture noise. The quality you can get from the higher ISO settings is shown in the images on this and the next page.

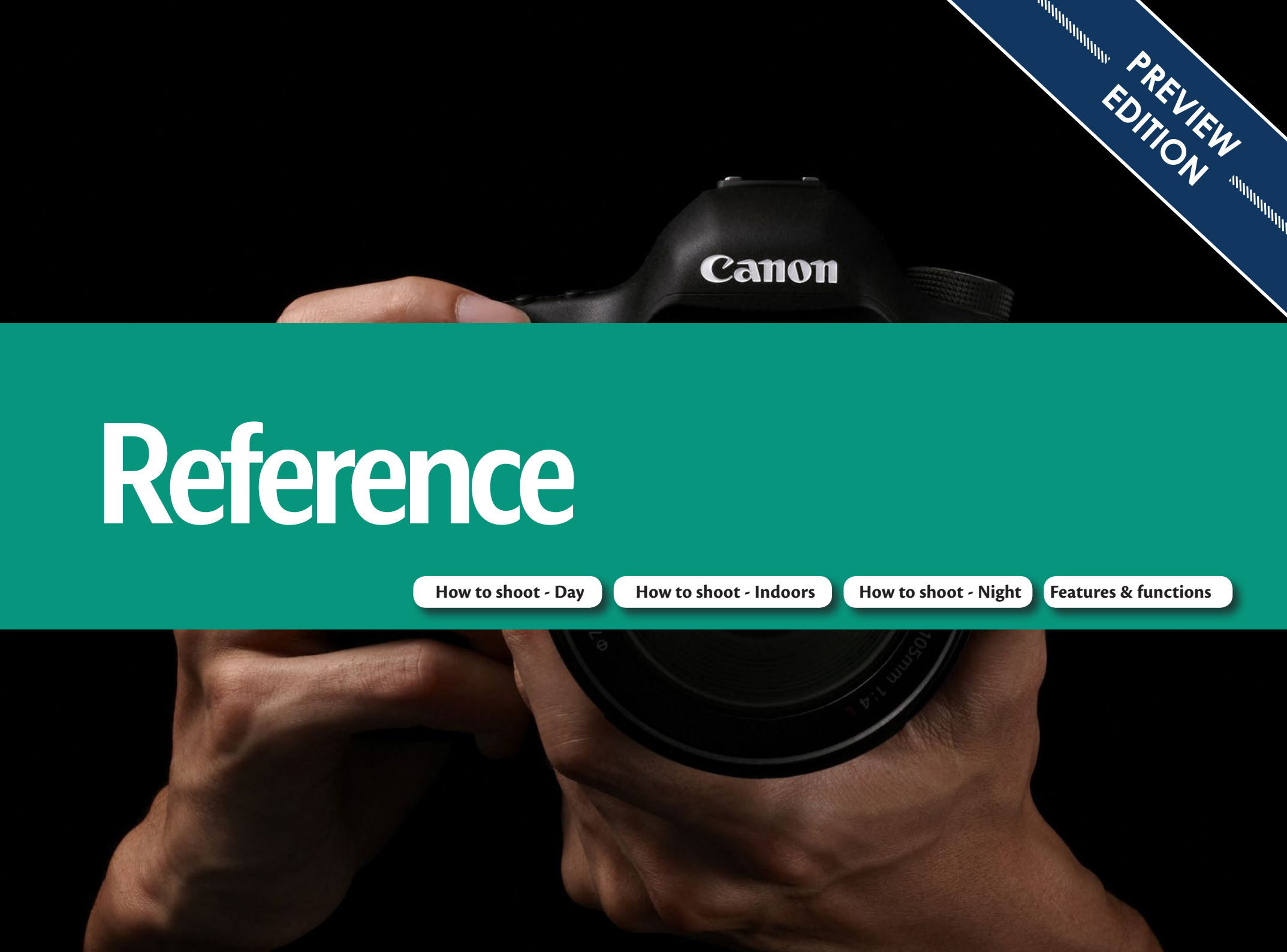
For the menu set options I have a final chapter within the book, called **Features and Functions**, that looks in-depth at many (there is not space to cover all of them) of the options that will be mentioned within the **How to chapters**. This has been done to save space and avoid the need to repeat the explanation on many pages as some features can be used with many different shooting scenarios. For 2020 I have added some of the new features that have appeared on the mirrorless models. I also mention on the how to shoot pages some of the additional settings that are useful for that type of photography, some may be turned on as a default, whilst others will need to be set up on the camera. Most of these options will be set within the camera's menu system, though some will also feature on the Q screen on the rear of the camera.

The Q screen is where most of the major camera features are set and has now been on the EOS range for a decade, appearing first on the EOS 5D Mark II and EOS 50D. Models older than this will have most of those option set via the function buttons on the top or rear of the camera. I look at this newer, easier way of setting camera functions in the reference section in more depth, if you're not familiar with it.

Contents

Items marked with • are newly added for this 2nd edition book.

Items marked with • are newly added for this 2nd edition book.



PREVIEW EDITION

Reference

How to shoot - Day

How to shoot - Indoors

How to shoot - Night

Features & functions

About the reference chapter

Due to its short length (short considering how many topics are covered) this book needs to have concise descriptions. Therefore it will use a number of specific photographic terms. This chapter is to help you understand some of the terms that you may not be familiar with. **Items marked with a • are newly added for this 2nd edition book.**

This chapter contains what I consider to be the photographic basics, that every photographer should know about and should be able to use without too much effort. Plus in the update I have included some new topics that are now becoming more relevant to understand.

I lead a lot of training events and one thing that over 20 years of training photographers has taught me, is that the grasp of these basics can vary a lot. Indeed most weeks on what are considered to be intermediate or advanced level events I find myself covering a good selection of things that I would consider to be basics and what are really covered on the beginner level events.

So although there will be some photographers who are fully conversant with these topics there will be many that will need this reference section to brush up the basic understanding to make the most out of the techniques explained within this book. I recommend that you take at least a glance through it, if nothing else look at the pictures and their captions as some may well challenge what you believe you know. The how to section follows this reference section.

There is then a final chapter at the end of this book called **Features and Functions** that looks at some of the commonly used camera settings that I will refer to within the How To Chapter and explain in more depth, what they do and the main ways of setting them on most of the EOS range. This avoids repetition of topics in the rest of the book. This is very generic and the specific books on individual EOS models would explain this in more depth specifically for the model that you have.

Reference chapter index

Camera launch dates

This may seem to be a strange thing to put in the reference section. However, I have included it as it is useful to know when your camera model came out, It also avoids repeating lists of cameras many times within the book – it is easier to say that a particular feature appeared in a specific year and has been on almost every camera since its introduction.

The exception to this rule tends to be the very basic models, such as the EOS 2000D and 4000D. These models are designed to be very affordable, and to achieve this Canon uses older processing chips, called DIGIC processors. As the DIGIC processor is what powers your camera, this means that some of the very latest features may not be available with older versions. So it is worth looking at the DIGIC version as well, as some of the key camera features introduced in 2015 rely on having at least a DIGIC 6 processor, yet models such as the EOS 2000D and 4000D (introduced in 2018) use the DIGIC 4+ processor version.

The latest processor version is DIGIC X, introduced on the EOS-1D X Mark III. At the time of writing, most current models are using either DIGIC 7 or 8 versions.

More advanced cameras – such as the 1D- and 7D-series – shoot at faster frames per second rates and have more sophisticated focusing systems, so it is common for them and similar models in the range to use two processors to give additional processing power. This is indicated in the table where it says 'dual' in the DIGIC version.

	Production dates	DIGIC Version			
			EOS 250D/Rebel SL3	2019 - Curre	
EOS-1D	2001 - 2004	-	**EOS 300D/Rebel**	2003 - 2005	
EOS-1D Mark II	2004 - 2005	II	**EOS 350D/Rebel XT**	2005 - 2006	
EOS-1D Mark II N	2005 - 2007	II	**EOS 400D/Rebel XTi**	2006 - 2008	II
EOS-1D Mark III	2007 - 2010	dual III	**EOS 450D/Rebel XSi**	2008 - 2010	III
EOS-1D Mark IV	2009 - 2012	4	**EOS 500D/Rebel T1i**	2009 - 2011	4
EOS-1D X	2012 - 2016	dual 5+	**EOS 550D/Rebel T2i**	2010 - 2012	4
EOS-1D X Mark II	2016 - 2020	dual 6+	**EOS 600D/Rebel T3i**	2011 - 2015	4
EOS-1D X Mark III	2020 - Current	8 and X	**EOS 650D/Rebel T4i**	2012 - 2013	5
EOS-1Ds	2002 - 2004	-	**EOS 700D/Rebel T5i**	2013 - 2015	5
EOS-1Ds Mark II	2004 - 2007	II	**EOS 750D/Rebel T6i**	2015 - 2019	6
EOS-1Ds Mark III	2007 - 2012	dual III	**EOS 760D/Rebel T6s**	2015 - 2019	6
EOS 5D	2005 - 2008	III	**EOS 800D/Rebel T7i**	2017 - Current	7
EOS 5D Mark II	2008 - 2012	4	**EOS 850D/Rebel T8i**	2020 - Current	8
EOS 5D Mark III	2012 - 2016	5+	**EOS 1000D/Rebel XS**	2008 - 2011	III
EOS 5D Mark IV	2016 - Current	6+	**EOS 1100D/Rebel T3**	2011 - 2014	4
EOS 5DS	2015 - Current	dual 6	**EOS 1200D/Rebel T5**	2014 - 2016	4
EOS 5DS R	2015 - Current	dual 6	**EOS 1300D/Rebel T6**	2016 - 2019	4+
EOS 6D	2012 - 2017	5+	**EOS 2000D/Rebel T7**	2018 - Current	4+
EOS 6D Mark II	2017 - Current	7	**EOS 4000D/Rebel T100**	2018 - Current	4+
EOS 7D	2009 - 2014	dual 4	**EOS D30**	2000 - 2002	-
EOS 7D Mark II	2014 - Current	dual 6	**EOS D60**	2002 - 2003	-
EOS 10D	2003 - 2004	I	**EOS M**	2012 - 2015	5
EOS 20D	2004 - 2006	II	**EOS M2**	2013 - 2015	5
EOS 30D	2006 - 2007	II	**EOS M3**	2015 - 2018	6
EOS 40D	2007 - 2009	III	**EOS M5**	2016 - Current	7
EOS 50D	2008 - 2010	4	**EOS M6**	2017 - 2019	7
EOS 60D	2010 - 2015	4	**EOS M10**	2015 - 2017	6
EOS 70D	2013 - 2016	5+	**EOS M50**	2018 - Current	8
EOS 77D	2017 - Current	7	**EOS M100**	2017 - 2019	7
EOS 80D	2016 -2019	6	**EOS M200**	2019 - Current	8
EOS 90D	2019 - Current	8	**EOS M6 Mark II**	2019 - Current	8
EOS 100D/Rebel SL1	2013 - 2017	5	**EOS R**	2018 - Current	8
EOS 200D/Rebel SL2	2017 - 2019	7	**EOS RP**	2019 - Current	8

Sensor sizes

EOS models have two different sizes of imaging sensor today. It used to be three with the professional models offering a 1.3x sensor as well but this vanished when the EOS-1D X appeared as a full frame model and has not been on any models since then.

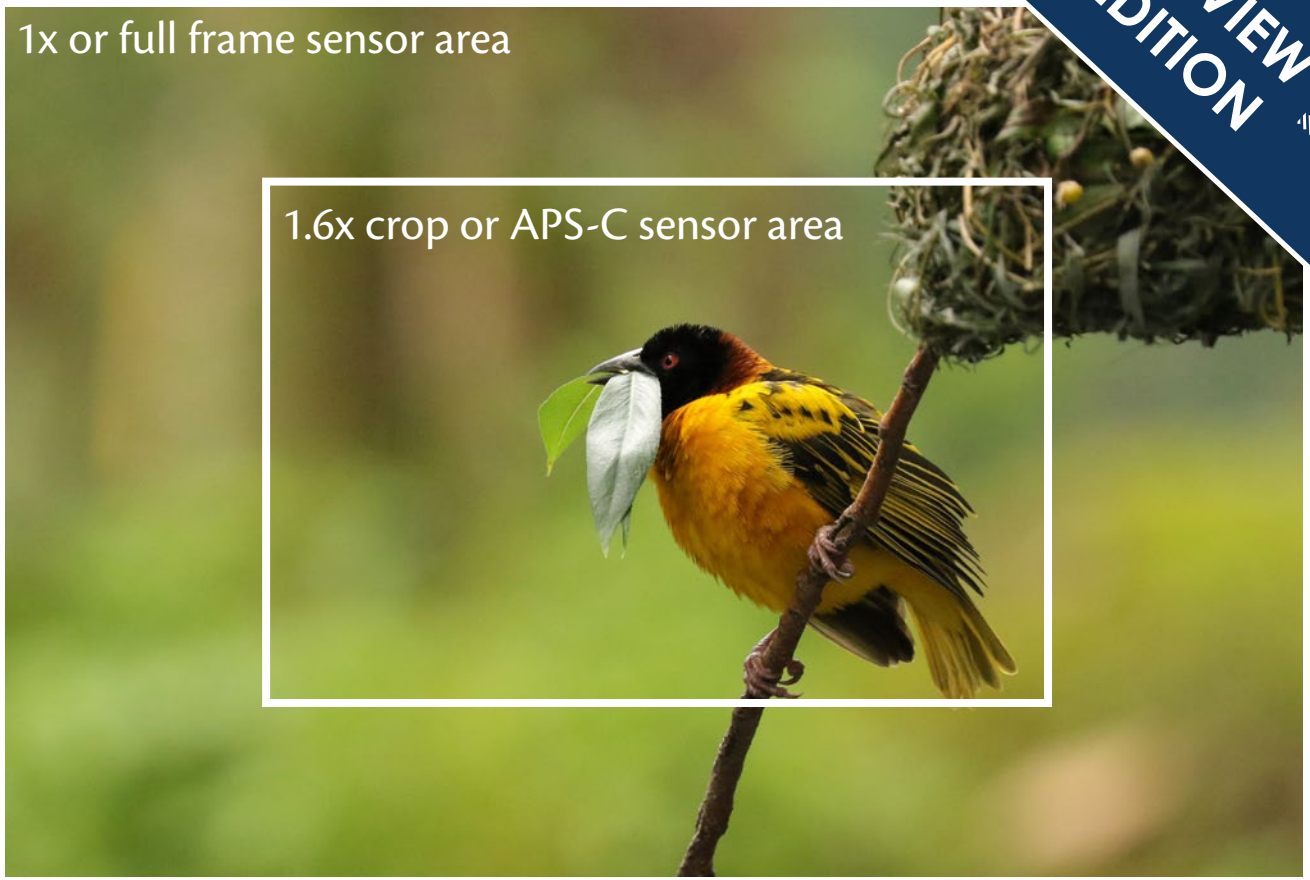
This is an area that some photographers get very confused about so I thought it was worth including in the reference section to understand the differences made by the sensor size.

Full frame or 1.0x sensors are found on the high end models (EOS-1D X series, EOS 6D, EOS 5D-series and R series only). The sensor is 36mm x 24mm in size.

APS-C or 1.6x crop sensors are found on the more affordable models and have a sensor size of approximately 22.4mm x 15mm.

This difference in size changes what a specific focal length of lens will capture. The smaller sensor effectively crops the image compared to the full frame models. The crop factor is often called a magnification factor, though a 300mm lens is always a 300mm lens regardless of the body that you use it on. But the smaller sensor effectively crops the area that is being captured by the lens, so it looks like the lens magnifies more.

The crop can be a good thing if you mostly shoot with telephoto lenses or macro lenses as it makes filling the frame a lot easier and you do not need to buy such long lenses. However, it will mean that you need to buy significantly wider lenses to give a good wide angle than you would need on the full frame models.



This is why Canon make the EF-S range of lenses for the models featuring the smaller sensor – to give a range of wide angle lenses especially designed for these models at a more affordable price point.

The image above shows the benefit of using a 400mm lens on a APS-C or 1.6x model compared to on a 1.0x or full frame model as it is much easier to fill the frame.

However, when shooting subjects that need wide angle lenses, the benefit with the 1.0x or full frame models is that a subject fits in the frame nicely with a 24mm lens. On an APS-C or 1.6x model it will need a 15mm lens to achieve the same.

Sensor sizes

This is why we have listed the focal length from both in the table below, as with wide angle lenses it does change how the lens is described – the lenses for the smaller sensor cameras need to be a much shorter focal length to give a good field-of-view.

	1.0x / Full frame	APS-C / 1.6x
Ultra wide	11mm - 20mm	10mm - 14mm
Wide angle	24mm - 35mm	15mm - 35mm
Standard	36mm - 60mm	36mm - 60mm
Telephoto	70mm - 300mm	70mm - 300mm
Ultra tele	400mm - 800mm	400mm - 800mm

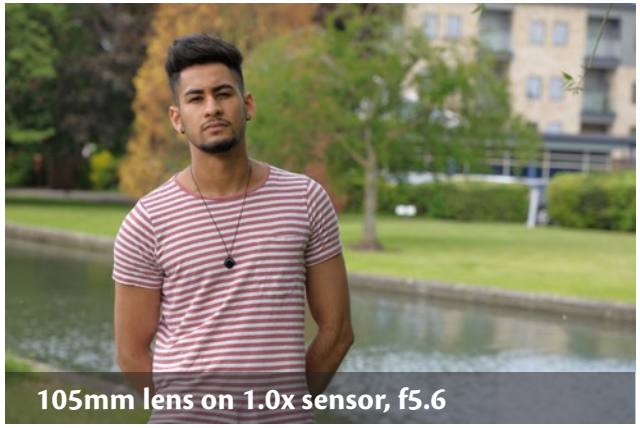
I have given a chart below that shows the focal length that is used on the 1.0x or full frame models and shown to the right of it the lens that would be needed on the 1.6x or APS-C models to give exactly the same amount in the frame.

1.0x or Full frame	1.6x or APS -C sensor
16mm	10mm
24mm	15mm
28mm	18mm
50mm	31mm
70mm	44 mm
105mm	66 mm
135mm	85mm
200mm	125 mm
300mm	188 mm
400mm	250 mm
500mm	312 mm
600mm	375 mm
800mm	500 mm


17mm lens on 1.6x sensor, f5.6


28mm lens on 1.0x sensor, f5.6


68mm lens on 1.6x sensor, f5.6


105mm lens on 1.0x sensor, f5.6

The images above were shot at the same distance to the subject using focal lengths that closely matched each other, but on bodies with the two different sensor sizes. Although the area captured is the same the backgrounds are more blurred on the full frame camera because of the longer focal lengths being used.

The 1.6x or APS-C models actually make it easier with landscape to get everything sharp due to the shorter focal lengths; however at the same time it also makes it harder to get good background blur as the lenses being used are ones that do not give blur as easily. This is compounded by the narrower aperture that the lenses normally have in an effort to keep them small, light and affordable.

Viewing difference DSLR vs Mirrorless

DSLR – LOOKING THROUGH VIEWFINDER

DSLR – TAKING AN IMAGE OR USING LIVE VIEW

MIRRORLESS - ALL OPERATIONS

It is important to understand how Mirrorless cameras differ from the more traditional DSLR models that we are used to, as this does affect how they are used to a degree.

A DSLR model has a reflex mirror. When viewing, this mirror is down, allowing light to be reflected up into the camera's pentaprism and then up into the camera's optical viewfinder. This is shown on the image above. By utilising a reflex mirror we are able to see through the lens. This allows us to see the image being captured through the lens.

Of course the mirror is actually blocking where the image is going to be taken and so when the shutter is fired, the mirror lifts up and the picture is then taken through onto the image sensor. Although this allows us to see both framing and focusing, it does not allow us to preview exposure or white balance.

Later DSLR models are fitted with a feature called Live View. This allows the camera to be used with the mirror raised, utilising a direct feed from the imaging sensor. This allows exposure, white balance and other image processing options to be previewed in real-time before the image was taken.

On mirrorless models both the reflex mirror and the pentaprism have been removed. On R and M series mirrorless, the pentaprism is being replaced by an electronic viewfinder. In addition the image can also be viewed on the rear screen just like when using Live View on the DSLR models.

However, not all mirrorless models have electronic viewfinders, relying instead on the rear screen LCD screen for viewing the image.

Regardless of viewing in an electronic viewfinder or on the rear screen, mirrorless models allow you to preview exactly how the image is going to look when taken, when shooting with ambient light. If shooting with flash this changes as you cannot preview flash light until the image is actually taken.

Mirrorless choices

The range of models in the EOS range has expanded significantly in the last couple of years. The R series mirrorless models, which all have electronic viewfinders, were introduced at the end of 2018 and have brought the size and weight of full frame models down significantly and allows access to the benefits of full frame photography to new audiences. At the same time the M series range has been expanding and now has a number of products that either offer an electronic viewfinder or have the option of a viewfinder than be clipped on as shown bottom right.

I consider an electronic viewfinder to be an essential on mirrorless models for a number of reasons:

Firstly it gives better camera handling when handholding, as it gives the standard three points of contact, right hand on grip, left hand supporting lens and eyepiece against eyebrow. This three point approach ensures the best practices in-camera handling and prevents blur from camera movement occurring.

Secondly, if you wear glasses the viewfinders can all be adjusted for your eyesight, whereas to use the rear panel you need to wear glasses.

Thirdly, in bright light it is not easy to see the rear displays and judging exposure on them is almost impossible as they are so hard to see. The electronic viewfinders allow you to see the subject clearer and make more informed choices as to any adjustments that need applying to the image.

WHAT IS THE DIFFERENCE BETWEEN THE R AND M SERIES?

The R series models are full frame cameras, whilst the M series feature the 1.6x or APS C sensors. They both have their own lens systems, RF lenses for the R series and EF-M lenses for the M series. The two new series of lenses cannot be interchanged in any way.

However, the EF and EF-S lenses from the DSLR system can be fitted onto both ranges thanks to their own dedicated EOS Mount adapters that convert the lenses over to the new format. The Mount adapter for the M series can take both the EF and EF-S lenses fully compatibly.

The Mount adapter for the EOS R allows both EF and EF-S lenses to be fitted, but the EF-S lenses automatically turn on a crop mode when fitted that will give a reduced number of pixels due to the smaller area captured by these lenses.

Mirrorless advantages

Mirrorless offer several distinct advantages over the DSLR modes. The one that is always talked about is the reduction in size and weight of the outfit. Though for me that is not their key appeal, and at the moment the size of the available RF lenses negates any weight saving.

YOU SEE THE IMAGE BEFORE YOU TAKE IT

On a DSLR you see through the lens and so preview focusing but that's it. On a mirrorless model you actual see the exposure just as it's going to be captured, before you take the image. That's an obvious advantage making exposure errors a thing of the past.

YOU CAN PREVIEW THE CONTRAST IN THE SCENE

What we see through a DSLR is not what we capture. Our eyes see a much wider range of tones than can be captured by a digital sensor, and it's not a small amount. Contrast can double when the image is taken and so dark areas become darker and even though we can see into them, they can become black in the final image. Whites at the same time become brighter and therefore can burn out in the final image.

This is why sometimes images are captured far from what you saw at the time of taking. Professionals know this and should, if they are competent photographers, be able to visualise what the image is going to look like, but that not so easy for enthusiast photographers who do not use a camera every day and do not have that level of expertise or experience.

EXPOSURE CORRECTIONS ARE APPLIED IN REAL TIME AS YOU VIEW THE IMAGE

So for a tricky image such as the one to the right you can dial in exposure compensation until the image looks exactly as you want it to be captured. So incorrectly exposed images are a thing of the past.

YOU SEE THE ACTUAL COLOURS YOU ARE GOING TO GET AND WHITE BALANCE ADJUSTMENTS SHOW UP STRAIGHT AWAY

This means that white balance corrections can be applied and previewed in real time, once again meaning that less postproduction is necessary to get images correct.

YOU CAN PREVIEW DEPTH-OF-FIELD WITH NO BRIGHTNESS LOSS

Although the cameras do not have a depth-of-field preview button, it is a facility that can be added onto the models using their custom controls. With a DSLR when the depth-of-field is previewed the image in the viewfinder will darken. When shooting with mirrorless you see the depth-of-field change but there is no dimming of the viewfinder thanks to the exposure simulation system.

FOCUSING IS OVER ALMOST THE WHOLE FULL VIEWFINDER AREA NOT JUST IN THE CENTRE

DSLR models are limited to an area in the centre of the frame for focusing regardless of the number of focusing points they have due to the way that the DSLR focusing systems work. The mirrorless models can use virtually the whole viewfinder area for focusing.

Mirrorless drawbacks

I have been using a mirrorless model, the EOS R, for over a year now alongside my 5D Mark IV and I really like the concept of mirrorless shooting. The EOS R is OK but it's not a camera I love due to some of the controls and when something better is available I will be upgrading. I personally think the RP is a nicer model to use, having tested it on a trip for a week. The problem for me personally is the lack of compatibility between the RP batteries and the ones my other camera uses and the more limited time they last. Though for most photographers that is less likely to be a problem.

However, at the current time there are some areas of photography where I will not recommend mirrorless at the moment. Though I will say that the M6 Mark II has started to improve things on the M series and the EOS R5 when it eventually appears will improve things on the R system.

The area where there are problems is any type of action photography, especially with subjects that you have to pan with to take the shot. This is caused by the relatively slow refresh rates for the viewfinders, this means that following fast moving subjects can give blurring on the viewfinder image or a delay where the actual position of the subject does not match what is being seen in the viewfinder. Once you start shooting the camera cannot refresh the image when it is being taken and this can also affect the accuracy of what is bring shown in the viewfinder.

On the EOS R there is a high speed display mode available but, this is only available if you are shooting with the RF lenses, and currently the longest focal length available is a 240mm lens which is not long enough for some sports shooting.

That said, it's not impossible to get good action shots, the image to the right was taken on my EOS R and with a few small customisations to the camera it works well enough to get a lot of very good shots, equal to anything that I would have got with the 5D Mark IV. It makes it easier when shooting up against the sky which is needed in some locations at the venue where this was taken. However, I would say that with the current models, your shooting technique has to change, so you are only shooting when the subject is in the right place in the frame and generally taking less shots in a burst. However, the up side of that is from a day at the event I only came back with 2500 shots to sort out instead of the normal 10000 shots! Interestingly the amount I kept was about the same.

Coping with action - Mirrorless models

Canon has been upfront about the EOS R, RP and has said they are not designed for high-speed action, and it's a fair comment. Mirrorless models are a way off competing with the performance offered by models such as the EOS 1DX Mark III and the 5D Mark IV. It is important to remember that the EOS R/RP are the first models in the range. Having worked with the R and RP models for some time, I can say that the actual autofocus speed is very good and in fact it competes favourably with many of the lower range DSLR models. The M series do have significantly slower focusing, though the M6 Mark II is beginning to improve things a bit. What makes the cameras difficult to use for action is actually more to do with the viewfinder than the focusing. To overcome some of the problems I found that the following things help.

1. When you first raise the camera to your eye there is a time delay before the viewfinder actually comes on and this can make acquiring the subject quite difficult. An easy way to deal with this is to turn off the automatic switching between the rear panel and the viewfinder. The option to do this is found on the setup menu and you simply switch the display control to manual in the Display settings for the viewfinder. Because that means that you can only use the viewfinder it can then become difficult to set things like the menu options. This can be overcome by programming one of the custom buttons to act as a manual switch between the viewfinder and the rear screen. I personally use the quick shoot video button on the top of the camera (the one with the red dot on it) This symbol |O| enables switching between viewfinder and rear panel. A cheats way around this if you have a screen that can be rotated to face the camera, is to do exactly that leaving only the viewfinder active.

2. Another problem you may come across is that if you pause momentarily when taking a sequence, is that the image review will appear and this blocks your vision of your subject. This is easy enough to deal with by turning the image review off, which is found in the shoot menu. Interestingly I've not bothered to turn it back on again since I've had the camera as you're seeing in the viewfinder exactly what you're taking so there's not so much need to review the image as there used to be.

3. With any electronic viewfinder at the moment, there is always a short time lag when you're panning with a fast subject. Make sure any power saving options are turned off and that the display performance is on the better option. If shooting with a R series model and RF lenses the high-speed display option in the Shoot menu should be enabled. Unfortunately, at the time of writing the longest RF lens available was the RF24-240mm f4-6.3 IS USM lens, so I have not really been able to test how effective the high-speed display is.

PREVIEW EDITION

CHANGING TIMES

Mirrorless models are still e
fast rate and every mode we see
improving and overcoming some o
Certainly on the M6 Mark II the viewfi
improved significantly over the earlier M s
mirrorless models.

As new R models appear the rate of change is likely to speed up. The R5 is announced at the time of updating this book but only has basic details released, we are still waiting to hear when it is likely to be launched so that all the details are made available. When that happens some of the new tech, which is likely to be based on some of the new features in the Live View system on the 1DX Mark III model is likely to be incorporated and may well make the camera far better for action shooting.

Changes are happening even on the existing models especially with the EOS R system where the firmware is being updated regularly and since the launch has made both the R and RP models far more responsive on their focusing system especially the face and Eye Detection AF.

So on these models it is imperative to keep your firmware updated to get the best out of the cameras and also lenses and other items in the system.

Shutter speeds

The shutter speed controls how long the light has to enter the camera. The most important reason why we need to think about the shutter speed is to make sure that we can safely handhold the camera with the lens that we are using so that camera shake isn't visible in the image.

Camera shake is still one of the most commonly encountered picture faults that we see today. With cameras that have super wide ISO ranges, lenses with image stabilisation system and lots of automation possible on the cameras to prevent blur from camera shake occurring, the fact that I see a lack of sharpness caused by camera shake is totally frustrating! The rules for hand-holding really are very simple.

Normal handholding rules

The normal rule for handhold can be split into two parts. Firstly using a shutter speed slower than 1/30 second can never be guaranteed to give a sharp image when handholding, regardless of the focal length or image stabilisation system.

Secondly the shutter speed needs to be a minimum 1/focal length of the lens setting currently being used. So for a 50mm lens, 1/60 second is the slowest normally used whilst for a 400mm lens 1/500 second is used. The camera should be held steadily and the shutter button pressed gently down from its half pressure position to minimise movement to achieve shake free images. Of course the shutter speed may need to be higher than the handholding requirement for the lens if you are shooting a fast moving subject or shooting with a high resolution model which may need higher shutter sped to safely handhold images.


370mm lens 1/640 second for Handholding


135mm lens 1/200 second for Handholding


50mm lens 1/125 second for Handholding

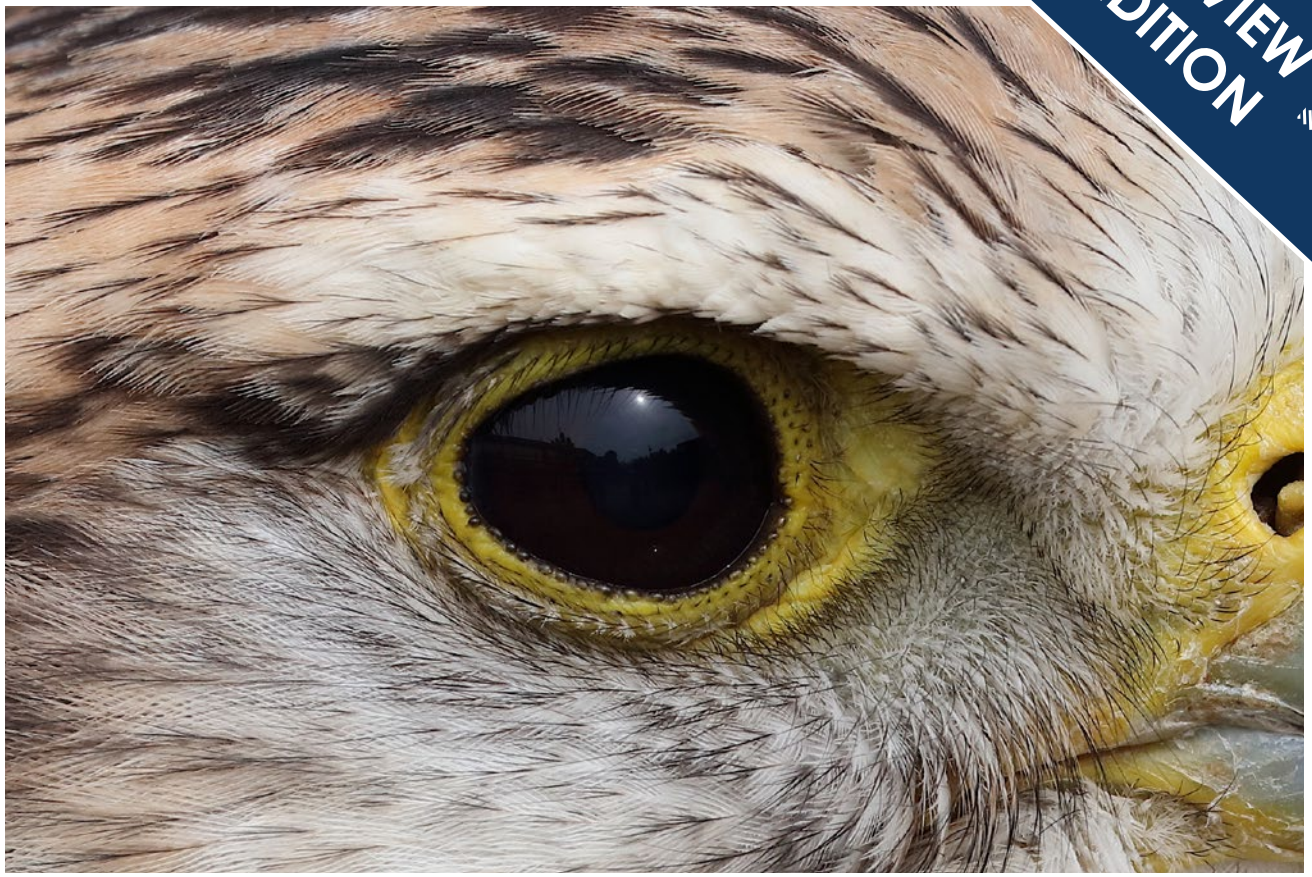

170mm lens 1/2000 second for movement

Although you can handhold at 1/focal length (so for a 50mm lens you can use 1/50 second or the first available speed above that which would be 1/60 second) it is good practice to try and use a shutter speed that is just slightly faster to make allowance for any inadequacies in holding the camera steady.

If the camera is being used on Auto ISO then in Program mode and Av mode the camera will automatically set the ISO high enough to ensure that the 1/focal length of the lens rule is adhered to.

There are options on some of the more recent advanced models within a setting called ISO speed settings to control the shutter speeds that are available when using Auto ISO. I look at this in the features and functions section.

Higher resolutions and shutter speeds



We are seeing the pixel counts on EOS models climb ever higher. Until recently 20-24 million pixels was fairly normal but over the last 5 years, 30 million pixels is becoming the normal and we already have models in the market with 50 million pixels. The image above and enlarged section to the right are taken on the EOS 5DS to show the sharpness and quality the camera is capable of.

MORE PIXELS = BETTER?

Now that is an interesting debate. More pixels do give a higher resolution images, if you have more total pixels you can have more pixels per inch. To a degree it also means that you can crop more as you have more pixels to start with cropping down to say 25% still leaves more pixels. Certainly from a marketing point of view it is easy to sell the concept of more pixels equals better camera as well.

But that is where the good points of more pixels end. Canon has just released the EOS 1DX mark III, its flagship professional models and the pixel count has gone down from 20.2 million pixels to 20.1 million. It is now has the lowest number of pixels of any model in the whole EOS range. Despite that the professional love it. It was actually feed back from the professionals that ensured the camera remained around the 20 million pixel mark as that's all they want it to have.

Professionals need images that are quick and easy to upload to remote servers. They also need to be able to shoot in ultra lowlight and so keeping to less pixels ensures that the pixels are larger, respond better in lowlight and gives the camera its incredible ISO 102400 available as a native setting without the need for any expansion. If you really need it the model can go right up to ISO 819200. So lower pixel counts do give us higher usable ISO ranges and smaller more manageable images.

So there are benefits to both high and low pixel count models. The reality is though the majority of the range are going to have the pixel counts constantly increasing as time goes by.

Higher resolutions and shutter speeds

There are starting to be some downsides from the increasing number of pixels that the latest models are offering. Apart from the obvious one of the images taking up significantly more space, models of 30 million pixels and over are starting to show up flaws in shooting technique that we simply have not seen before. Of course the big improvement in monitor resolutions that we have also seen over the last few years with larger screens, 4 or 5K monitors becoming the normal, is also starting to show these issues up.

One of the things that is being talked about a lot more as more of these higher resolution models emerge is that the shutter speeds that we have always used for handholding - 1/focal length, are not as effective at preventing blur from camera movements as they used to be.

The images above are a case in point. The image was taken at 118mm with a shutter speed of 1/160 second, plenty to allow for safe handholding of the shot, especially when you consider that the lens features a 5-stop image stabiliser. I took about five images of the scene as the sunlight was moving around the scene in the background. three of the images were pin sharp but two had camera shake. The image stabiliser was turned on, all I can assume is that I was a little harder on the shutter press on two of the images than the other ones.

The images above are cropped in areas of the full size image that is shown above left, also it is a reasonable sized enlargement. So as an image on a small computer screen both look sharp but on a big monitor even small amounts of camera shake do start to show up significantly. If you are wondering how I know it is camera shake, everything across the whole image is blurred by the same amount, a clear indicator of blurring due to the shutter speed being too slow. Without the image stabilisation turned on I doubt if any of the images would have been sharp.

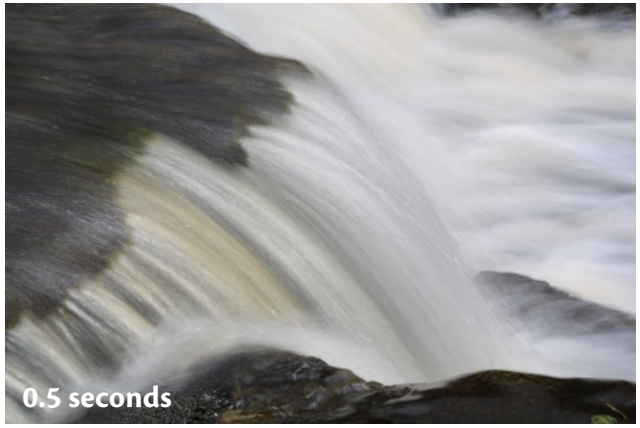
What is happening is that smaller pixels, which we get as we put more onto an imaging sensor, will show up things like movement of the camera or blur from subject movement a lot more. The image above is taken on my EOS R which is full frame, the EOS 90D and the EOS M6 Mark II both have sensors that have 32.5 million pixels, but that is on a APS-C or 1.6x sensor which is significantly smaller and therefore the pixels are smaller as a result and prone to show up problems such as this even more.

Shutter speeds

Shutter speeds can be grouped into three distinct categories. 1) High shutter speeds which will freeze action; 2) Mid shutter speeds which are used the most and are chosen so that the lens in use can be successfully handheld; 3) Low shutter speeds which are always used on a tripod, often to produce blur.

High/fast shutter speeds 1/1000 – 1/8000 second
Used to freeze action, the faster the subject the higher the shutter speed will need to be. Even within a specific type of subject there will be a variance in the shutter speeds that will successfully freeze the action. So if shooting birds in flight, birds that fly more slowly on a predictable path and are easy to follow, such as a swan, could be successfully shot at 1/1000 second, though 1/2000 would be a better shutter speed to use. A smaller bird that flies faster and to a less predictable flight path such as hawk being flown to a lure will need at least 1/2000 and possibly even 1/4000 second to guarantee good results. You would also need to shoot in very bright light, to allow wide apertures to be used or to ensure safe handholding of 500mm and longer lenses.

Mid shutter speeds 1/30 - 1/500 second
These speeds are mainly used when the only thing required is a shutter speed that can safely be handheld without getting any camera shake. The exact shutter speed needed will be dependent on the focal length in use and if there is any slight movement in the subject. If a lens has image stabilisation then the shutter speed can be used below the normal handholding rule, but it only corrects for holding movements and not for any movement in the subject.


0.5 seconds


1/15 second


1/250 second


1/4000 second

Slow/long shutter speeds 1/15 - 30 seconds
Slow shutter speeds are not handholdable, so the camera always needs to be on a tripod or other sturdy support when slow shutter speeds are being used. These are often used when shooting in low light on a tripod. They are also used to allow blur within the image to be deliberately generated. This can range from blurring water to producing light trails.
The exact shutter speed you need in order to produce blur depends on the subject that you are shooting. To blur water, 1/15 second will give blur on fast moving water, though the effect generated at 0.5 seconds does look a lot better. The faster the flow of water the higher the shutter speed can be.

eBooks
for your EOS photography

You've just read a **free 20-page preview** of this eBook, part of a comprehensive series of Canon EOS camera eBooks that I've produced, based on years of experience training Canon EOS photographers like you. Thanks for downloading it.

There's much, much more – most of my eBooks are around 150 pages long, so you've had just a small taste of what you can learn about your camera. And it won't cost you the earth – prices start **from just £4.95.**

So get the COMPLETE picture – buy the **full version of this eBook** and, in minutes, you'll have the key to unlocking your EOS camera and your potential as a photographer.

Nina

visit: **www.eos-magazine.com/ebooks**