

**POP-UP VIDEOS!** **NO.1 FOR CANON DSLR USERS**



Issue 123 • March 2017

# PhotoPlus

## THE CANON MAGAZINE



**NEW CANON TECHNIQUES**

# WILDLIFE MASTERCLASS

Canon camera settings • Lens advice • AF setup  
Shutter speed tips • Blur your backgrounds

**MACRO TIPS**

## LIFE UP CLOSE

Get top shots of  
insects indoors  
with flash light

## CITIES AT NIGHT

Learn how to photograph  
cityscapes after dark



**LEARN  
NEW DSLR  
SKILLS  
TODAY**

**//** I'm considering going  
for a quick pint while the  
shutter's open for this  
long exposure shot **//**

David Noton – PhotoPlus columnist

Future

**SUPER TEST**

## GREAT VALUE TELEPHOTOS

Best budget telephoto  
zoom lenses from £100







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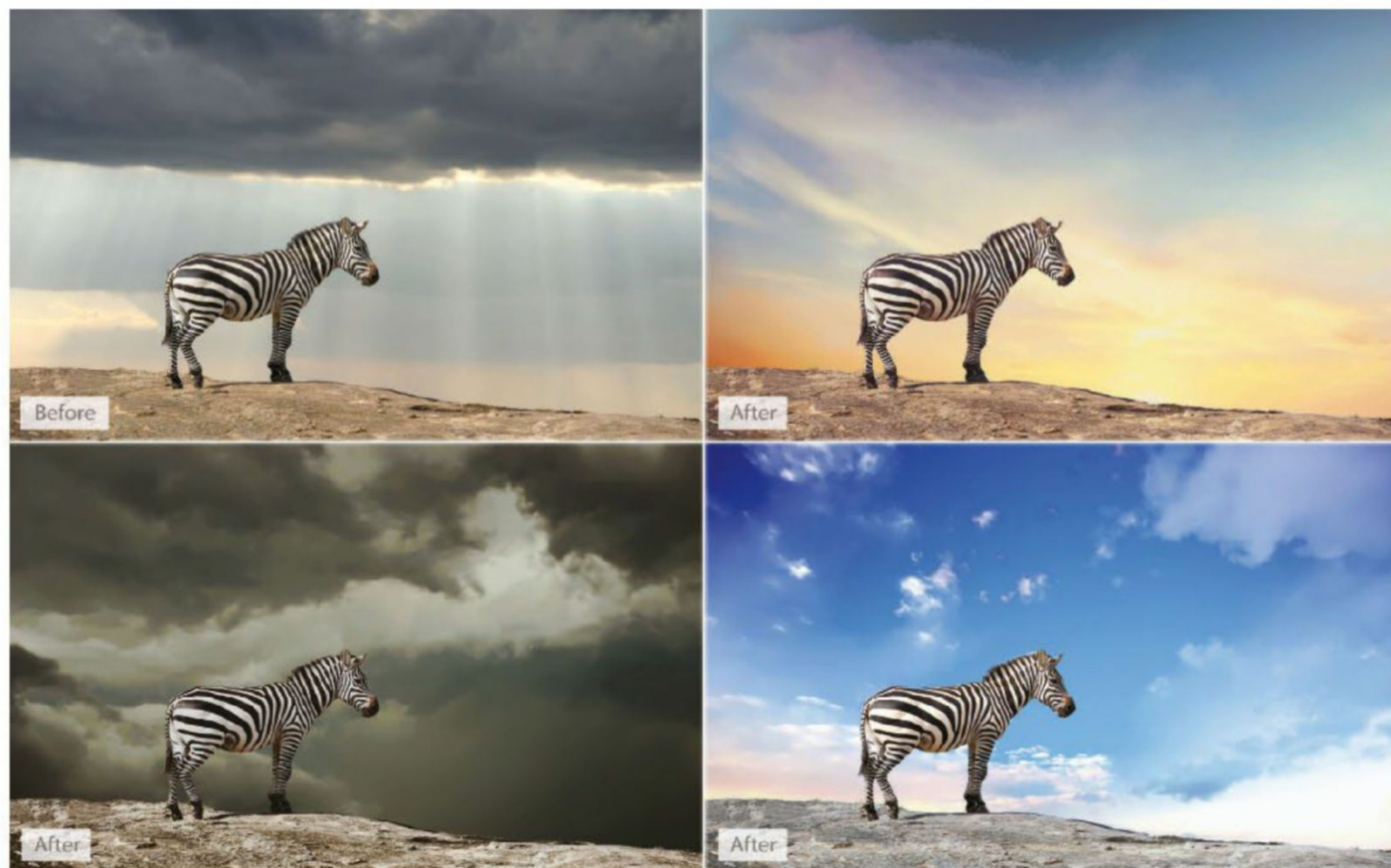
*New from Anthropic - the makers of PortraitPro software*

**"A very powerful program"**

*f2 Cameracraft, Sept/Oct 2016*

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## DISTINCTIVE SPORTS SHOTS

Learn how to develop an eye for unique sports shots, as we interview US-based Canon photographer Simon Bruty on **page 68**



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- We're proud to use **THE WORLD'S TOP CANON PHOTOGRAPHERS** and experts. Meet them on page 6.



**Peter Travers**  
Editor

# Welcome

**W**alking in a winter wonderland, you might be surprised how much wildlife is still active in your local area, or even simply searching for food in your back garden. This issue we'll show you all the key camera settings, lens choices and photography techniques for capturing winning shots of winter wildlife. Turn to **page 30** for some top tips and inspirational Canon imagery.

This issue our Apprentice gets up close and personal with his macro lens and, under the guidance of top nature photographer Alex Hyde and his portable zoo of invertebrates, learns how to make tiny insects look like huge monsters for some amazing Hot Shots. See page 8.

We have a plethora of great photo projects, starting on page 45, from creative Hockneyesque portrait techniques and photographing all things frosty, to capturing cracking cityscapes at night and fake foggy forest photos. We speak to UK-born, US-based sports photographer Simon Bruty about how he continues to capture iconic photos (page 68), while *PhotoPlus* columnist David Noton reveals why it's worth waiting for a break in the weather to shoot Dorset's legendary Durdle Door (page 42).

We test the best budget telephoto zoom lenses, starting at only £100 (page 104), and Canon's updated EF 24-105mm f/4L IS II USM (page 102), plus all the usual brilliant regulars in Canon School (page 83); master multiple exposures, crop in DPP, and more technical questions answered.

Join our PhotoClub to save money, and get a great Manfrotto backpack, and if you upgrade to Member Plus you can access our amazing e-learning portal, with over 500 expert videos. See page 20 now!

*Peter*



Subscribe, save, get a great gift and become a **PhotoClub** member! **Page 20**



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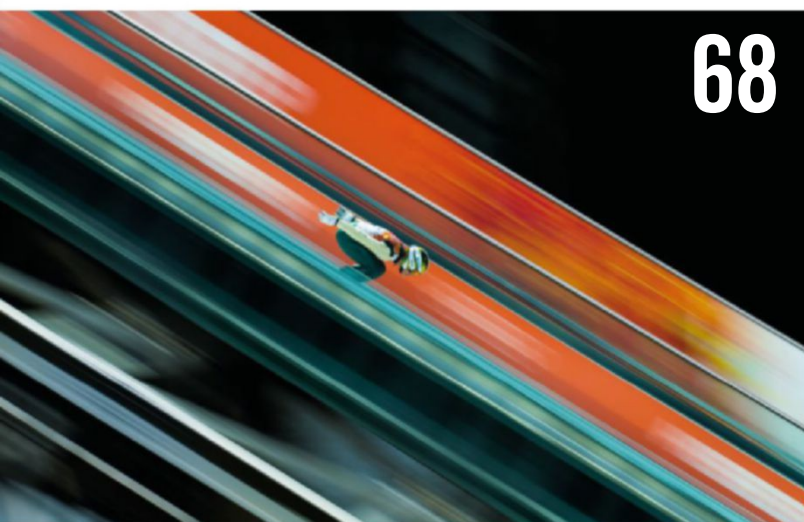


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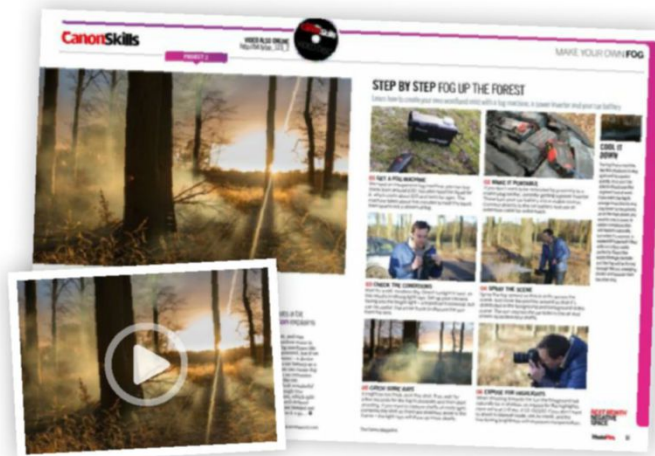
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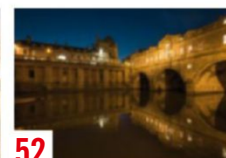
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## Meet the team...

# PhotoPlus

## THE CANON MAGAZINE

Who we are, what we do, and our very best bits of this issue...



### Peter Travers

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"I had a great time on this month's Apprentice shoot and was once again amazed at how macro lenses make miniature insects look like massive aliens." **PAGE 8**



### Adam Waring

Operations editor • 7D  
adam.waring@futurenet.com

"I learnt some important lessons producing my 'A touch of frost' project: get out early, wrap up warm, and don't lick a metal tripod when it's below freezing." **PAGE 58**



### James Paterson

Technique writer • 7D Mark II  
photoplus@futurenet.com

"After shooting my misty landscape project I take my fog machine everywhere. Although the fire brigade are getting annoyed with all the call-outs." **PAGE 50**



### Martin Parfitt

Art editor • 600D  
martin.parfitt@futurenet.com

"The air show season will be coming around again soon, and as an aviation nut I was delighted to see a nice taster of jets in action in this issue's Photo Stories." **PAGE 76**



### Rod Lawton

Head of testing • 6D  
rod.lawton@futurenet.com

"I'm glad that Canon has improved so many of the optical aberrations of its 24-105mm f/4 zoom. It's a useful range, but a shame it's not just a little sharper." **PAGE 102**



### Matthew Richards

Technical writer • 760D  
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"I enjoyed seeing how much image quality and telephoto reach can be had with a lightweight, low-cost lens. And just in time for the new motor racing season." **PAGE 104**

## This issue's contributors...



### Alex Hyde

Macro expert  
Alex taught our Apprentice the art of photographing creepy-crawlies up close. **PAGE 8**



### David Noton

David didn't bump into a T-Rex on his Jurassic Coast trip, but did find some cracking shots. **PAGE 42**



### Ben Andrews

Ben puts half-a-dozen Lightroom plug-ins through their paces for this issue's Mini Test. **PAGE 100**



### Simon Bruty

Canon pro  
Simon reveals how he made his name as one of sports' sharpest shooters. **PAGE 68**



### Guy Edwardes

Landscape and nature photographer Guy explains why you'll never find him travelling light. **PAGE 80**



### Marcus Hawkins

As well as his Canon School duties (**PAGE 84**), Marcus did our big winter wildlife techniques guide. **PAGE 30**



### George Cairns

This issue George explains how you can improve compositions by cropping in DPP. **PAGE 88**



### Brian Worley

Brian tackles another batch or your photography-related queries and critiques your best shots. **PAGE 91**

**Our contributors** Joe Branston, Simon Bruty, George Cairns, David Clark, Guy Edwardes, Peter Gray, Marcus Hawkins, Alex Hyde, Gareth Jones, David Noton, James Paterson, Ed Ricketts, Brian Worley



Print 18,915  
Digital 4,099

The ABC combined print and digital publication circulation for Jan-Dec 2015 is

**23,014**

A member of the Audited Bureau of Circulations

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**Distributed by:** Distributed in the UK by Marketforce (UK),  
2nd Floor, 5 Churchill Place, Canary Wharf, London, E14 5HU

#### Subscriptions & back issues

**UK reader order line & enquiries** 0844 848 2852  
**Overseas order line & enquiries** +44 1604 251045  
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Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR).  
www.futureplc.com

Chief executive Zillah Byng-Thorne  
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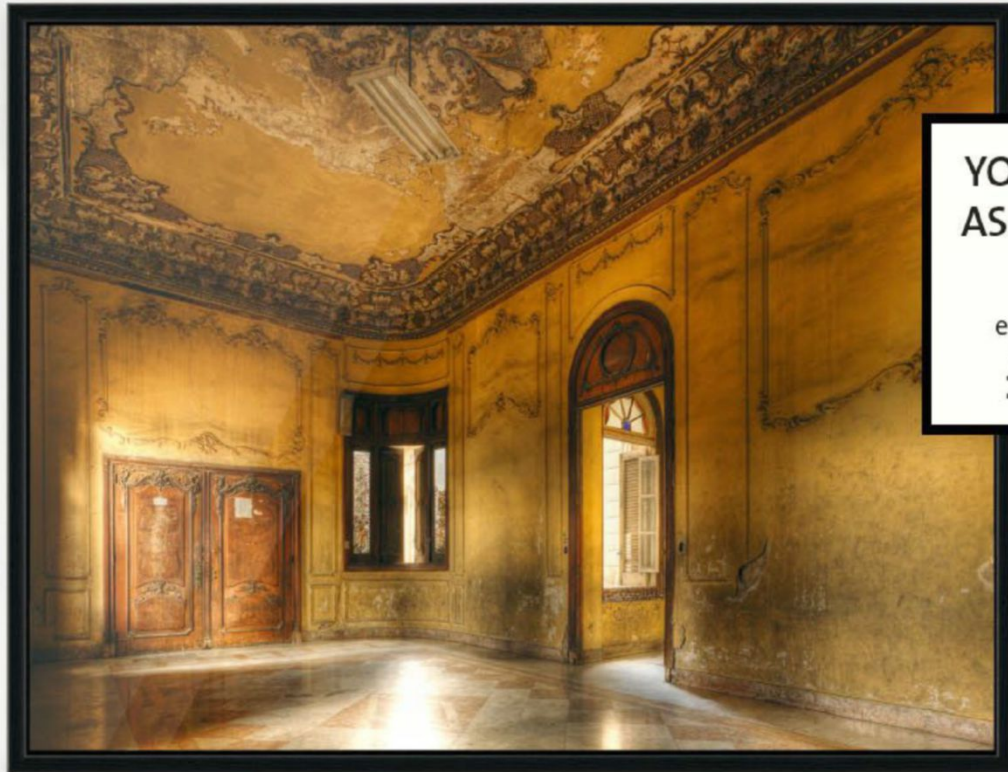
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# THE APPRENTICE

## APPRENTICE

**NAME:**

SIMON BUNKER

**CAMERA:**

CANON EOS 7D Mk II

**FROM** Milton Keynes, Simon's a 48-year-old maintenance engineer. He's been a keen amateur photographer since his late teens, when he had a Minolta 35mm film camera. More recently he bought a 600D, then a 7D Mk II, to photograph butterflies, crickets and grasshoppers, and he hasn't looked back. He asked for our help to take his macro photography to the next level.







## CANON PRO

**NAME:**

ALEX HYDE

**CAMERA:**

CANON EOS 5D Mk III

**BASED** in the Peak District, 33-year-old Alex is a freelance natural history photographer. He's had an interest in wildlife photography from an early age, getting his first Pentax SLR when he was 12. He went digital with an EOS 20D in 2005, and now uses an EOS 5D Mark III. He's amassed an extensive archive of invertebrate images from all over the world. To see his portfolio, and for workshop info, go to [www.alexhyde.co.uk](http://www.alexhyde.co.uk)

# LIFE IN MINIATURE

Our Apprentice learns the art of taking larger-than-life shots of creepy-crawlies using a macro lens and off-camera flash



# THE APPRENTICE

## TECHNIQUE ASSESSMENT

Alex helped *PhotoPlus* Apprentice Simon get his camera and flash set up for macro shots



### MANUAL SHOOTING MODE

“**SIMON** was used to shooting outdoors, so usually works in Av mode with natural light. Here we were working indoors with flash as our light source, so needed to lock down our aperture, shutter speed and ISO independently,” advises Alex. “I got him to switch to Manual mode and helped him set his exposure; we started at f/16 for good depth of field when using a macro lens, 1/160 sec and ISO100. We then adjusted our flash power (see below).”



### MANUAL FLASH SET UP

“**I NEARLY** always use off-camera flash to ensure the invertebrates are shown clearly and brightly in my macro shots. However, using Canon’s auto E-TTL setting often results in exposure errors when trying more creative lighting setups, such as backlighting a subject. I suggested we to go straight to Manual flash mode, meaning we can light our little subjects how we want, rather than how our flash thinks we want to light it,” smiles Alex. “I often start at 1/4 power with the flash and alter it as necessary.”



## TOP GEAR #1

### Macro lenses

“**I CARRY** two main macro lenses, the Canon EF 100mm f/2.8L Macro IS USM and Canon MP-E 65mm f/2.8 1-5x Macro Photo. I generally use the 100mm, but the MP-E is incredible, as it captures close-ups up to 5x life size. I often use it handheld and to focus just move very slowly forwards or backwards until the insect’s sharp,” says Alex.



## PRO TIP

## LEARN ABOUT LIGHT

“**TO START** off, we photographed an ammonite fossil, as its shape is perfect for learning how to use off-camera flash and how shadows can change the look of the shot to create a real three-dimensional image,” explains Alex. “We played with flash direction, adding a softbox, and also introducing a reflector on the opposite side to fill in shadows. I usually stick with one flashgun, and I like to use simple lighting setups that I can rely on, whether I’m indoors or in the jungles of Borneo.”



Flash straight-on



Flash side-on



Flash side-on with softbox



Flash side-on, softbox and reflector



**HOT  
SHOT  
#1****SIMON'S COMMENT**

**//** For our first Hot Shot we used a dead teasel seed head that didn't move, which, as Alex pointed out, meant it's easier to

photograph than some of the invertebrates, but still wonderfully attractive, with great textures. We experimented with flash power, but stuck to 1/8 power, instead moving the flashgun further away to reduce the light. We found it best to backlight the head, then use a small reflector to bounce light back into the front. We shot at f/16 for good optical quality; while my Sigma 105mm macro lens goes up to f/22 at its narrowest aperture, diffraction means that edge sharpness will begin to suffer. **//**

Lens	Sigma 105mm f/2.8 Macro EX DG OS HSM
Exposure	1/160 sec, f/16, ISO100



# THE APPRENTICE



## EXPERT INSIGHT

### LIVE VIEW

**ALEX** suggests using Live View when shooting close-ups. "It's much easier than peering through the viewfinder for focusing and composing, but switch Exposure Simulation off in the Live View menu as it displays your shot with available ambient light – so when you're using flash it will show a black screen! Also, the on-screen image shows the shot at the lens's widest aperture, even if using f/16, but by holding down the Depth of Field Preview button (on the front of your camera) once focused, you can see the shot at your chosen aperture, and double-check your focusing is good and your subject is sharp. Take a test shot with flash then use the histogram to fine-tune the exposure."



## TOP GEAR #2

### Off-camera flash and softbox

**"I NEVER** use my flashgun on top of the camera, as the direct light is so flat and unimaginative. Instead, I position it off-camera to create a nice side light or even backlight," says Alex. "I also use a small Lastolite Micro Apollo softbox, but bear in mind that flash power is reduced when using a diffuser, so you'll need to bump up the power to compensate when in Manual flash mode."

## SIMON'S COMMENT



Although incredibly well camouflaged against the underside of a log, focusing in close with my Sigma 105mm macro lens

and firing my flashgun with softbox from the side has helped reveal an amazing amount of detail in this Tanzanian giant tailless whip scorpion (as Alex called it), especially considering it has a body about the size of a 50 pence piece. Close-up really reveals its terrifying spines and features, from its armour to its eyes and barbed arms – making it look like something out of sci-fi horror movie!

Lens	Sigma 105mm f/2.8 Macro EX DG OS HSM
Exposure	1/160 sec, f/16, ISO100

## PRO TIP

### USE MOBILE PHONE LIGHT

**"BEFORE** setting up your flash, using a torch – or light on a smartphone – can reveal how a subject will look with a direct light source falling on it. By moving it around, you can see which angle is best to show the shape of the subject," suggests Alex.





SHOOT WITH A PRO

## HOT SHOT #2



### TOP GEAR #3

Hear mat & water spray

**“WARM** and humid is how many tropical insects like it, so I try and recreate their natural habitat and conditions indoors. I use an electric heat mat that’s essential for most of my invertebrates, as in extreme cold they could die if not treated properly. I also use a water spray to maintain the humidity they’re accustomed to, though each species has its own specific requirements,” says Alex.





# THE APPRENTICE

## TEN TIPS FOR BETTER CLOSE-UPS OF INSECTS

- 1 Know and respect your nature**  
The welfare of your subject always comes first, and a soft paintbrush is often the best way of moving insects as they can be very delicate. Different species also require different conditions, such as light, temperature and humidity.
- 2 Searching for invertebrates**  
Compost heaps and log piles are good places to find invertebrates. Even indoors there's plenty to see; in autumn, house spiders come looking for mates, so super photographic opportunities await!
- 3 Connect with your subject**  
For intimate insect portraits, get right down to eye level. This often means getting down on the ground, so there won't be room for a tripod.
- 4 Key camera settings**  
Macro lenses allow you to get very close to your subject. However, as camera-to-subject distance decreases, so too does depth of field. When lighting the subject entirely with flash, use Manual mode, with f/16 aperture to get plenty of your subject in focus, a shutter speed of 1/160 sec and ISO100.
- 5 Macro lens benefits over telephoto zooms**  
A macro lens gives far more magnification than a telephoto zoom lens. The working distance will also be less, allowing you to work close to your subject.
- 6 Flash setup tips**  
If the image is too bright in Manual flash mode, turn the power down or move the flash further away. If using a diffuser, set the flash zoom to a wide angle setting to avoid a hotspot in the centre.
- 7 Off-camera flash**  
An off-camera flash cord or radio trigger will transform your flash photography. Placing the flash to one side of the subject creates shadow and, with it, texture. Hairy or translucent subjects look great with a flash behind them to create backlighting.
- 8 Freezing the actions**  
When using flash to light an image, the rapid pulse of light is usually sufficiently brief to freeze camera shake or subject movement, so you can handhold it.
- 9 Focusing manually**  
When handholding, set Manual focus and rock slowly backwards and forwards until the focus is in just the right place. When using a tripod, zoom in to x10 in Live View to check the focus.
- 10 Tripod for sharp shots**  
Tripods are great for outdoor macro with natural light as slow shutter speeds are often needed.



### TOP GEAR #4 Sturdy tripod

**"A GOOD** tripod is imperative for long shutter speeds using ambient light, but is also ideal for accurate composition, so you can fine-tune focusing," says Alex. "I use a ten-year-old Gitzo carbon fibre tripod that is fairly light but still sturdy. Crucially it doesn't have a centre column, so doesn't restrict how low I can get to the ground for close-ups of small things. Even when working indoors with flash that will freeze movement, a tripod will help you tweak your compositions till they are just as you want them. Often we don't have enough hands to hold the camera, flash and reflector anyway!"



### PRO TIP

## KEEP IT REAL

**"I'M A** natural historian first – photographer second – and like to make my photos look as natural as possible, so when indoors I use old logs and branches with moss on them to make a more realistic-looking environment; they're also more comfortable for insects to grip, stand and crawl on, as well as making your indoor setups look great," says Alex. "I keep these outside so they don't dry out or gather dust."





SHOOT WITH A **PRO**



**HOT  
SHOT  
#3**

## SIMON'S COMMENT



**//** Alex told me this is a ghost praying mantis, and it's amazing as it looks *exactly* like a dead, shrivelled up leaf. Again we

used off-camera flash, which Alex held from above at an angle, but we used an A3 sheet of yellow card as a background to add some colour, and to help the insect stand out! Alex suggested I shot vertically, so I focused in close and carefully on its head for an alien-like portrait. Shooting at f/11 helped drop the background out of focus more, and we dropped the flash power to compensate for a good exposure. **//**

Lens	Sigma 105mm f/2.8 Macro EX DG OS HSM
Exposure	1/160 sec, f/11, ISO100

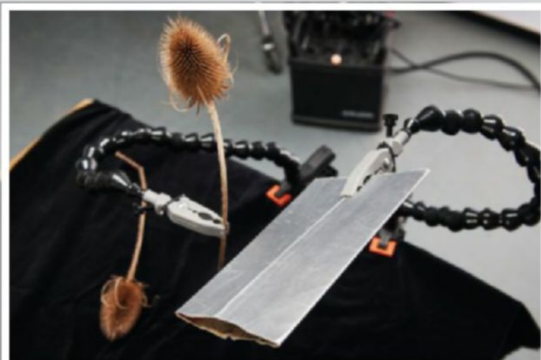


# THE APPRENTICE

## SIMON'S COMMENT



**//** We perched this 'black beauty' stick insect on an old log, positioning a second mossy log behind to add context and contrasting colour. I framed to include the whole body and antennae in shot, and composed from a low viewpoint to make it look more imposing. I set f/16 to blur the foreground log and background moss, keeping the majority of the insect sharp. **//**



## TOP GEAR #5

Clamp it!

**"I ALWAYS** carry a couple of Wimberley 'Plamps'. When clamped to a table, the foam-coated jaws gently secure a plant stem without damaging it. I also have a Plamp with a spike in one end, for sticking into the ground to carefully clamp a plant stem to keep it still during breezy conditions when out in the field," says Alex.

## HOT SHOT #4

Lens	Sigma 105mm f/2.8 Macro EX DG OS HSM
Exposure	1/160 sec, f/16, ISO100



## LITTLE MONSTERS

Canon pro Alex shares the story behind three of his colourful close-ups



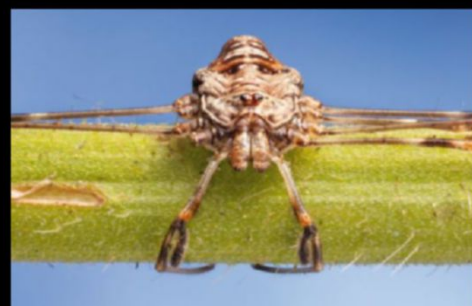
### INDIAN MOON MOTH

**"THE** beautiful pale antennae of this Indian moon moth stand out against the dark backdrop. Flash falls off quickly and often doesn't reach the background unless it is very close by, resulting in black backgrounds. This can be a benefit, creating a striking contrast."



### JUMPING SPIDER

**"JUMPING** spiders are highly active, often living up to their name, and I have had several jump onto my head in the past. I didn't have long to compose this shot so made sure I was using Manual focus to ensure that the autofocus didn't waste valuable time hunting."



### HARVESTMAN

**"DEPTH** of field is minimal in macro. To get the whole of this harvestman in focus, I focus-stacked 30 images. The camera was moved forwards a tiny distance between each shot using a macro focusing rail and the images were stitched together in Helicon Focus."



**EXPERT INSIGHT****BUCKETS  
O' BUGS!**

**OVER** the years Alex has built up his own jungle of invertebrates: "I love travelling off to far-flung rainforests to find and photograph nature in its habitat, but having lots of insects at my fingertips at home means I can study and photograph them indoors, so I have a constant supply of subjects and new photos for my clients, and for when I hold photo workshops. But please note that all my tropical invertebrates are captive-bred stock from established breeders in the UK. When I'm photographing UK species I generally work with them in the field where I find them."

**TOP GEAR #6****Home-made silver reflector**

**"I MADE** this little reflector by cutting up a juice carton that had a silver surface inside, it's great for bouncing a little light back up to brighten the dark side of the shot that's not lit. It's also foldable to tuck into my camera bag!" laughs Alex.





## SIMON'S COMMENT



It's amazing to think this baby praying mantis is only about 2-3cm tall from head to tail, but by using Alex's unbelievable

Canon MP-E 65mm Macro lens, at 2x life-size and an aperture of f/9, its microscopic power has made the miniature appear massive! To capture this super close-up, while Alex directed the flash, I had to focus manually by moving in and out carefully, balancing the end of the lens on my hand, which was resting on the table top. We practised focusing on the moss first, then brought the mantis in when we were ready. He was a feisty fella, but after several shots I managed to get this winner, showing both its tiny eyes sharp. When processing in Photoshop I had to make sure that the colour temperature wasn't too warm, and the tint was more green than purple for accurate colours.

## ALEX'S VERDICT



Simon was already an experienced amateur and had a good eye for close-up compositions, and his knowledge of crickets

and grasshoppers was very impressive, too! He just needed some assistance using off-camera flash, setting his exposure in Manual mode, and focusing manually. I'm pleased to see that he has put all these techniques together for a classic close-up shot of this juvenile Australian giant rainforest praying mantis's head and fantastic eyes. His manual focusing is spot on and, zooming in to 100% on the computer screen, you can see the hexagonal details of the compound eyes wonderfully. What a fabulous Shot of the Day!

Lens	Canon MP-E 65mm f/2.8 1-5x Macro Photo
Exposure	1/160 sec, f/9, ISO100





NEXT MONTH **ACTION SPORTS**

# SHOT OF THE DAY!

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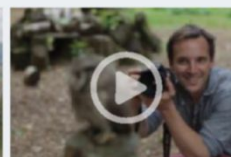
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# INSPIRATIONS

STUNNING IMAGERY FROM THE WORLD OF CANON PHOTOGRAPHY







**01 NIGHT BLOW BY AUDUN RIKARSEN**

In the polar winter the sun was below the horizon, but there was just enough light to see that killer whales had come into the fjords outside Tromsø, Norway. Extreme cold and high humidity created a magical frost mist over the water but also ice crystals that froze to my face and camera. I hung over the side of the boat and pointed my camera in the direction of the sound of the whales' blows or occasional glimpse of a fin. After six freezing hours, this was the shot that made it all worthwhile.

**Lens** Canon EF 11-24mm f/4L USM

**Exposure** 1/100 sec, f/5.6, ISO1600



# INSPIRATIONS



02

## 02 FLAMINGO VEIL BY THEO ALLOFS

I took off in my powered paraglider at sunrise. Steering with one hand on the brake, the other holding a camera, I spotted a large flock of lesser flamingos feeding in the shallows on algae and other plankton in Lake Logipi, northern Kenya. I had to fly very high so as not to scare them. Leaving trails like beautiful veils in the muddy water, the flamingos gathered into a circle, creating their ephemeral design.

**Lens** Zeiss Distagon T\* 2/35 ZE

**Exposure** 1/250 sec, f/7.1, ISO200

## 03 THE DISAPPEARING FISH BY IAGO LEONARDO

In the open ocean there is nowhere to hide, but the lookdowns, at the top of this image, are masters of disguise. I was free-diving, with special permission, around Contoy Island. Using only natural light, I framed them against a shoal of grunt to highlight the contrast between the two species.

**Lens** Canon EF 20mm f/2.8 IS USM

**Exposure** 1/320 sec, f/11, ISO400



03

Theo Allofs / Wildlife Photographer of the Year

Iago Leonardo / Wildlife Photographer of the Year



04

**04 DAWN OF THE BISON BY JASPER DOEST**

I have been documenting European bison since they were reintroduced to the Netherlands in 2007 (they were hunted to extinction in the wild in Europe in 1927). On this particular morning I found the herd cooling off at a lake amid a swarm of midges. The first rays of sunlight started to emerge over the trees, creating a beautiful visual show.

Lens	Canon EF 70-200mm f/2.8L IS USM
Exposure	1/640 sec, f/8; ISO400

**05 PLAYING PANGOLIN BY LANCE VAN DE VYVER**

I had been tracking the pride for several hours when they happened across this pangolin and started to roll it around like a ball. I focused in on this young lion's claws and the pangolin's scratched scales, black-and-white simplified the composition. The pangolin's armour plating creates an impregnable barrier, but it would be 14 hours until the lions finally lost interest.

Lens	Canon EF 500mm f/4I IS USM
Exposure	1/1600 sec, f/4, ISO1600

05

**WILDLIFE PHOTOGRAPHER OF THE YEAR**

These are a selection of entrants to the Wildlife Photographer of the Year 2016 competition. All the finalists are on display at the Natural History Museum until 10 September 2017. Wildlife Photographer of the Year is developed and produced by the Natural History Museum, London. More details at [www.nhm.ac.uk/wp](http://www.nhm.ac.uk/wp)



# INSPIRATIONS



06

## 06 STUDY IN MUD BY LAURENT CHAGNARD

I was watching the flamingos in a small swamp when one bird took a break from feeding and lifted its head to take a breath. For a fleeting moment, the mud clung to its face and neck, allowing me to capture this image before the dark slime dripped off.

**Lens** Canon EF 100-400mm f/4.5-5.6L IS USM

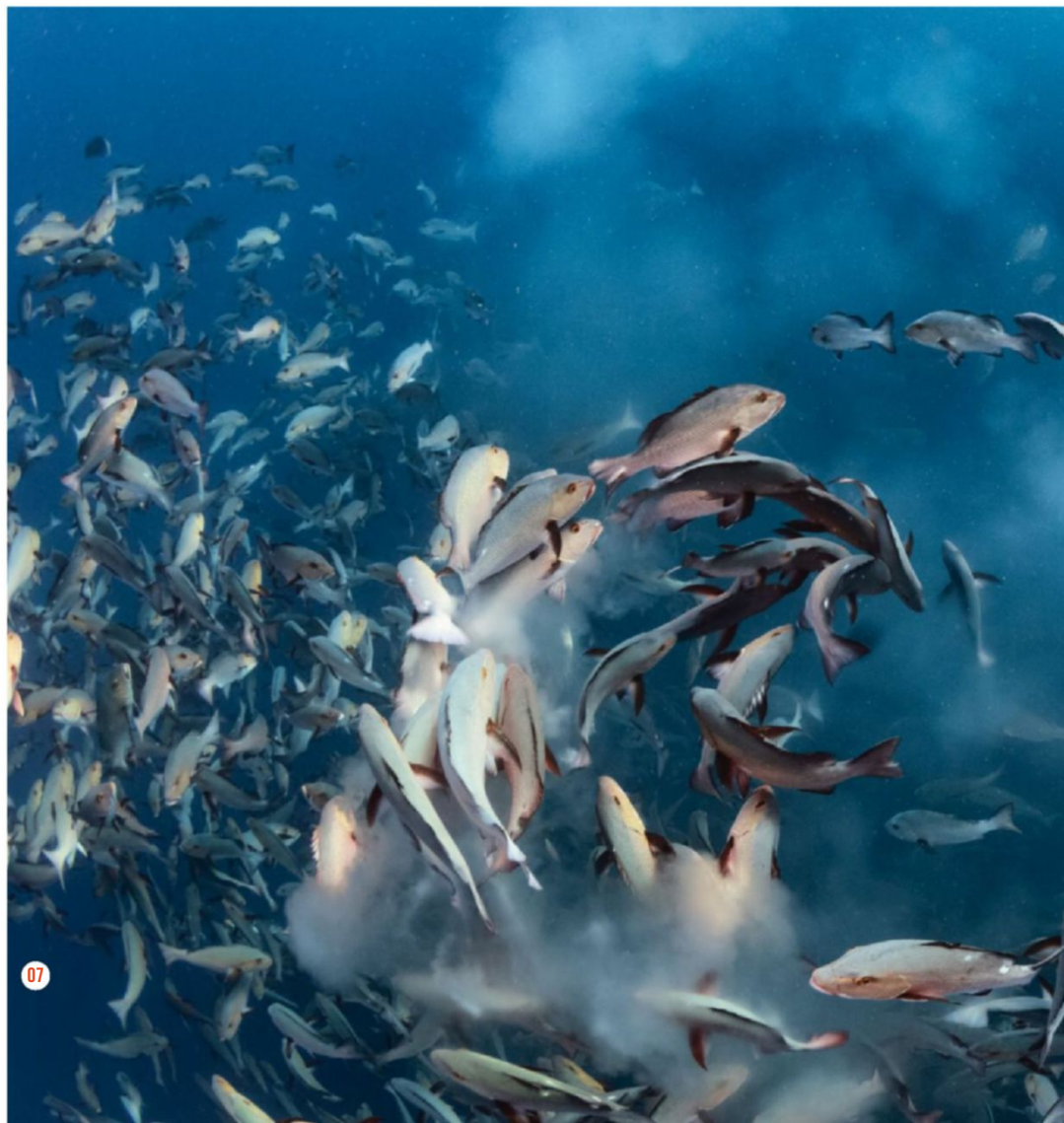
**Exposure** 1/1250 sec, f/6.3, ISO100

## 07 SNAPPER PARTY BY TONY WU

For several days each month (in tandem with the full moon), thousands of two-spot red snappers gather to spawn around Palau in the western Pacific Ocean. The currents were unrelenting and light was low, and the water was clouded with sperm and eggs. I was intrigued to see that the fish rapidly changed colour during mating from their standard red to a multitude of hues and patterns.

**Lens** Canon EF 15mm f/2.8 Fisheye

**Exposure** 1/200 sec, f/9, ISO640



07

Laurent Chagnard / Wildlife Photographer of the Year



Gideon Knight / Wildlife Photographer of the Year



08

## 08 THE MOON AND THE CROW BY GIDEON KNIGHT

Catching sight of a crow in the park, I thought the spindly twigs of the sycamore tree made it feel almost supernatural, like something out of a fairy tale. But the bird kept moving, making it difficult to keep it silhouetted against the moon. Finally, as the light was failing, I managed to turn an ordinary moment into something magical.

Lens	Canon EF 400mm f/5.6L IS USM
Exposure	1/250 sec, f/6.3, ISO500



Tony Wu / Wildlife Photographer of the Year



# INSPIRATIONS



Juan Jesús González Ahumada / Wildlife Photographer of the Year



Louis Pattyn / Wildlife Photographer of the Year

09

## HARVESTMAN WALK BY JUAN JESÚS GONZÁLEZ AHUMADA

There were lots of harvestmen about that night in the pine forest, so I seized the chance to capture the character of one of these spider-like arachnids. Turning the light on and off during a long exposure, I recorded an impression of the animal's navigation, its legs in constant motion.

**Lens** Canon EF 100mm f/2.8 Macro USM

**Exposure** 133 secs, f/8, ISO100

10

## BIRD'S-EYE VIEW BY LOUIS PATTYN

The rush of wind through feathers was the only sound to break the silence as the lammergeier glided by, just a few metres from where I stood. I had waited for hours in the bitter February cold high up on the Gemmi Pass, overlooking the Swiss town of Leukerbad. When it soared past, it was so close that I could make out every detail through my lens.

**Lens** Canon EF 100-400mm f/4.5-5.6L IS USM

**Exposure** 1/640 sec, f/6.3, ISO800



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# GO WILD FOR WINTER

Make the most of the season's natural spectacles with your Canon camera and our expert guide to capturing stunning shots

Words Marcus Hawkins Photos Ben Hall & Shutterstock

**W**hen it comes to wildlife photography, no other season offers quite the same potential for creating dramatic, atmospheric, wonderfully lit images as winter does. On a clear day, the low sun provides a beautiful quality of lighting that's a world away from the bare bulb of summer, but it's when snow, frost and mist arrive that something magical happens. Some of nature's most spectacular gatherings of

birds happen at this time of year, and it's easier to track and spot individual creatures in the bare landscape, as well as coax them closer with food. Many animals and birds look their most interesting too, with mammals boasting thicker coats and birds sporting their most striking seasonal plumage.

Whether you've just picked up your first Canon or you're a seasoned EOS user, there's plenty to get your photographic pulse thumping right now – and we've got plenty of tips to get you started.







## GETTING STARTED

You don't have to trudge through the wilderness to take great wildlife shots. Start off close to home, in your back garden. . .

### ◆ Set up a feeding station

You can coax birds within reach of your lens by setting up a feeding station and keeping it topped up throughout the winter months. Gradually move the feeders closer to where you'll be shooting from – whether that's a temporary hide, garden shed or the kitchen window – over a period of weeks, and consider how the light changes throughout the day before deciding on the final position for the feeder.

### ◆ Avoid getting mucky!

Shooting from a low angle produces more intimate, eye-level portraits of ground-feeding birds and mammals. Looking through the viewfinder can be awkward or impossible at ground level, but if you have an EOS DSLR with a vari-angle LCD, you're laughing. Or you could use Canon's Camera Connect smartphone app to use remote Live View with a Wi-Fi-equipped camera. If you have neither, raise the camera off the deck using a beanbag, your camera bag or a low-level tripod.



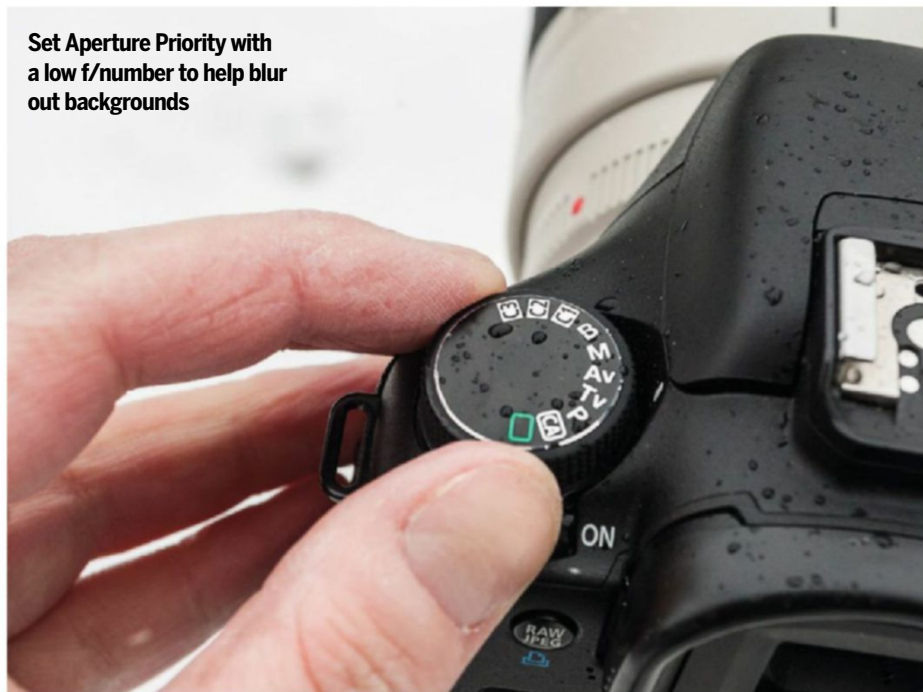
**Get birds used to your feeding station and then gradually move it closer to your shooting location**

### ◆ Use a fast shutter speed

Shoot in Aperture Priority exposure mode (Av on the main dial) and set a low f/number, such as f/4.5 or f/5.6 to give you a large aperture. The maximum (largest) apertures not only reduce the depth of field, helping to blur distracting background details, but they give you the

fastest possible shutter speed for the given lighting conditions. You will also need very fast shutter speeds to freeze the wings of small garden birds buzzing from branch to branch. Increase the ISO as needed for a shutter speed of around 1/500 sec for bird portraits, and 1/2000-1/4000 sec for flight shots.

**Set Aperture Priority with a low f/number to help blur out backgrounds**



**Ground-level shots can be tricky to frame without the help of Live View**







### Find a better background

It can be challenging to frame garden birds against a clutter-free background, particularly in winter; it might be easier to spot wild birds when the trees are bare, but a tangle of branches doesn't typically make for a great backdrop. You don't have to work with your existing shrubbery though. Use photogenic fallen branches that you can clamp in front of a suitably clean background. Place a feeder out of shot so that the birds land on the temporary perch before flying to the food.



## STAYING LOCAL

Keep it local and work a nearby wood or lake, as you'll be able to get familiar with the movements of the birds and animals there

### ◆ Get kitted up

Wear clothing that won't rustle as you move, ideally with button/snap closures on the pockets as opposed to Velcro-style fastenings. Gloves, hats and balaclavas will all help to reduce the amount of bare skin on show, and you should avoid spraying on the aftershave and deodorant if you're trying to track mammals.

### ◆ Set up a hide

There's plenty of choice when it comes to temporary hides, with small, camouflaged dome hides easy to transport and set up. If you're not going to use it on your own property, ask the landowner's permission first; ideally you'll need to set up a feeding station to bring birds and animals within range of your lens too. To get the animals used to the hide, set it up weeks before you'll use it. Keep it in position with tent pegs and use an empty

Many animals can smell artificial odours such as deodorant and will move away from its source



Shutterstock

drinks bottle as a substitute lens sticking out of the window.

### ◆ Brush up on your fieldcraft

Once you've spotted a wild critter, avoid a direct approach towards the animal; get closer zig-zag style, keeping low and ensuring your shape isn't distinctive against the skyline. With mammals, you'll need to approach from downwind (that is, with the wind in your face).



A hide will need to be in place for some time for animals to get used to it



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Wild animals and birds are easily startled, so try to move quietly and slowly whenever you're near them





◆ **Create a shallow depth of field**

Affordable telephoto lenses have small maximum apertures, usually in the region of f/5.6-6.3. This makes it more challenging to get the buttery-soft backgrounds and foregrounds that an expensive f/2.8 400mm affords – but not impossible. Find a spot to shoot from where the background is a considerable distance away from the subject and free of distractions, and get close to details in the foreground – focusing beyond these will cause them to melt into a blur.

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**This swan almost seems to be melting into the snow, thanks to shallow depth of field**



# WINTERWILDLIFE

Monkeys are often fairly comfortable around humans, so they can be easier to shoot

## GO FURTHER AFIELD

Visit a national park or go global for a wider choice of species and backdrops

### ◆ Do your research

If you're going the extra mile(s) for your wildlife photography, you need to make sure you're in the right place at the right time. Research is cheap – free, even – and it doesn't take much effort to find out when a species is likely to be in a particular location, what time of day it will be active and how approachable it is. For instance, if snow monkeys are on your wildlife photography bucket list, a quick internet search brings up a host of tips – from lens recommendations to hotels to stay in, and even GPS co-ordinates to get you to the exact spot in Japan.

### ◆ Pack extra batteries

As temperatures plummet, so does battery power. Factor in the use of AI Servo continuous autofocus and image stabilization – features you'll typically be making heavy use of – and you'll quickly eat through batteries. So pack several charged spares in an inside pocket to keep them warm.



Lower temperatures drastically decrease battery life – make sure you have spares



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### ◆ Use a mobile hide

There will be some locations where you'll have more luck approaching wild birds and animals if you use your car as a mobile hide. Take someone with you to do the driving – or act as a spotter while you drive – and approach slowly. Turn off the engine to reduce vibrations when you take the shot, and use a beanbag resting on the door frame to improve your chances of getting sharp results; you can buy V-shaped beanbags especially designed for this purpose.



Patience is usually the key when trying to get a good shot of more exotic animals – they won't pose on command!



Shutterstock



Ben Hall

Your camera will likely underexpose a snowy scene – dial in some exposure compensation

## Check the exposure

Bright white snow can pump so much light through the lens that the camera thinks the scene is being overexposed, and will reduce the exposure accordingly. The histogram should be humped towards the right (bright) side of the graph when there's lots of snow around; if it's not, be prepared to dial in +1 or +2 stops of positive exposure compensation.







## INCLUDING THE HABITAT

Don't own a 600mm lens and 2x teleconverter? Embrace the environmental portrait with shorter lenses instead...

### ◆ Give it room

One of the benefits of using a shorter focal length, or just shooting from further away, is that you'll improve your chances of capturing unpredictable action. Get up close at sensor-filling distance and you might crop off the tips of wings, antlers or tails.

### ◆ Compose with care

Your photo can still have an impact even when the animal is

recorded smaller in the frame as an element in the wider landscape, but you'll need to work a bit harder with the composition to ensure the creature is easy to pick out. Techniques to try include finding an uncluttered spot in the background, such as the gap between the trees in the image to the right, and using the rule of thirds together with leading lines and contrasting colours and tones to draw attention to the spot.

Even the most simple of habitats can provide an opportunity for striking shots





Inquisitive creatures examining a camera can often lead to great shots



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## Use a wide lens

A wide-angle lens is ideally suited to capturing more of an animal's habitat, but you'll need to be much closer to the animal in order to prevent the creature looking like a speck. Or rather, your camera will

need to be much closer; few wild animals will tolerate a human being that close. While you might be able to lie on the bank of a lake and get sensor-filling shots of swans and ducks, in most instances you'll need to set up the camera and trigger it remotely.

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Public bird hides are useful, but often not designed for photographers



Make sure the subject doesn't get lost in the background by using careful framing



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## Take a beanbag

Public hides are often situated in spots that afford a wide view of the habitat, but if you're planning on shooting from one then it's definitely worth lugging a beanbag with you. Purpose-built hides are frequently

designed with the needs of birdwatchers in mind, and their narrow windows, seating and shelves can make it awkward to set up a tripod. In this case, wedging a beanbag next to one of the viewing slots can provide some much-needed stability for your lens.





## CAPTURING BEHAVIOUR

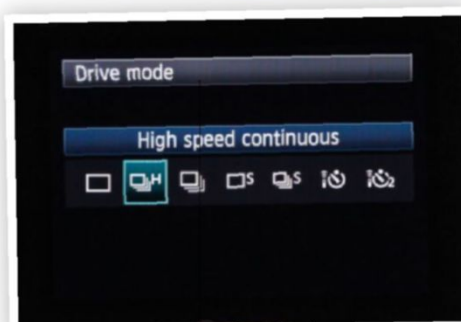
Take your pictures up a gear by photographing wild animals exhibiting their own natural behaviour

### ◆ Go slow

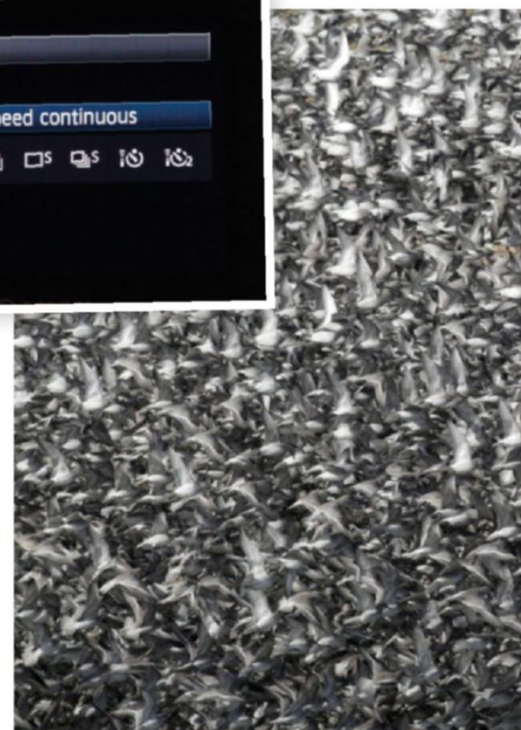
Pin-sharp portraits where you can count the hairs on an otter's chin are all well and good, but there's a lot to be said for using a slower shutter speed to add a touch of motion blur to pictures. In fact, it might be the only option when light levels are really low. Try panning the camera with a running or flying animal – the blur will enhance the sense of speed – or locking the camera on a tripod and allowing flocks of birds to draw lines across the frame.

### ◆ Capture birds in flight

Winter is a time when birds typically form dense flocks – particularly wildfowl and waders – and these offer a great opportunity to hone your flight-shooting skills. Make sure your EOS is set to its high-speed continuous shooting mode and fire in short bursts to avoid overloading the buffer. If you're using a lens fitted with an image stabilizer, select the Panning mode as this means that the lens won't try and correct your intentional movement.



**Flocks and swarms can provide spectacular images from the right angle**







Sometimes it can pay to just fire off a sequence of shots of animals in action

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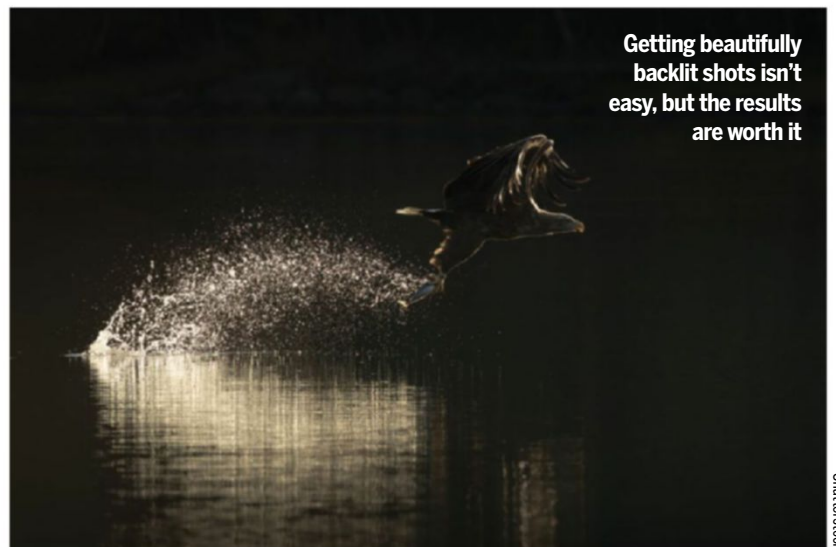


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## ◆ Use AI Servo AF

For active animals and flying birds, choose AI Servo as the AF (autofocus) mode. Half-press the shutter button and your camera will continuously adjust the focus to keep track of the animal; ensure that the creature is covered by the AF point(s) in the viewfinder. If the

subject is against a clean backdrop, such as a bird against the sky, use all the AF points or a smaller group to act as a 'net' to catch the action. If the background is more detailed and there's a risk the AF will lock onto that, set a single AF point or small group and move the camera to keep this on the animal.



Getting beautifully backlit shots isn't easy, but the results are worth it

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## ◆ Make use of backlighting

Shooting into the sun enables you to pick out clouds of steaming breath, or to highlight the outline of feathers and fur. Find a dark background to shoot against to heighten this effect. Watch out for flare, though: make sure you fit a lens hood to shield the front element, and also to protect it from rain and snow. 🐾





# Jurassic larks

Jurassic Coast, Dorset, England. 4:18pm local time. 1 November 2010

*Even in unpromising weather conditions, Dorset's famous coast can serve up some stunning views, as David Noton well knows*

**L**ow cloud sits over Dorset like a blanket: a smothering, uniform grey sky devoid of any tone, texture or interest. Looking out the window, it seems inconceivable it could clear before April, and yet my weather app is telling me the sun is due to make an appearance down around Wareham at 3pm, or thereabouts.

With sunset due at 4:25pm, that could present the photo opportunity at Durdle Door I've been waiting for, and yet I'm not convinced; my gut feeling tells me any sun that does penetrate the gloom will be pathetically weak. The chances of a productive session look slim, and yet I know if I don't go and subsequently miss a precious glimmer of light, the self-recriminations will last for days, weeks even. It's a classic case of Photographer's Angst, a malady I know all too well.

I force myself to stop procrastinating, load my bag in the car and head south. As soon as I'm on the road, relief and well-being courses through me; I should know by now that it's far easier on the mental health to just go, whatever the odds. At least this way I won't risk the bitter torment of looking out the window to see the sun glowing on the office car park. And besides, it's never a waste of time even when the camera never comes out the bag, is it?

At Kimmeridge Bay the chances of seeing any light seem even slimmer as the sun drops behind a heavy layer of cloud that marches in relentlessly from the west. Still, I'm here now; I might as well play with some long exposures.

I frame up my shot, take an exposure reading in manual mode, then mentally calculate an extra 10 stops of exposure: 6 minutes at f/8. Fit the Big Stopper, position a 0.9ND grad by eye in front of the lens to hold back the sky, set the camera to Bulb setting, lock open the shutter, then pace for what seems an eternity. This is just like the old days, mentally calculating exposures with

filter factors and applying running adjustments during the exposure as the light changes. As the interminable exposure drags on I wander about a bit, chat to people on the beach and wait. Against all expectation a tinge of pink is now glowing ethereally on the western horizon – proof positive there's always hope, and that it's always worth going for it no matter how uninspiring the weather looks at the moment.

Eventually it's time; I release the lock, close the shutter and check the image's histogram. Too dense. Open up a stop, and start pacing again. I'm now seriously considering going for a pint while the shutter's open, but I chin-wag with another photographer instead, then stroll back to the camera ten long minutes later. Look at that image glowing on the camera's monitor in the gathering gloom... it's like magic.

The next afternoon, at the world-famous Durdle Door, I'm at it again,



## DAVID NOTON

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**// I'm now seriously considering going for a pint while the shutter's open for exposure //**

**Durdle Door, Jurassic Coast, Dorset**

Lens	Canon EF 16-35mm f/2.8 L II USM
Exposure	127 secs, f/11, ISO100

pace by the tripod as another long exposure ticks past. This afternoon the slanting warm light painting the arch is gorgeous. With such really long exposures getting an accurate reading is difficult, as the 'correct' value is usually changing as I make the exposure. It's not an exact science, it's all a bit suck-it-and-see, but then that's all part of the fun.

Long exposures of this length – measured in minutes – capture cloud streaking through the sky and ethereal seas of mercury. It's a look that can easily be overdone, and there is a time and a place for seeing all the detail in the surface of the water. Then again, if you haven't tried this game of glacially long exposures using heavy Neutral Density filters, I'd urge you to give it a go – it's fun. Just don't pace too far afield while your shutter's open. 📷

**NEXT MONTH PARIS****01 Dancing Ledge, Purbeck, Jurassic Coast, Dorset**

Lens	Canon EF 24-70mm f/2.8L II USM
Exposure	2 secs, f/9, ISO100

**02 Durdle Door, Jurassic Coast, Dorset**

Lens	Canon EF TS-E 24mm f/3.5L II
Exposure	150 secs, f/16, ISO 100

**03 Kimmeridge Bay at dusk, Jurassic Coast, Dorset**

Lens	Canon EF 16-35mm f/2.8L III USM
Exposure	623 secs, f/5.6, ISO200





# REVEAL THE NEXT STEP IN YOUR PHOTOGRAPHY JOURNEY

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# PhotoPlus Canon Skills

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our all-new photo projects and expert guides*



Adam Waring  
Operations editor  
adam.waring@futurenet.com

## New projects with video guides

Follow our Canon DSLR walkthrough guides and Photoshop editing videos

### Welcome...

**BRRR!** It's cold outside – but don't let that stop you getting out and about with your Canon, for we have projects on making the most of morning frost by photographing everything from crisp white landscapes to iced-up car windscreens (it's more photogenic than it sounds), taking in the city lights at night, and shooting foggy scenes – even if you have to make your own mist.

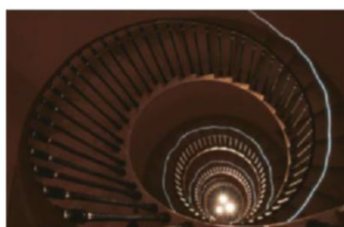
But if you do insist on staying wrapped up indoors, we'll show you how to make a Hockneyesque 'photo joiner' by shooting the same subject from a variety of angles and focal distances and combining them in a pop art montage, and make arty light trails with your mobile phone.

We also explore Photoshop Elements 15's new and improved Smart Tag and Quick Fix features, show you how to give your portraits a distressed look in Photoshop CC, and create rich mono conversions in Lightroom. Have fun!



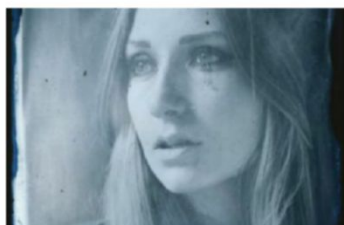
### 46 Joined at the lip

Take inspiration from artist David Hockney's famous technique and piece together a portrait collage



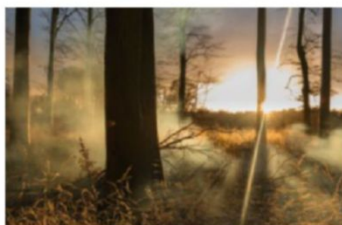
### 56 Blaze a phone trail

Create a cool long-exposure light trail image with your mobile phone and a spiral staircase



### 64 Distressed images

Four fantastic Photoshop techniques to give images the classic look of old, degraded photo prints



### 50 Mist opportunity

Nothing beats a bit of fog for atmospheric landscape photos – even if you have to make it yourself



### 58 A touch of frost

From landscapes to macro close-ups, a dusting of frost turns the mundane into the magical



### 66 Go grey gracefully

Selectively lighten or darken tones in a mono conversion based on the original colours of the image



### 52 Paint the town blue

Make the most of those long winter evenings by capturing local landmarks as they light up at night



### 62 Smart tags & quick fixes

See how the new Photoshop Elements 15 Organizer is smart enough to tell a dog from a goat...

### VIEW THE VIDEOS

**WHENEVER** you see this icon you'll find an accompanying video – tap the link and the video will 'pop-out' of the page (as long as you have an internet connection). You can also download project files to your computer.







## THE MISSION

Create an original collage by piecing together cropped photos of a face

**Time needed**  
1 hour

**Skill level**  
Intermediate

**Kit needed**  
Photoshop (or a set of prints)

# Joined at the lip

**James Paterson** takes inspiration from a famous artist's technique and explains how to piece together a portrait collage

**B**ack in the 1980s, artist **David Hockney** started piecing together Polaroids into collages that showed a subject from multiple angles. Hockney's 'joiners' captured the public imagination and made him a household name.

Since then the technique has been much imitated, to the point where it has almost become a bit old hat. There's even a website

called the Hockneyizer which will do the job for you, which is about as far from the original spirit of the idea as you can get. But experiment with this technique and you'll find there's still life in it, in the unusual point of view it creates and the effect it has on an everyday scene.

To begin, we shoot a set of portraits taken from different angles, some cropped in tight, others looser. Variety is a good

thing here, as subtle differences between the frames will help to set them apart.

From here we've got two options: we can either arrange our collage in Photoshop, piecing the images together and then adding shadows to simulate real photos. Or instead we can take the old-school approach by printing out the photos and arranging them by hand. We'll explain both methods over the page. 📷



PROJECT 1

# CAMERA SKILLS SHOOT YOUR 'JOINERS'

Capture the set of images you need to create your collage

## 01 CAMERA CONTROLS

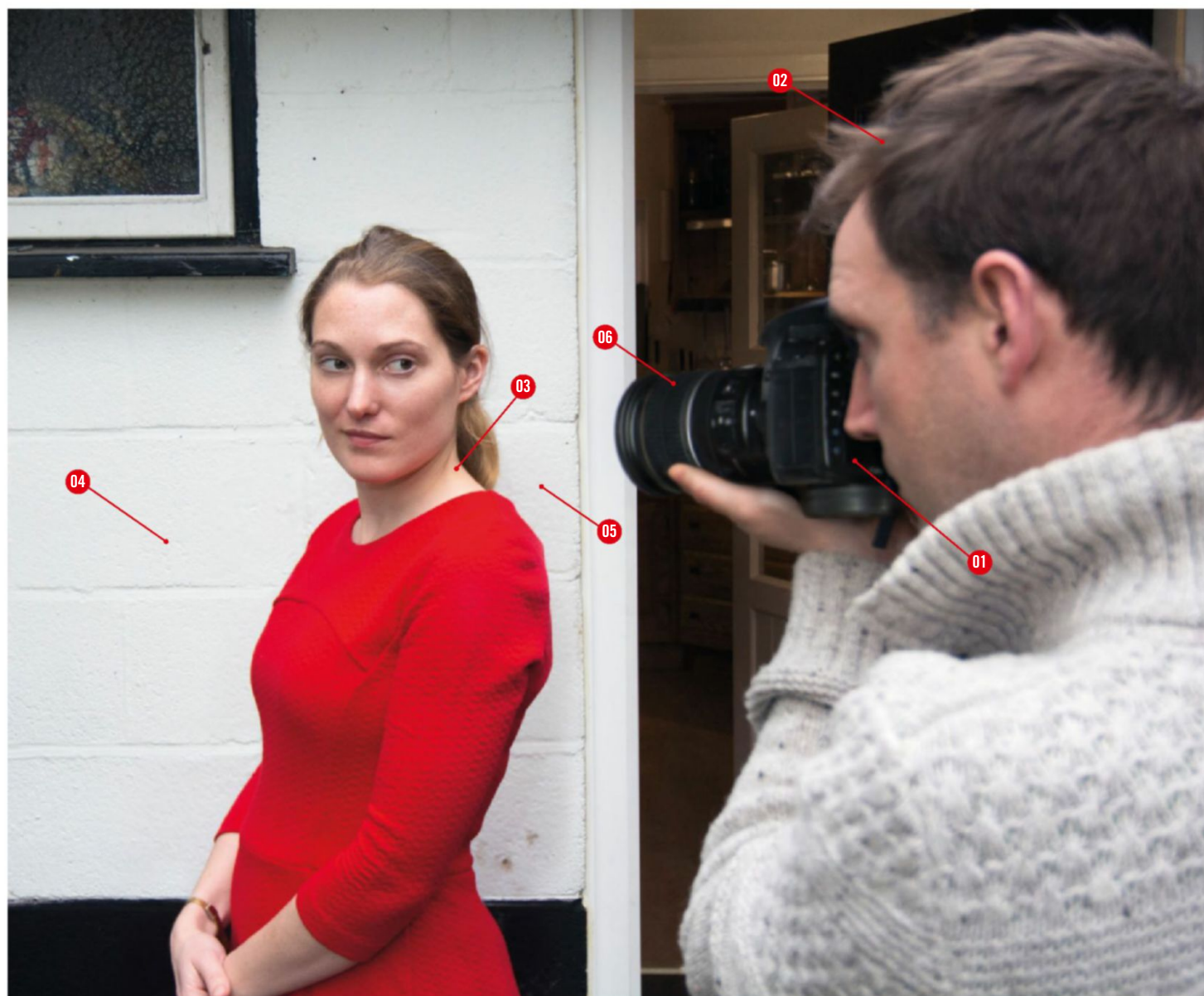
These tend to be our stock exposure settings for outdoor portraits: Manual Mode, Shutter Speed 1/250 sec, Aperture f/4, Auto ISO. This way the shutter speed will be fast enough to freeze the action, and the wide aperture blurs the backdrop.

## 02 MOVE AROUND

Take a series of shots of the face; you'll need at least 20. Move around slightly as you shoot to capture different angles. Try adding variety with your focus point; perhaps focus on the closest eye in one frame, and the furthest eye in the next.

## 03 SUBJECT MOVEMENT

As well as shifting your camera position, ask your subject to move between frames. Shoot them straight on, try capturing their profile, or position them at 45 degrees. For a strong shape to your collage, keep the neckline clear from clothing.



## 04 WHITE WALL

You can try the technique on any scene, but if you want to create the kind of strong shape of the head shown opposite, a simple, clean backdrop will work best as it helps to define the shape of the face. We used a plain white outdoor wall here.

## 05 SOFT LIGHT

We shot our set of portraits outdoors on a cloudy day. Being soft and diffuse, not only is this kind of light flattering for portraits, it's also perfect for the joiner technique as it means the light stays even and consistent across the different frames.

## 06 ZOOM LENS

You'll want to vary the crops as you shoot, with some frames tight to different parts of the face and others further away. A zoom lens like this will help you to shoot in this way. At longer focal lengths, brace the camera as you shoot to avoid shake.



# STEP BY STEP CREATE A DIGITAL COLLAGE

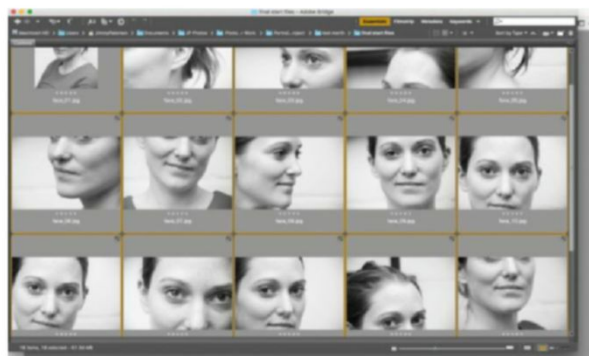
Piece together your set of portraits and learn about Photoshop's transform controls, layer skills and shadows



## BEYOND HOCKNEY

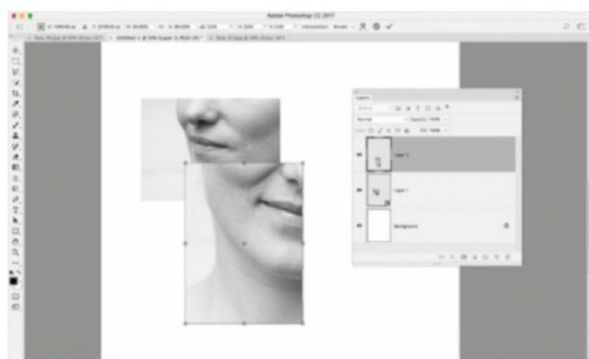
David Hockney might be its most renowned exponent, but photo collage has been explored by many other artists. Thomas Keller creates his collages by shooting a roll of 35mm film, cropping in to each part of a scene from one frame to the next. The entire roll is then laid out as a contact sheet (see above). Portrait photographer Rankin made a series of celebrity portraits, then asked the sitters to chop up and rearrange them to create self-portraits in his series Destroy Rankin.

## NEXT MONTH THE AURORA BOREALIS



### 01 CONVERT ALL IMAGES TO MONO

In Adobe Bridge, right-click an image and 'Open in Camera Raw', then convert it to mono. Click Done. Right-click the image, choose Develop Settings>Copy Settings. Select the other files, right-click and select Develop Settings>Paste Settings.



### 03 RESIZE AND POSITION

Select the Move tool, tick Show Transform Controls and Auto-select Layer in its options. Move the piece roughly into position and click the corner of the box if you need to resize (hold Shift). Open another image, select an piece, paste it in and position again.



### 02 COPY AND PASTE

Open one image, use the Rectangular Marquee tool to select a portion, then Ctrl+C to copy. Go to File>New and make a new A3 document with white background. Paste in the selection. In the Layers panel, right-click the layer and select Convert to Smart Object.

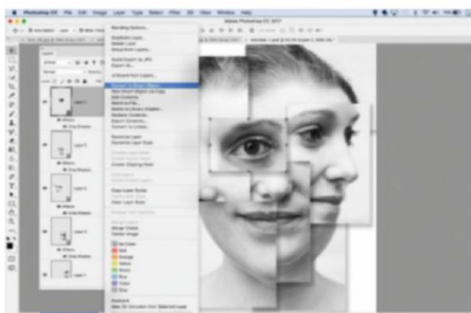


### 04 CREATE SHADOWS

Lastly, we'll add shadows. Double-click any layer to open the layer styles box. Highlight Drop Shadow, then adjust the settings to tweak the shadow size and position. Once done, hold Alt and drag the drop shadow effect from one layer to another to copy it.

# KEY PHOTOSHOP SKILLS NON-DESTRUCTIVE EDITING

Give yourself several bites of the cherry by using these top tips for a non-destructive Photoshop workflow



**WHEN YOU** resize a pixel-based layer to be smaller, you're effectively throwing away pixels, which is a problem if you decide to go larger again. However, if you right-click it and Convert to Smart Object, you can resize as much as we like with no loss in quality.



**IN A** project like this there are a myriad ways to create your montage. Using Snapshots, you can easily save a point in your workflow, then go back to it later if you choose. Create a snapshot from the History panel; it'll appear at the top of the panel.



## STEP BY STEP THE OLD-FASHIONED APPROACH

Why not print out your portraits, piece together by hand and shoot the result?



### 01 MAKE PRINTS

We used a high-street printer to make our set of 6x4 prints – some verticals, others horizontal – then laid them out on a white table. As in Photoshop, we can play with positions and move prints up or down, but it feels more authentic to do it by hand, and the results are more random.



### 02 SET UP A COPY TABLE

For even lighting, position two equally powerful lamps either side of the artwork at a 45-degree angle. Set up a tripod directly above the prints and angle your camera straight down. Some tripods let you reverse the central column so the camera faces downwards, which can help.



### 03 SHOOT THE PRINTS

Check for hotspots and reflections over the prints and adjust the position of the lights if necessary. Ensure the tripod legs don't cast shadows over the print. Set your camera to Aperture Priority at f/8, ISO100 then take your shot. Fix any colour casts or convert to mono in Photoshop.

## WHY NOT TRY EXPERIMENT WITH IMAGE BLENDING

There are plenty of other ways to combine two or more photos, like this slotted effect created with Photoshop

**YOU CAN** create all kinds of interesting effects by combining your portraits, including one like this. We start by copying one image on top of another in Photoshop – use the Move tool to drag images between documents. Next we need a set of strips – either make your own or use the strip.png file provided. Copy this in, then in the Layers panel, drag the strip layer in between the other two. Next, hold ALT and click the line dividing the strip layer and the top layer to clip the top layer. Now the only parts visible will be those directly above the strip shape, which gives us our effect. If you like, add a drop shadow to the strip layer.







## THE MISSION

Use a fog machine to add artificial mist to an outdoor scene

**Time needed**  
 1 hour

**Skill level**  
 Advanced

**Kit needed**  
 Tripod (optional)  
 • Fog machine and fog liquid • Power inverter • Extension cable • Car

# Mist opportunity

If you want atmospheric landscape photos, then nothing beats a bit of fog – even if you have to make it yourself, as **James Paterson** explains

**M**ist and fog offer potent opportunities for any landscape photographer. It's a wonderful mood-setter, but the problem is, the conditions have to be just right.

Natural mist occurs when moisture in the air cools suddenly – think of warm breath on a cold day. The rapid cooling transforms the invisible gas to visible droplets. It generally happens where the warmer air hanging above a body of water comes into

contact with cold land, or when a cold night air falls over warmer wet ground, for instance.

These kind of conditions happen fairly often, but if you want guaranteed atmosphere, why not take matters into your own hands? You might think of a fog machine solely as a cinematographer's tool, used to heighten the atmosphere. But it's great for stills too, and it isn't as troublesome or expensive to set up as you might think. A cheap fog machine like ours can be bought

for less than £30, and can transform an outdoor scene in seconds. Basic fog machines like this are mains-powered, but if we use a power inverter – a device that lets us use a car battery as a power socket – we can create fog anywhere within an extension cable's length of the car.

Fog and mist look wonderful when filtered through tree branches and leaves, which split off the light into well-defined shafts of light. So we headed out to the woods to give it a go... 📸



# STEP BY STEP FOG UP THE FOREST

Learn how to create your own woodland mist with a fog machine, a power inverter and your car battery



## 01 GET A FOG MACHINE

We need an inexpensive fog machine; you can buy these from around £30. You also need the liquid for it, which costs about £10 and lasts for ages. The machine takes about five minutes to heat the liquid, then spurts out a stream of fog.



## 02 MAKE IT PORTABLE

If you don't want to be restricted by proximity to a mains plug socket, consider getting a power inverter. These turn your car battery into a usable source. Connect directly to the car battery and use an extension cable for extra reach.



## 03 CHECK THE CONDITIONS

Wait for a still, windless day. Direct sunlight is best, as this results in strong light rays. Set up your camera facing into the bright light – a tripod isn't essential, but can be useful. Use a tree trunk to obscure the sun from the lens.



## 04 SPRAY THE SCENE

Spray the fog upwind so that it drifts across the scene, and move the position around so that it's distributed in the foreground and background of the scene. The sun catches the particles in the air and shows up as beautiful shafts.



## 05 CATCH SOME RAYS

It might be too thick, as in this shot. If so, wait for a few seconds for the fog to dissipate and then start shooting. If you want to capture shafts of misty light, compose the shot so there are shadowy areas in the frame – the light rays will show up more clearly.



## 06 EXPOSE FOR HIGHLIGHTS

When shooting towards the sun the foreground will naturally be in shadow, so expose for the highlights. Here we're at 1/6 sec, f/13, ISO100. If you don't want to shoot in Manual mode, use Av mode, and try fine-tuning brightness with exposure compensation.



## COOL IT DOWN

The fog that a machine like this produces is very light and dissipates quickly, so it won't be able to stand even the slightest hint of wind. If you want the fog to emerge more thickly and stay lower to the ground as in the shot above, you need to cool it down. In colder conditions this will happen naturally, but when it's warmer, a makeshift tube half-filled with ice cubes works perfectly. Direct the nozzle through the tube and the fog will be forced through the ice, emerging thicker and heavier from the other end.



## PROJECT 3



HANDHELD = SOFT

TRIPOD = SHARP

### THE MISSION

Capture city scenes at night using a combination of long exposures and narrow apertures

**Time needed**  
Two hours

**Skill level**  
Intermediate

**Kit needed**  
Tripod • Remote release • Wide-angle lens

# Paint the town blue

Make the most of those long winter evenings by capturing local landmarks as they light up at night. **Peter Travers** goes out on the town

**We love photographing cityscapes during the winter months.**

Whereas wintry landscapes can end up looking rather bare once the trees have shed their leaves, cities transform into beautiful scenes by late afternoon, with brightly lit buildings contrasting with atmospheric dark shadows. And after the shoot there's always somewhere nearby to escape the cold for a warm cup of coffee...

But capturing city night scenes in-camera requires a few essential techniques. First of all, to show the cityscape off in all its glory, you'll need a wide-angle lens strapped to your Canon. Then, to capture the scene sharp from the foreground to the horizon, you'll need to set a narrow aperture. As you're shooting at night, light levels will be very low (depending on how bright the building lights are, and how much sky you're including in shot) so you'll need a

long exposure; with the resultant slow shutter speed, you won't be able to shoot handheld as you'll end up with blurry shots, so you'll need a tripod. We go in more detail on these settings on the right, while over the page we reveal killer Photoshop skills for boosting your Raw image.

So, dressed in our warmest winter gear, and with our tripod over one shoulder, we spent a night out in beautiful Bath to capture some classic cityscapes. ♦



# STEP BY STEP SETTINGS FOR NIGHT CITY SHOTS

Learn essential Canon camera settings, and how to get set up for shooting at night



## 01 LONG EXPOSURES

The darker it gets, the slower your shutter speed will be for a good exposure. At night this could be 10 to 30 secs, depending on light levels. By using Manual mode you can control shutter speed and aperture.



## 02 DEPTH OF FIELD

Use a narrow aperture (such as f/16) to capture a good depth of field through the scene. Going narrower will slow the shutter speed further, but at the potential cost of loss of sharpness at the edges of your frame.



## 03 SEE IN THE DARK

Your camera may well struggle to autofocus when it's dark. Use Live View's Exposure Simulation mode so you can see your scene, then zoom in to 10x view and manually focus your lens for guaranteed sharp shots.



## 04 TRIPOD & REMOTE CONTROL

Use a sturdy tripod to keep your camera still during the long exposure for a pin-sharp shot, and a remote shutter release to fire the camera without potentially nudging it as you press the shutter button.

## QUICK TIP!

You'll need a combination of a narrow aperture and slow shutter speed when shooting city scenes at night, so it's best to use Manual mode

## HOW TO SHOOT CITIES AT NIGHT



### 01 WIDE-ANGLE LENS

A wide-angle lens means you can include more of your city night scene in shot. For a camera with an APS-C sensor, such as the 750D, 80D or 7D Mk II, you'll need a lens with a focal length of around 10-20mm. For full-frame, like the 6D and 5D series, 16-35mm is wide enough.



### 02 STAR BURST

As well as ensuring you are capturing a large depth of field for front-to-back sharpness, an added benefit of using a narrow aperture of around f/16 (see Step 4, above) is that diffraction caused by the aperture blades turns street lights into striking star bursts.



### 03 BULB MODE

If your city scene has very little light and you need an exposure time longer than 30 secs, you'll need to use Bulb mode (B on your Mode dial, or in Manual mode dial 'past' 30 secs, depending on your camera) so you can keep the shutter open for as long as you like.



### 04 BATTERY POWER

Batteries run out of juice much more quickly in cold conditions, and Live View drains power too. Keep a spare or two in a warm inside coat pocket, ready to go when needed. You may find that the cold dead battery has some life left once you warm it back up again.



### 05 RAW POWER

It's usually best to shoot with the Raw image quality setting on your Canon regardless of what you're shooting – but this goes double for when shooting night scenes, so you can reveal more detail in the shadows, as well as adjust tones, colours and white balance easily.



# PHOTOSHOP TIPS BOOST YOUR IMAGE

Once you've captured the city at night, now enhance the Raw file in Photoshop



## SELECTIVE RAW TWEAKS

In the Photoshop CC version of Adobe Camera Raw, and also in Lightroom, you can selectively adjust areas within your Raw images using the Adjustment Brush tool. We used this to lighten the unlit buildings in our image to help it feel more balanced with Pulteney Bridge, which is brightly lit by the city lights.



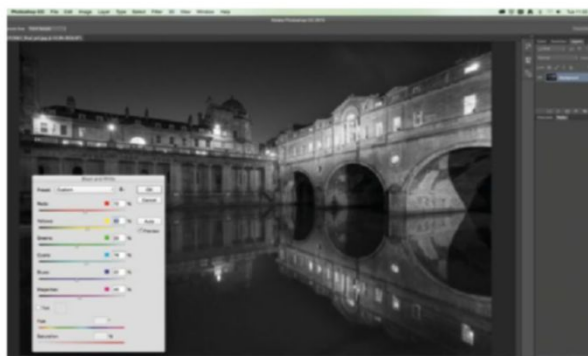
### 01 PROCESS YOUR RAW

We opened our Raw image in Adobe Camera Raw. From here quickly adjusted our Exposure (we set it to 0.45), Contrast (reduced to -10 as it's already a high-contrast scene), boosted Shadows to +44 and reduced Highlights to -28.



### 02 ENHANCE THE BLUE HOUR

Click on the HSL/Grayscale tab, we wanted our image to have a cooler feel so we set Aquas to +15 and Blues to -15. The Sky looks a better blue now. To further enhance this look, see below for how to adjust the white balance – using the Temperature slider.



### 03 IS BLACK & WHITE BEST?

Open your Raw image in the main Photoshop workspace, perhaps a mono conversion will improve the image? Go to Image>Adjustments>Black & White, try clicking Auto first, then adjust each colour slider to adjust tones in your cityscape image.

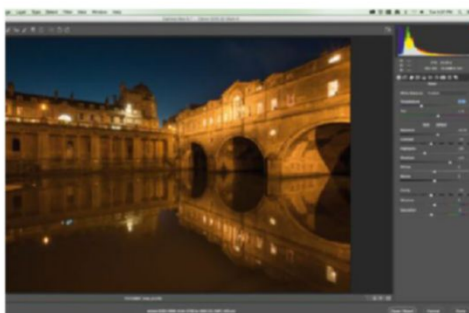
### 04 ADD A TINT

Still in the Black & White control panel, click the Tint box; now you can add a tint to your mono shot. Use the Hue slider to pick which colour (we went with a light blue at 205), and then the Saturation slider; use this subtly for the best results, we set ours to 15%.

**NEXT MONTH**  
**PORTRAITS BY**  
**CANDLELIGHT**

# STEP BY STEP WHITE BALANCE AT NIGHT

Shoot in Raw and adjust your white balance easily in Photoshop ACR



### WARM IT UP

With your Raw image open in ACR you can instantly tweak the white balance with the Temperature slider. Use a higher number, over 5000 K, for warmer tones and colours – good for summertime and people photos.



### COOL IT DOWN

A setting below 3000 K gives a blue tinge – good for wintertime when you want your images to have a cooler feel. We found that a happy medium of 3750 K reproduced the warm colours of the Bath stone but cooled the sky down.





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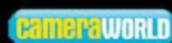
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# Blaze a phone trail

**Adam Waring** demonstrates how to create a cool light trail with your mobile

### THE MISSION

Get creative with your mobile phone

**Time needed**  
Five minutes

**Skill level**  
Easy

**Kit needed**  
Tripod • Phone

**O**ne of the great things about photography is that it's not unusual to stumble upon an idea for a picture while shooting something else. In this case, we were shooting the spiral staircase at Beckford's Tower, when technique writer James Paterson wandered into frame, not realizing that we were in the middle of shooting a long-exposure shot of the stairwell.

When we checked the shot to see if he'd been walking fast enough not to register on the sensor, we noticed a blue streak in the middle of the frame (see below). It didn't take us long to work out that this was the glow of his phone, which he'd been browsing on the way up the stairs.

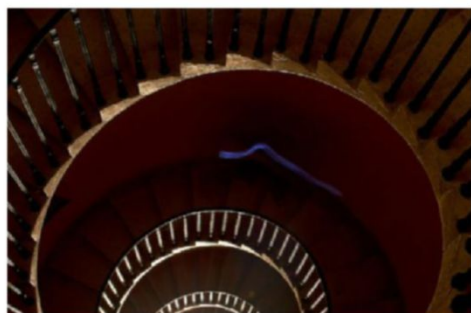
And so an idea was born – why not try racing up the stairs to include a light trail all the way up to add a twist to the shot? Here's how we did it. ➡

**NEXT MONTH**  
**WRITING WITH**  
**SPARKLERS**



## STEP BY STEP COME FULL CIRCLE

Here's how to go round the bend – in a good way...



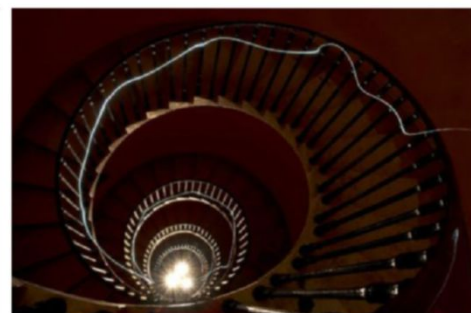
### 01 GO LONG

The shutter speed for our 'accident' was 2 secs; only long enough to create a short trail. An aperture of f/20 and an ISO of 100, gave a shutter speed of 30 secs – long enough for James to run up the stairs with his iPhone in his hand!



### 02 STAY SMOOTH

With our Canon on a tripod, we focused on the bannister nearest the top of the frame to maximize depth of field, then used a remote release to begin the exposure. James then trotted up the stairs with his phone light pointing upwards.



### 03 EXPERIMENT

Our first attempt, with the phone held out over the bannister, didn't quite work, but our second attempt, with the phone held inside, worked better. You don't need a spiral staircase – just somewhere dark to shoot, and a few ideas of your own!



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- Jay P. Morgan  
*The Slanted Lens*

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## PROJECT 5



### THE MISSION

Photograph a range of subjects on a frosty winter's morning

**Time needed**  
Half a day

**Skill level**  
Intermediate

**Kit needed**  
Standard zoom, wide-angle or macro lens • Lens hood • Tripod • Reflector

# A touch of frost

From landscapes to close-ups of the natural world, a dusting of frost turns the mundane into the magical, **Adam Waring** heads into the white stuff

**V**enturing out into sub-zero temperatures while Jack Frost is nipping at your nose might not sound all that appealing, but morning frost offers a myriad of opportunities for the photographer. Landscapes are transformed with a glistening sparkle, ice forms impossible abstract patterns, and a coating of ice crystals gives everyday objects an extraordinary look.

Frost forms when overnight temperatures fall below zero. Moisture in the air freezes on cold

surfaces, forming weird and wonderful shapes in the process. Get up early and head out while it's still dark as the rising sun will melt ice rapidly, and you're better off heading out into open areas, such as fields and parks, rather than woodlands, as the canopy can prevent frost from forming. Frost lasts longer in shaded areas, but you may need to use a reflector to bounce light back into the shot to add that sparkle.

All that bright white frost can fool your metering system into underexposing, so be prepared to dial in around one stop of positive

exposure compensation on your DSLR, but check the histogram to ensure you have nailed the exposure. A cooler white balance setting will help emphasize the cold feel of your shot too.

Subjects are many and varied. Shooting landscapes with side light helps give depth to the frosty foliage in the foreground. Close-ups of leaves and berries show beautiful icy detail. And ice forming on water – or even car windscreens – takes on fractal-like properties. So wrap up warm, glove up, and get out of bed early on the next frosty morning. ❄️



# THE FROST REPORT GET SET FOR SUB-ZERO SHOTS

Ensure that you and your gear are all set up to photograph the morning frost



## 01 STUDY THE WEATHER

A sunny winter's day followed by a clear night means that overnight temperatures will plummet, increasing the chances of ice forming. The colder the night the heavier the frost, and if the temperature remains near freezing the following day, the longer the frost will last.



## 02 ESSENTIAL KIT

A kit lens will do for most shots, but wide-angle is good for landscapes and macro for detailed close-ups. A lens hood is vital to shield your front element from flare, and a tripod when light levels are low. A reflector is useful for bouncing light back onto shaded subjects.



## 03 CAMERA SETTINGS

Set a narrow aperture for wide and macro shots, or a shallow aperture to separate more distant subjects from their backdrops. Your camera's metering system can be tricked by frost, so be prepared to dial in positive exposure compensation to brighten shots up.



## 04 WHITE BALANCE

Dialling down the white balance adds a cool blue tint to your images that accentuates the wintry feel. Select the Kelvin option and enter a value of around 4000 by rotating the Main dial – if shooting Raw you can adjust this during the post-production stage.

## QUICK TIP!

Condensation can form on kit when brought in from the bitter cold to a warm environment, so let it acclimatize in your bag for a while

**NEXT MONTH**  
**FUN INDOOR**  
**MACRO**

ICE AND EASY... STUCK FOR ICY SUBJECTS? HERE ARE SOME IDEAS TO GET YOU GOING



## 01 MACRO MAGIC

Get in close with a macro lens to reveal intricate detail. We set our tripod pointing straight down, then positioned our leaf so the veins cut diagonally across the frame.



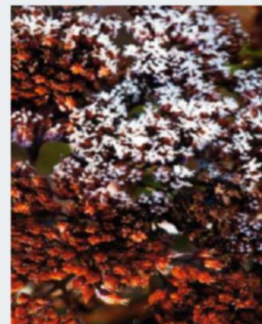
## 02 REFLECT ON THIS

When lakes or ponds freeze they create a highly reflective ripple-free yet distorted surface, so use these to mirror focal points for interesting compositions.



## 03 FROSTY FRUITS

Red berries and green foliage are particularly vibrant when covered with a dusting of ice. If you can't get close for a macro shot, widen the aperture to blur the background.



## 04 BOUNCE LIGHT IN

The sun had melted the ice on one side of this plant, but the frosty side was in shadow and looked dull; we used a reflector to bounce light back in and brighten it up.



## 05 AMAZING ABSTRACTS

A heavy frost can create the most wonderful abstract patterns to form on cold surfaces. These fractal-like ice structures formed on a car windscreen.



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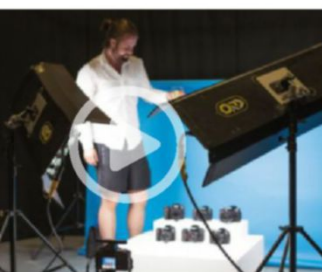


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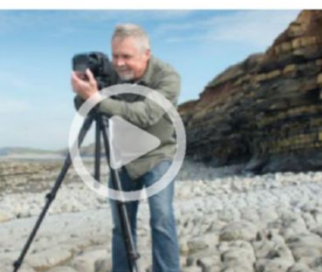
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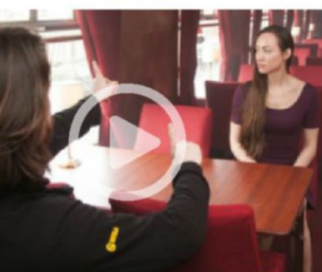
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AFTER

## THE MISSION

Learn about the new smart tags and instant fix features in the Elements Organizer

**Time needed**  
15 minutes

**Skill level**  
Easy

**Kit needed**  
Photoshop  
Elements 15

# Smart tagging and quick fixes



BEFORE

The new Photoshop Elements 15 Organizer is smart enough to tell a dog from a goat, explains **James Paterson**

**T**he Photoshop Elements Organizer has a grand ambition, a goal that many of us thought would be forever out of reach. It's there to bring order out of chaos – that chaos being your image library.

If, like many of us, your photos are scattered across numerous folders and drives, finding the image you want can often be a chore. But if you're an Elements user who knows how to utilize the Organizer to the full, then things get a lot easier. If you've used previous versions of the Elements

Organizer you'll already know about its many sorting skills, from ordering your photos by date, location or rating, to detecting, recognizing and grouping different faces.

In version 15 of Photoshop Elements, the Organizer is smarter than ever. In previous versions, tagging images involved manually adding metadata and keywords. With Elements 15, the Organizer automatically creates 'smart tags' by analysing images for all manner of common subjects and themes. Not only can it detect animals, it can tell the difference

between a dog and a goat. It recognizes events such as birthdays and weddings, and tags places like beaches and farms. It even adds a tag for images it deems to be 'beautiful'. Of course, like all automated features it's by no means perfect, but in most cases it analyses correctly – and when it does go wrong, it's very easy to fix.

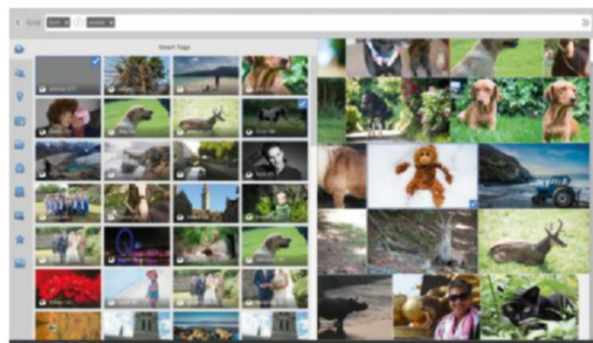
Alongside the new Smart Tags feature is another useful tool – Instant Fix – which comes in handy for quick edits and effects. We'll talk you through these two impressive new features. ♦

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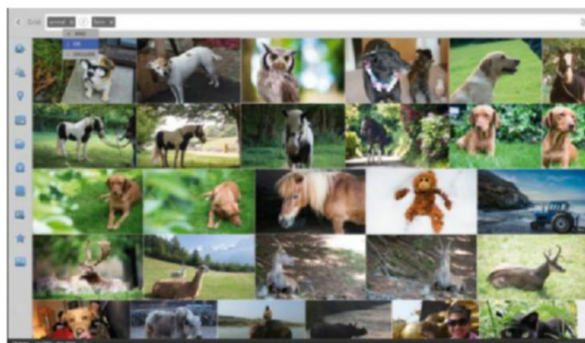
# STEP BY STEP ELEMENTS ORGANIZER'S NEW FEATURES

Get to grips with Smart Tags for instant image sorting, and discover how to make quick edits



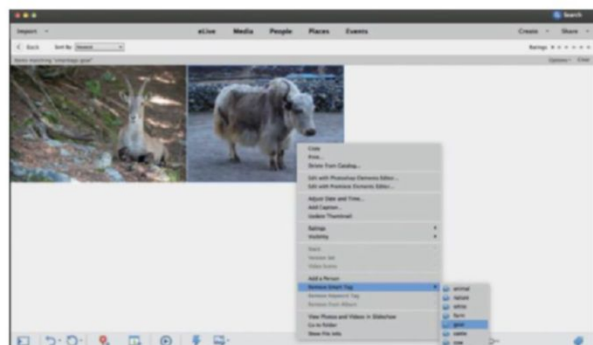
## 01 SEARCH FOR SMART TAGS

Go to the Elements 15 Organizer. Click the Media tab and use the Import button at top left to import new images. To access the new Smart Tags feature, click Search at top right. Then go to the icons that appear along the left edge and click Smart Tags.



## 02 CHOOSE A SET

Your images appear in common categories. Browse through the list and select a group. You can also search for more than one smart tag. When two or more tags appear in the search bar, use the icon between them to choose And, Or or Exclude.



## 03 CORRECT MISMATCHES

Elements thinks this yak is a goat, understandably. If an image is tagged incorrectly, click Grid to go back to that view, then right-click on the image and choose Remove Smart Tag. You can remove tags from several images at once by Ctrl-clicking to select them all.



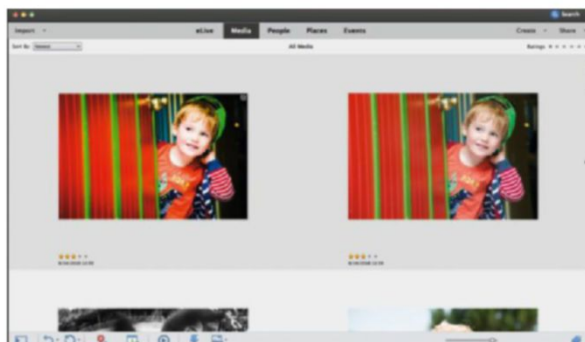
## 04 OPEN INSTANT FIX

Rather than opening an image in the main Elements editor, sometimes it can be quicker to edit it directly within the Organizer with another new feature, Instant Fix. Highlight an image and click Instant Fix. First, grab the Crop tool at top right and crop in tighter.



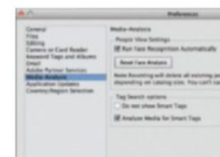
## 05 CHOOSE AN EFFECT

Click the FX icon on the right to access quick, one-click image effects – we've used Coral here. Next try clicking Smart Fix. This auto-corrects tones (if it looks wrong, click Undo). The next three icons – Light, Color and Clarity – let you manually alter those.



## 06 SAVE THE FIX

Click Save at bottom right, then click Back. Notice that the edited image thumbnail has a 'Version Set' icon in its top right corner. This means that we can still access the original image. Go to View>Details then click the black arrow beside the image to see it.

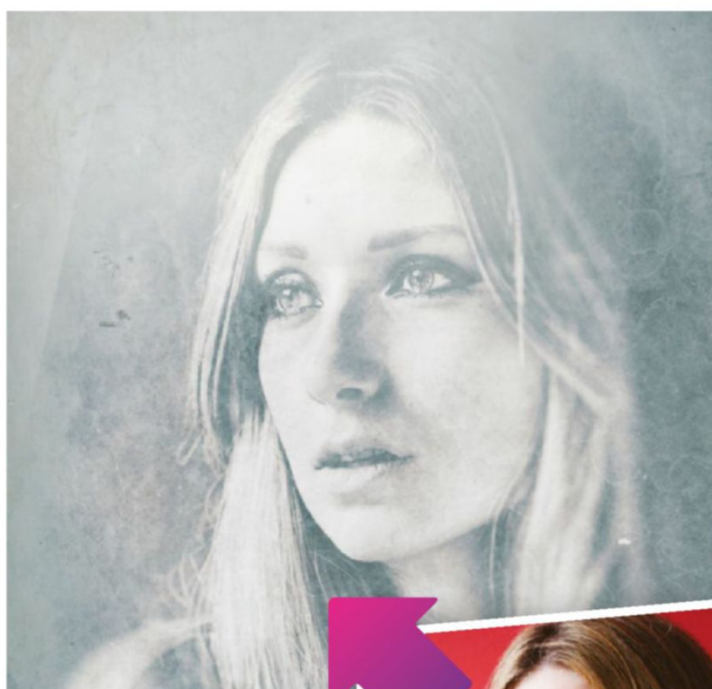


## SMART TAGS AND PERFORMANCE

The analysis for smart tags takes place in the background whenever you import images, but if for any reason you don't want to use the Smart Tags feature, you can go to Preferences (under the Edit menu in Windows, and under Elements Organizer menu on a Mac), click Media Analysis, and untick the 'Analyze Media for Smart Tags' option. You'll also find the option to turn facial recognition on and off here. This could be useful if you see a dip in performance, especially if you have a very large catalogue of photos.

**NEXT MONTH**  
**NEW PSE 15**  
**GUIDED EDITS**





**THE MISSION**

Age your images

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**Time needed**  
30 minutes

---

**Skill level**  
Intermediate

---

**Kit needed**  
Photoshop CC

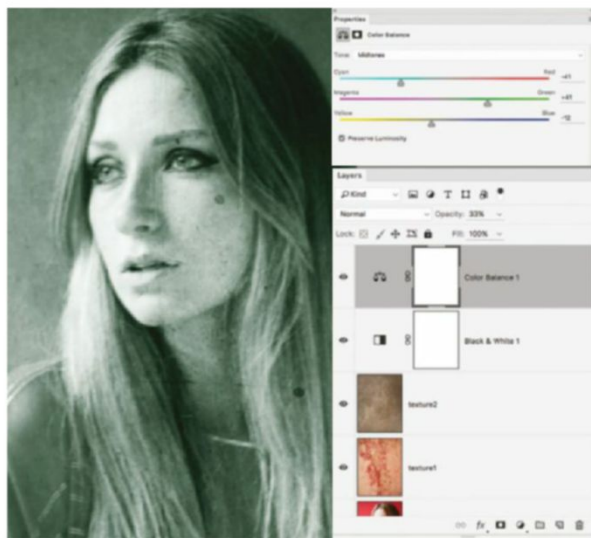
# Distress and age images

**James Paterson** reveals four fantastic Photoshop techniques to give your modern images the classic look of old, messy and degraded photo prints



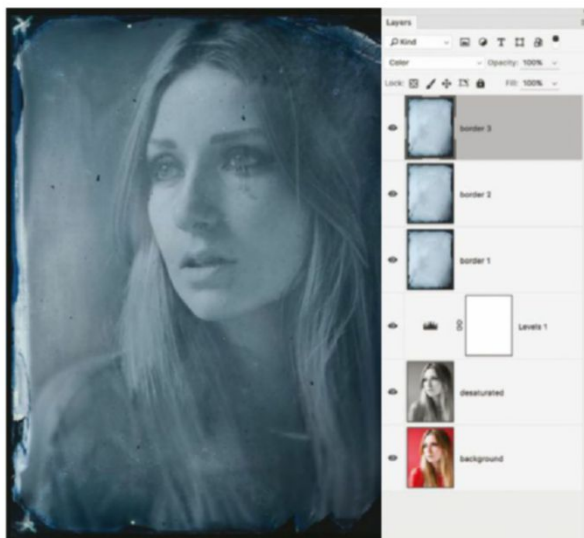
# STEP BY STEP AGEING YOUR PHOTOS

Add textures, create a tatty border, and generally distress your pics with these four techniques



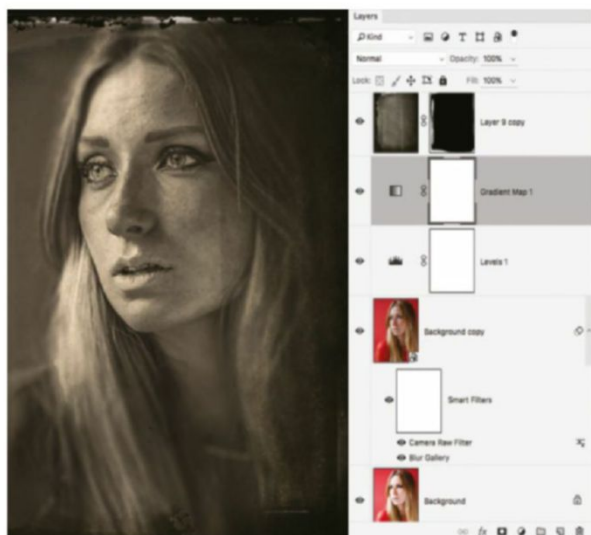
## 01 CREATE A TINTYPE EFFECT

Duplicate the 'Background' layer with Ctrl+J, then go to Filter>Blur to apply a touch of Gaussian blur and motion blur. Next, add a Black & White adjustment layer. Drop in texture01 and 02 and drag them below the black and white layer. Set them both to the Overlay blending mode and lower the opacity slightly. Finally, add a Colour Balance layer at the top and dial in cyan, green and yellow. Adjust the layer's opacity until you're happy with the look of it.



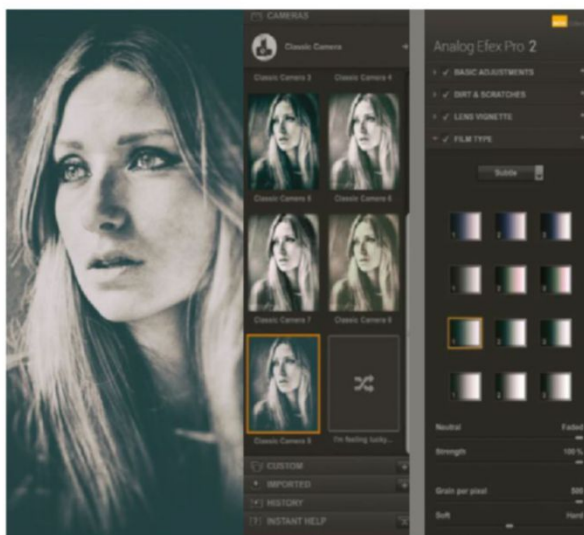
## 02 BLEND A MESSY BORDER

Press Ctrl+J then Ctrl+Shift+U to desaturate. Add a Levels layer and drag the Output Levels whites and blacks inwards to reduce contrast. Download a border (see the tip on the right for our suggestions) then use the Spot Healing tool to remove the subject. Copy the border to the main image and resize with Ctrl+T, then make two extra copies of the border layer. Set the lowest one's blending mode to Pin Light, opacity 75%. Set the middle one to Multiply and the top one to Color.



## 03 COLLODION EFFECTS

Press Ctrl+J then go to Filter>Camera Raw Filter. Decrease Highlights, increase Clarity, then select the Targeted Adjustment tool, target Luminance and drag over the face to darken the reds. Go to Filter>Blur Gallery>Iris Blur, and blur all but the face. Add a Gradient Map layer, load the Photographic Toning Map set and choose Sepia-Selenium 3. Finally, drop in an old border – see Step 2, above, for more on this.



## 04 TRY ANALOG EFEX

Available for free as part of Google's Nik Collection, Analog Efex is a great plug-in for retro effects. Download it from [www.google.com/nikcollection](http://www.google.com/nikcollection) and install it, then go to Filter>Nik Collection>Analog Efex. Here we first applied a Wet Plate preset, then a Classic Camera preset. We finished by adding texture03.jpg and set this layer's blending mode to Screen, with opacity set to 77%.



## FINDING OLD BORDERS

When it comes to adding messy, chemical-stained borders to your images, there are plenty of good resources online. You'll find a really good source of copyright-free images, for example, at the Wikimedia Commons site ([commons.wikimedia.org](http://commons.wikimedia.org)). For the border in Step 2 we used an old photo from [www.bit.ly/dc184border](http://www.bit.ly/dc184border), and for Step 3, an old plate of Abraham Lincoln. Once a border has been located and prepared, you'll need to blend it with your chosen image. You could experiment with blending modes (try Multiply, Darken, Overlay or Soft Light), or add a layer mask then paint with black to hide the centre part of the frame, leaving just the border.

## NEXT MONTH BOOST MONO IMAGES

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## LIGHTROOM



AFTER

### THE MISSION

Improve the look of a monochrome conversion

**Time needed**  
 15 minutes

**Skill level**  
 Easy

**Kit needed**  
 Lightroom 5 or later

# Go grey gracefully



BEFORE

You can selectively lighten or darken greyscale tones in a mono conversion based on the original colours of the image – **George Cairns** reveals all

**In the days of shooting with black-and-white film, photographers would place a coloured filter over the camera's lens to produce more striking pictures.** Different coloured filters lighten or darken the greyscale tones of specific objects in the scene. For example, a red filter makes blue skies appear dark grey in the monochrome print, so lighter clouds pop out in contrast.

Your Canon's Monochrome picture style setting enables you to produce a black-and-white photo in-camera. You can even set it to apply colour filters that help lighten or darken greyscale tones in particular areas, such as blue skies or green fields. This in-camera approach can be hit and miss, so we'll show you how to take more control of greyscale tones in your monochrome conversions in Lightroom.

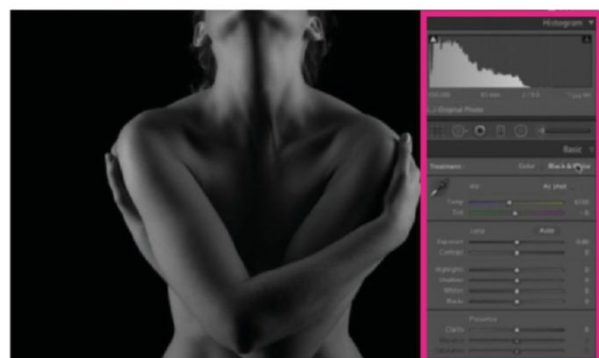
There are several ways to create a monochrome image in Lightroom. If you simply set Saturation to 0, you'll get an instant mono conversion, but you risk producing a drab wash of greys, especially if the shot consists mostly of midtones. An eye-catching monochrome photo has a wide range of tones, from black shadows to white highlights. Let's see how to get better black-and-white images... ♦

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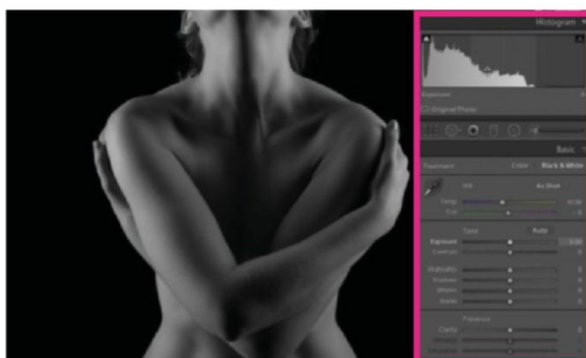
## STEP BY STEP SOFT SILVER TONES

Create a monochrome image that packs some punch with our simple walkthrough



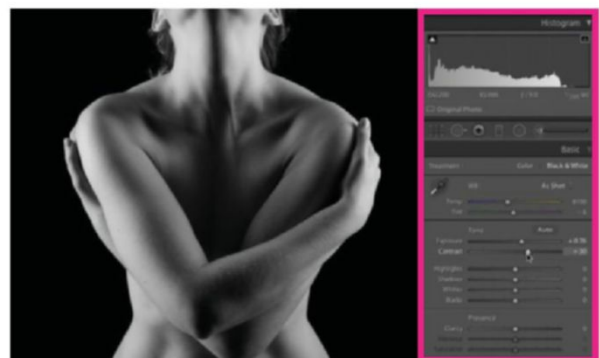
### 01 GO GREY

Import TYLR01.dng. In the Basic panel's Develop module, click on the Black & White tab to desaturate the photo. Lightroom adjusts the position of the Black & White mix sliders. You can fine-tune the results. Drag Orange up to +33 to lighten the skin tones.



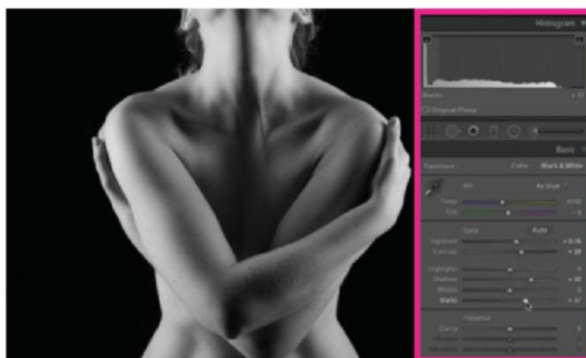
### 02 A QUESTION OF CONTRAST

After lightening greyscale tones that correspond to orange colours, the histogram has slid to the right. However, you still need to boost the contrast. If you move the cursor over the middle of the graph you'll see that the Exposure slider influences this section.



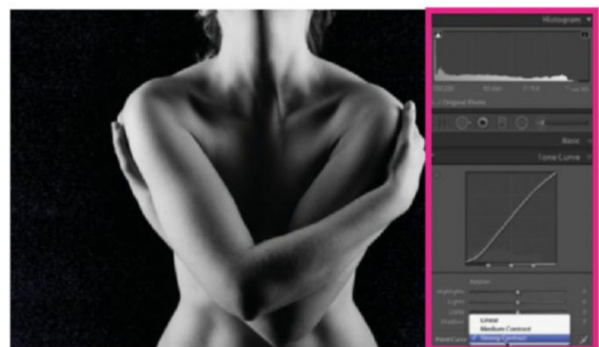
### 03 INCREASE THE EXPOSURE

Click on the middle of the histogram and drag right to push exposure to +0.76 (or drag the Exposure slider right). Increase the strength of the tones by pushing the Contrast slider to +28. The higher-contrast photo has more impact and a healthier-looking histogram.



### 04 LIGHTEN THE SHADOWS

Click on the histogram's Shadow Clipping Warning icon. Areas that will print as pure black will appear as blue patches. There's no clipping, but some shadows lack detail. Push the Shadows slider up to +50. Reveal more detail by dragging the Blacks slider to +37.



### 05 BOOST THE CONTRAST

To reveal the form of our fine-art nude, we can push the contrast even further. The Tone Curve tab enables you to selectively lighten or darken tones in a variety of ways (see right), but for now simply click on the Point Curve drop-down menu and choose Strong Contrast.

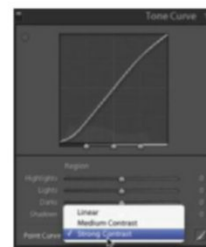


### 06 FINE-TUNE THE GREYS

This contrast boost reintroduces some background clipping, but there are no important details here. Go back to the B&W tab to fine-tune the conversion. Push Reds up to +40. Return to the Basic panel and go to the Presence section. Drag the Clarity slider up to +51.

### QUICK TIP!

It's still handy to set the Monochrome picture style in-camera to give you an idea of how your shot will convert to black and white



### TONE CURVE

Lightroom's Tone Curve tab enables you to target tones and remap them to make them lighter or darker, displaying the results on a graph. We've selected the Strong Contrast preset, which gives a classic 'S-shaped' graph by decreasing Shadows and Darks and increasing Highlights and Lights. You could also manually drag the sliders that appear below the graph, or click-drag on the graph itself, moving your mouse up or down to increase or decrease the tones in that particular area.

**NEXT MONTH**  
**MASTER THE**  
**HSL PANEL**



# THE **CANON** CONVERSATION

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# SIMON BRUTY

*Shooting sport is different in the digital age, but you still need the same skills to take great pictures, award-winning photographer **Simon Bruty** tells **David Clark***

**T**RAVELLING around the world in style, watching major sporting events and meeting elite athletes is most sports fans' dream job. Simon Bruty has lived that dream for over 30 years. The UK-born photographer has covered eight summer

Olympics, several football and rugby World Cups and numerous major events in world tennis, skiing and golf.

Working primarily for *Sports Illustrated* since 1998, Simon has garnered a reputation for finding new ways to shoot familiar sports, as well as having a keen eye for the crucial moment. He's also developed a diverse portfolio which includes action, portraits of sports stars shot on location and in the studio, and behind-the-scenes documentary work. Simon has spent his working life photographing sport, but, as he explains, his first ambition was to be on the other side of the camera...

## **Which came first for you, sport or photography?**

Definitely sport. I played a lot of cricket as a kid and I wanted to be a cricketer. Everything else was by the wayside. However, while at school in Hampshire, England, I did a photography O Level course and that really fired me up. I went out and got a Canon AV-1 with a 50mm

### **01 SKI JUMPING**

South Korea's Seou Choi in action during the Men's Large Hill ski-jumping event at the 2014 Winter Olympics.

Lens	Canon EF 70-200mm f/2.8L IS II USM
Exposure	1/15 sec, f/9, ISO250



# THE CANON CONVERSATION

## 02 SWIMMING

Simon's shot of a swimmer diving into the pool was taken at the 2008 Olympics.

**Lens** Canon EF 70-200mm f/2.8L IS II USM

**Exposure** 1/1000 sec, f/2.8, ISO1000

## 03 STRIKING GOLD

A remote camera at the track side with a wide-angle zoom captures Mo Farah winning gold in the 5000m at the London Olympics in 2012.

**Lens** Canon EF 17-35mm f/2.8L USM

**Exposure** 1/2000 sec, f/4.5, ISO2500

## 04 KENTUCKY DERBY

Taken from aboard the Goodyear blimp: Barbaro on his way to a decisive win in the 2006 Kentucky Derby.

**Lens** Canon EF 500mm f/4L IS II USM +1.4x converter

**Exposure** 1/1600 sec, f/7.1, ISO800

lens. I remember looking at other lenses in the local camera shop and fantasising about buying them, like a kid looking in a sweet shop window.

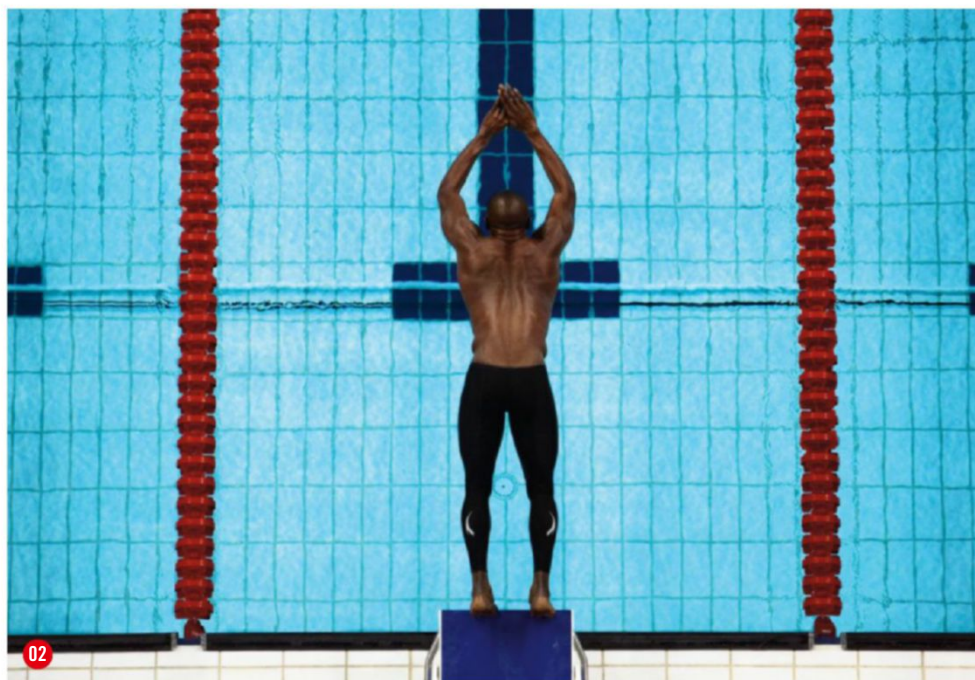
### When did you decide you wanted to shoot sport?

At first I didn't have any interest in becoming a sports photographer, because I was constantly being told how tough it was to get into. Then at school I played basketball and got on well with the teacher, who was a former professional player. He asked me what I wanted to do when I left school and I told him I was into photography. He told me about the Allsport agency, showed me pictures they had taken of him and gave me their phone number.

### How did you approach Allsport?

I just kept calling the number and after a while I got through to Steve Powell, who was the co-owner of the agency at the time. Eventually he said "Why don't you come in to see us?" So I went to the office in Collier's Wood, south London, and was shown around by senior staff photographer Adrian Murrell. I was 18 and super-excited to be there. A few weeks later I had a call from Adrian

**// I was basically making tea and a gopher. I was on the lowest rung in the Allsport office //**



saying they had a job for me. My cricket career had stalled badly and that avenue was now closed to me, so I grabbed this opportunity. I found a bedsit, moved to London and started at Allsport in 1984.

### What work did you do?

I was basically making tea and a gopher. I was on the lowest rung in the office, but I was really lucky because Allsport was definitely at the cutting edge of sports agencies. It had a great stable of photographers and I learnt literally on the job with those guys, particularly Dave Cannon, who took me under his wing and lent me gear. As I didn't know anyone in

London, if I had any spare time I would just go out and photograph sports events. At weekends I'd get a pass to go to Fulham or Chelsea matches. Dave would look at my work afterwards and say "This is terrible," which it was. However, I was looking at imagery all day and every day and did nothing else but go out and try to emulate the guys in the office. I started small, gradually improved and began getting bigger and bigger jobs.

### What were your first big assignments at Allsport?

Dave Cannon took me to the British Open in 1985, then the following year I went to



## // I didn't have time to fail; when you're working for a magazine they expect you to come up with the results //

which nobody in the UK or Europe was doing. *Sports Illustrated* in particular had the resources and they also expected sports photographers to be able to light a portrait. Until then, I had only played with lights and experimented – I'd had no formal education in lighting, just learning on the job with other Allsport photographers. So it was challenging.

### **Was there a lot of trial and error as you learned?**

I didn't have much time to fail, because when you're working for a magazine they just expect you to come up with the results. I certainly messed things up many times, but always managed to come up with the image they were after. When I first got here I bought a Norman 400B one-light kit and a great little softbox. I came up with some pretty cool images using that simple set-up and just went on from there.

### **How long did you stay with *Sports Illustrated*?**

I was on the staff for 17 years, so I had a good run. Two years ago they fired all the staff photographers and now I'm freelance. I still do some work for them as well as a range of commercial and editorial clients. The market is now swamped with action pictures, so now most of my work is story-based or portraits, with action tagged onto it. I like the variety.

### **Do you enjoy shooting portraits?**

I've always been interested in the portraiture side, but it is a very different animal. When the sitter comes through, you have to have an idea and be ready, because generally they don't want to give you any time. You need to have plans A, B and C and you have to be able to execute them at any point.

### **What photographic kit have you used over the years?**

I've always used Canon kit, apart from the occasional medium format camera. As a sports photographer you need the

Rio to photograph Formula 1. That was basically it – I was up and running. Allsport's work was expanding and there was a need for more photographers. Bob Martin and Chris Cole joined the agency around that time, so there were a lot of young and ambitious people coming in. There was a lot of camaraderie among us, but at the same time we were competitive. It was a brilliant place to learn. I spent 13 years at Allsport.

### **What was your next move?**

I wanted to try something different so I went to Allsport's New York office in 1994. While in the States I started getting

to know people who worked for *Sports Illustrated*. They had big budgets and were sent on amazing assignments on private planes. It was a glamorous life and I really wanted to work for them. In 1998 I left Allsport, went freelance and started doing one or two assignments. Then in the same year they offered me a staff job.

### **What were the differences between UK and US photographers, if any?**

The sports guys in the States were definitely more technically savvy at the time. They would light whole arenas,

04



## 05 GAME ACTION

A pin-sharp, bird's-eye view of the NCAA College Football Championship game between Ohio State and Oregon.

**Lens** Canon EF 200-400mm f/4L IS USM

**Exposure** 1/1250 sec, f/4, ISO10000

## 06 MICHAEL PHELPS

This Phelps shot was taken on the first run-through of an underwater set-up.

**Lens** Canon EF 20mm f/2.8 USM

**Exposure** 1/250 sec, f/13, ISO400

## 07 SKEET SHOOTING

At the end of a magazine assignment on skeet shooting, Simon set up this picture. "The subject was eager to point the gun at me by that stage!" he says.

**Lens** Canon EF 70-200mm f/2.8L IS II USM

**Exposure** 1/1600 sec, f/2.8, ISO200

wide range of lenses and the quality that Canon provides. I've always felt they have been on the cutting edge in terms of research and development. Canon's service is good and the cameras have always been reliable.

### What's your main camera now?

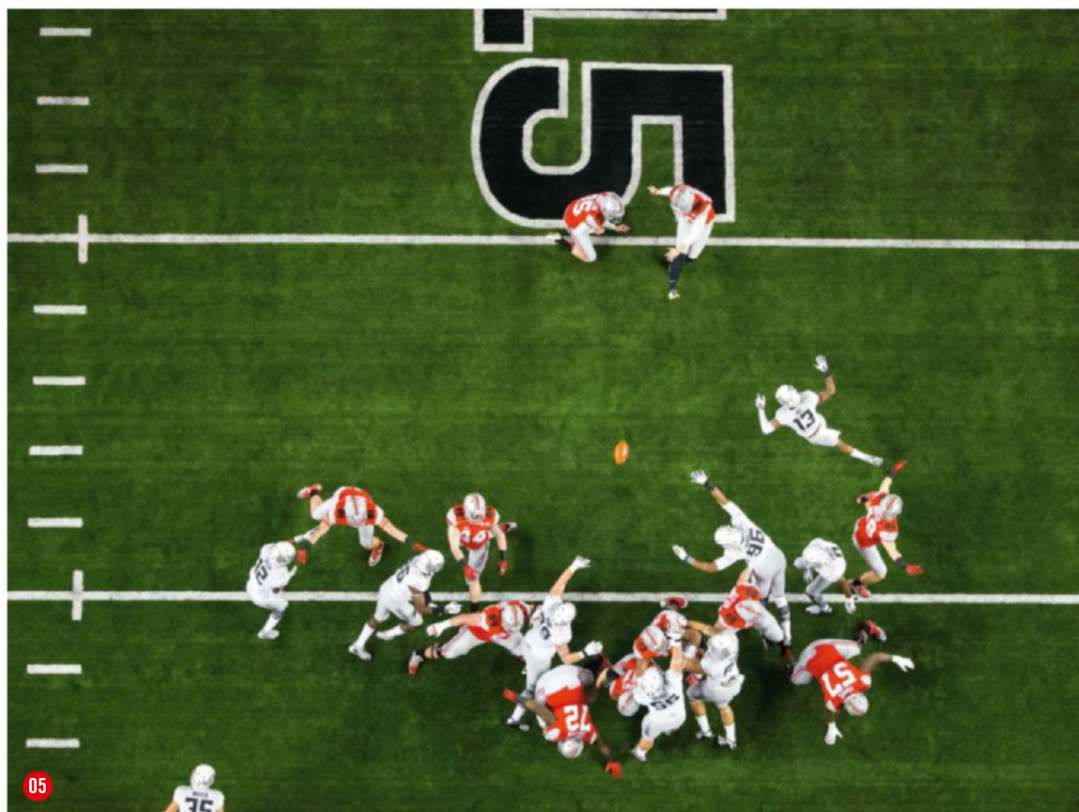
I use the Canon EOS-1D X Mark II. It's amazing. There are lots of things I love about it, such as the ability to shoot Raw files without any buffer. As a sports photographer that's what you need.

The main lenses I use are the EF 400mm f/2.8L IS II USM, which is a staple for sports photographers, and the EF 200-400mm f/4L IS USM which has an in-built 1.4x extender. The zoom range gives me the ability to frame the subject, so I've been using that lens a lot. I switch between the two. I also take a variety of other lenses on assignment, including wide-angles and tilt-shift lenses.

### Do you use a lot of remote cameras for action shots?

I've always had a love-hate relationship with remote cameras. I took four remotes to the Rio Olympics this year, which is a lot of gear in itself. They're brilliant because they get you to spots you

**I'm not an expert in Photoshop by any stretch, so I farm it out to guys who know what they're doing**



generally can't photograph from. However, they take away a lot from the camera in your hand, because you're always fussing over the remotes. I've messed up so many times with remote cameras and it's debatable whether the time and effort poured into them is worthwhile, for me.

### Do you spend a lot of time on post-processing?

No, I don't spend very much time on it. I'm not a Photoshop expert by any stretch of the imagination, so I farm it out to guys

who know what they're doing. I use Lightroom and Photoshop in my basic attempts at post-production, but I mainly concentrate on the shooting.

### How has sports photography changed during your career?

All the changes have been based around technology. Even before digital, autofocus changed sports photography dramatically. Before autofocus, really good sports photographers who could follow focus were in a different league to the rest of the pack. Autofocus levelled the playing





07

## // Modern technical innovations have made getting an action photograph pretty straightforward //

field. Then digital brought about a complete revolution, particularly in the transmission of images, and it's still changing. Technical innovations over the past 10 or 15 years have made getting an action photograph pretty straightforward.

### So has sports photography become de-skilled?

On the outside it seems like it's all changed and it's all super-easy. We are awash in imagery and you see great action photographs every day. But the basic skills of anticipation and concentration are the same as they've always been. If you're not good at those essential photographic skills, it doesn't matter what new technology you're dealing with – you're never going to be that good a photographer.

### What's your favourite and least favourite sport to photograph?

I've always liked photographing soccer.

## STORY BEHIND THE SHOT



### Matthias Steiner's slip

A prime example from Simon of always being ready to capture the vital moment

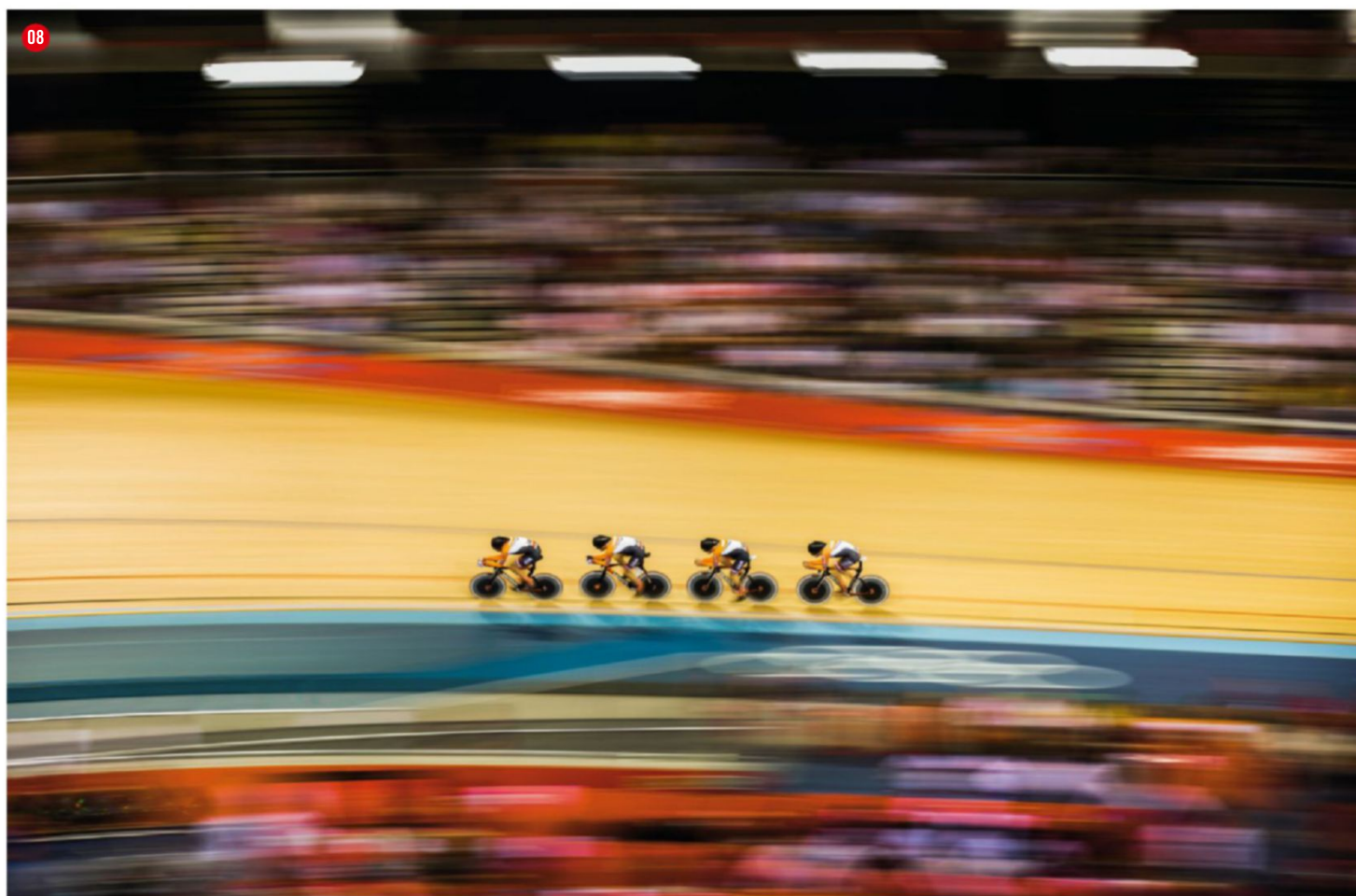
"Right at the end of the London 2012 Olympics, I went to photograph the weightlifting finals," says Simon. "I remember getting there early and looking at the options available to me. I wanted a position looking head-on at the lifters and slightly elevated."

"Matthias Steiner was a gold medal winner in weightlifting at the Beijing Olympics and he was one of the best around. But when he tried to lift 196kg at London, he made a mistake.

He slipped, the bar came crashing down onto him and caught him across the neck. He walked away, but his Olympics ended there and he retired the following year.

"Photographing weightlifting is usually really boring and repetitive. If something happens and you're not paying attention, you're going to miss the crucial moment. From experience I knew something unusual might happen and didn't miss this moment."





**// The police had all my gear on the table. They thought it was some sort of bomb //**

## 08 TEAM PURSUIT

Simon had only one chance to shoot at the velodrome at the 2012 Olympics. "99 per cent of this shoot went in the bin," he says.

**Lens** Canon EF 70-200mm f/2.8L IS II USM

**Exposure** 1/8 sec, f/5.6, ISO500

## 09 THE MASTERS

A tilt-shift lens gives a 'toytown' look to the US Masters golf championship.

**Lens** Canon TS-E 90mm f/2.8

**Exposure** 1/2000 sec, f/2.8, ISO100

## 10 MATTHIAS MAYER

Mayer on his way to winning gold in the Men's Alpine Skiing Downhill event in the Winter Olympics 2014.

**Lens** Canon EF 600mm f/4L IS II USM

**Exposure** 1/2000 sec, f/4, ISO500

It's not easy, even with autofocus, but I love the atmosphere.

On the other hand, shooting downhill skiing is very difficult. There are a lot of hazards, you're often working in bad weather conditions and you have to visualize where the best action photograph is going to take place. There are a number of things that can go wrong and that doesn't include being killed by the skier. I've always found it to be a challenge. Every sport has its own personality and, as a sports photographer, you have to figure it out.

## Has anything gone wrong for you at a big event?

I had a hell of a scene at the old Wembley stadium before a major football match. I had a set of long-distance remote camera triggers that were like old walkie-talkies, and I had clamped two cameras high in the catwalk with these things on. I had permission to do it, but ten minutes before the start of the game, my name was read out over the stadium PA and I was asked to go to the office.

I went there and the police had all my camera gear on the table with these radios. They thought it was some sort of

bomb and impounded it all. It took a lot of persuasion before I got it back. It was the last thing you'd want to happen just before the start of a big event.

## What's the secret to getting a great sports photograph?

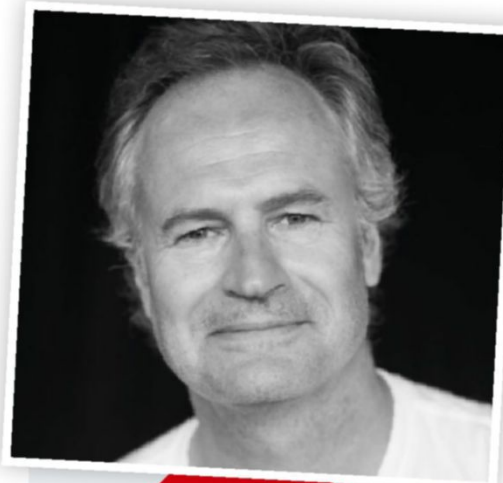
It's difficult to quantify. There's a lot of luck involved in getting a great action photograph, but you have to make sure you're ready when that luck comes your way. Personally, I love to find a different angle, but that's really difficult when you're constantly corralled, as we are at the Olympics or in the Premier League, and told where to shoot from.

I chafe a little bit at those constraints. I definitely believe that bending the rules is what a photographer should be doing. You should always be questioning: should I be with the pack or should I be going my own way? Sometimes I'm in the wrong place because I didn't want to be with the pack and the action happens in front of it. But I still try to follow that mantra because I think that's what separates the really good photographers from the rest.

## What have you enjoyed most about your work?



**// I've had an amazing career so far and have travelled around the world //**



## PROFILE

### Simon Bruty

Sports photographer

Simon was born in Portsmouth in 1965. He emigrated to South Africa with his family in 1970, but returned to the UK in 1975. He worked for the Allsport agency from 1984-1997 and, after settling in the US, was a staff photographer for *Sports Illustrated* from 1998-2015. During that time he shot over 80 magazine covers.

His accolades include World Press Photo awards in 1989 and 1999, the IOC Best of Sport Folio Winner in 1994 and *L'Équipe* Sports Photographer of the Year in 2003. In October 2016 he won a Lucie Award for Achievement in Sports.

Now working as a freelance photographer, his editorial clients include *Sports Illustrated* and FIFA, while his commercial clients include Rolex, Nike and Reebok. He currently lives in Washington DC.

**Next issue:** Award-winning Portuguese architectural photographer Fernando Guerra



I've had the luxury of being able to come up with a different angle on sports pictures without getting fired. If you work for a tabloid newspaper, you have a very different outlook to someone like me who works for a weekly magazine. Working for *Sports Illustrated* fed my attitude that I could go somewhere else and do something slightly different.

#### **What advice would you give an aspiring photographer, particularly in your field?**

Photography is changing and merging with video, so anyone starting today would have to be able to use all those skills to get ahead. If you want to be a photographer or someone in the visual arts, you have to embrace shooting still

and moving images and understand how to put it all together. If you don't, then you'd better be super-talented if you want to survive as a pure photographer.

#### **If you were starting out now, would you still go into sports photography to begin with?**

Sports photography has been unbelievable to me. I was incredibly lucky to get into it in the first place and I've had an amazing career so far and have travelled around the world on someone else's dime. Photography itself is in a difficult position and starting a career is always challenging, but there's still room for a good photographer. That's why I'm still doing it and not working as a barista at Starbucks. ☘



# PHOTOSTORIES

*Photo essays from PhotoPlus readers  
and professional photographers alike*

JOIN IN  
THE FUN!

One of the great things about photography is being able to share your view of the world. This issue, aviation photography in Snowdonia's famed Mach Loop and documenting the destruction caused by the construction of a highway.

**We want your photos and stories!** For your chance to show off your images in *PhotoPlus*, send three to five high-resolution JPEGs, along with a brief synopsis – explain why you took the shots, the location, whether they're part of an ongoing project or a one-off shoot, and anything else unusual or interesting. Also include Canon DSLR, lens and exposure details.

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**Post**  
PhotoPlus: The Canon Mag  
Future, The Ambury  
Bath BA1 1UA, UK



## PROJECT INFO



**NAME:** Sean Strange

**LOCATION:** The Mach Loop,  
Snowdonia, North Wales

**MISSION:** To showcase the professionalism of the Royal Air Force and the necessity of rigorous training

**KIT:** Canon 5D Mark III, Canon EF 300mm f/2.8L IS II USM, Canon Extender EF 1.4x III

[www.seanstrangephotography.co.uk](http://www.seanstrangephotography.co.uk)

## British air power

Contrasting the raw power of high-tech military jets against scenic Snowdonia

**A** viation has been in my life from day one; it runs in the family in one form or another, so naturally I am drawn to the skies above. Over the past 21 years I have increased my knowledge of the Royal Air Force, its history and realizing how incredibly important it is for our forces to train day in, day out for different scenarios.

History shows us that training has saved lives and helped to achieve the aims of operations with far greater

efficiency. My aim has been to photograph the RAF in its current training capacity at a series of locations, but the one that really catches the eye is in the Snowdonia National Park, Wales. LFA7 – otherwise known as 'The Mach Loop' – is one of the most beautiful locations you can find in Britain to photograph aircraft.

I use a Canon 5D Mark III and EF 300mm f/2.8L IS II USM with an Extender EF 1.4x as my standard setup for aviation. It gives me the reach to capture the action.





Photographing up in The Loop is like fishing; you have to have a great deal of patience and a dash of good luck. The light can change in an instant, so you have to check your settings and take test shots every so often because here is the killer bit; you have one shot to get this right and you only have a couple of seconds to do it. I have been photographing aviation for a long time now so I know precisely what to

expect and roughly when to take the photographs that will work the best.

Weather conditions can be somewhat adverse, so correct clothing is incredibly important as the wind will cut through nearly everything up there. At the end of three cold days I had produced a body of work that emphasized the skill needed to undertake this kind of flying and to give the viewer a small sense of what it is like to be in a pilot's seat. 🍀

**Photographing up in The Loop is like fishing; you have to have a great deal of patience and a dash of good luck**

### 01 PIERCING THE LIGHT

A rainbow provides a colourful backdrop for a GR4 Tornado

Lens	Canon EF 300mm f/2.8L IS II USM + Canon Extender EF 1.4x III	Exposure	1/1000 sec, f/7.1, ISO800
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### 02 INSIDE THE BUBBLE

A Hawk T1-A training jet weaves through the Welsh mountains

Lens	Canon EF 300mm f/2.8L IS II USM + Canon Extender EF 1.4x III	Exposure	1/2000 sec, f/5, ISO1000
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### 03 OVER THE SHOULDER

A GR4 Tornado thundered past my vantage point in a split second

Lens	Canon EF 300mm f/2.8L IS II USM + Canon Extender EF 1.4x III	Exposure	1/1000 sec, f/7.1, ISO800
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## PhotoPlus FEEDBACK

*You must know your gear inside-out when shooting fast-moving subjects like aeroplanes as you have limited opportunities to capture them. Sean has sussed out his perfect setup, which does come with experience. Practice makes perfect!*

*Keep an eye on the weather and light, you may need to predict your exposures to cope with the changing light conditions to ensure you capture the best possible results.*

*Luck plays a big part in aviation photography, but the more often you get out and about the luckier you'll be – Sean was certainly very fortunate to capture the Tornado hitting a pool of light with a rainbow behind and capturing the perfect exposure.*





## PROJECT INFO

01



**NAME:** Amlan Sanyal

**LOCATION:** Siliguri, India

**MISSION:** To capture some of the moments of demolition of illegal roadside houses to make way for the expansion of a highway and the impact on its dwellers

**KIT:** Canon EOS 5D, Canon EF 24-105mm f/4L IS USM

<https://www.flickr.com/photos/amlansanyal>

# Urban development

Documenting a new highway's impact on roadside dwellers

**T**he Great Asian Highway is a landmark project that aims to increase India's connectivity with neighbouring countries and be a major boost to economic activity in the region. Approval has been granted and the work of highway expansion has already started around the city of Siliguri.

As the process of broadening the highway to four lanes has been initiated,

roadside slums are being flattened to make space for the work. These settlements have illegally occupied the land for decades, with buildings ranging from ramshackle shelters to unauthorized concrete houses. The majority of its inhabitants live below the poverty line, and they are seeing bulldozers bringing down their homes, shops and other establishments. Their source of income has suddenly come to a halt.

Today, when road-building has become essential due to

the increase in the volume of traffic, we must look for a more permanent solution for both the problems – not just the widening of the road, but also the economic rehabilitation of the poor. Authorities should ensure that the people dwelling on the roadside have somewhere better to go. Otherwise, after a few years, the roadside will be threatened again by the growing population.

Through my photographs I try to show that demolition takes down more than just





structures; it destroys people's homes and the lives lived within them. Rebuilding that requires much more than the 30 minutes it takes for a house to come down.

Every demolition has a tragic aspect. I was saddened to see a mother holding her child in despair, worried about the uncertain future. The child, however, is oblivious of the situation as she is in her mother's arm, which is still the most comfortable place in the world. I saw a little boy who has packed his toys and games and awaits his parents to take

him to a new home. He only hopes to see his friends again. An old woman has seen lots of ups and downs in her life but never expected to go through this hopeless situation at this age when she is all alone. The only asset she holds is some memories of the past.

As people say goodbye to their houses, it will be the last time they will walk within the walls that have seen many tears and smiles and adventures over the years. It almost felt as if they were visiting a dying relative and saying their last goodbyes. ♦

**I try to show that demolition takes down more than just structures; it destroys homes and the lives lived within them**

#### 01 THE DEMOLITION

The highway's construction leaves a path of destruction in its wake

Lens Canon EF 24-105mm f/4L IS USM Exposure 1/640 sec, f/4, ISO100

#### 02 FEELING HOPELESS AND DESPAIR

The suffering inhabitants face life without a roof over their heads

Lens Canon EF 24-105mm f/4L IS USM Exposure 1/200 sec, f/4, ISO100

#### 03 CHILDHOOD INTERRUPTED

A young boy reflects on the past and present

Lens Canon EF 24-105mm f/4L IS USM Exposure 1/100 sec, f/4, ISO100

#### 04 MEMORIES NEVER DIE

An elderly citizen comes to terms with losing her home

Lens Canon EF 24-105mm f/4L IS USM Exposure 1/250 sec, f/4, ISO100

#### 05 SAYING GOODBYE

The trauma of saying goodbye to friends and neighbours

Lens Canon EF 24-105mm f/4L IS USM Exposure 1/640 sec, f/4, ISO100

## PhotoPlus FEEDBACK

*Documenting humanitarian issues is a great way to raise awareness. Amlan has done this sensitively and his series tells a thought-provoking story, which leaves the viewer wanting to find out more.*

*Street and documentary photography work well in black and white. By stripping the colour from a scene, we tend to focus more on the details and what's happening in an image.*



# MYKIT

Professional photographers reveal their top six tools of the trade they couldn't shoot without



“ With the rapid advances in digital technology, I like to keep my gear up to date ”

## Guy Edwardes

Although he's always out and about, expert nature and landscape photographer Guy doesn't believe in travelling light – he prefers to be prepared for anything

**B**ecause I shoot both nature and landscapes I do tend to carry an awful lot of kit.

My general philosophy is to carry as much as I possibly can. Even when I'm heading out to shoot a specific subject I still like to be prepared for any eventuality.

I've used Canon equipment for the past 27 years and over that time have built up a collection of lenses from 8mm to 600mm. My main camera body for landscapes is the superb EOS 5DS R and for

wildlife photography I use the EOS-1D X. With the rapid advances in digital technology I do like to keep my equipment up to date, ensuring my lenses aren't out-resolved by the sensor. I use the TARDIS-like Tamrac G Elite G32 backpack, which enables me to carry as much as physically possible.

Around 95 per cent of my landscape photographs are taken with the camera mounted on one of two sturdy tripods. The first is a Manfrotto 351MVCF that I use exclusively for coastal work. The second is an extra-tall

Really Right Stuff TVC-34L that I'm careful never to take near salt water! I use very sturdy Really Right Stuff BH-55 ballheads on both tripods, although one of these is swapped for a Sachtler FSB 6 fluid head when I'm using a big telephoto lens.

I own only four glass screw-in filters: a Heliopan polarizer and 0.9, 2.0 and 3.0 solid neutral density filters. It's a really compact and easy-to-use filter set-up. To control contrast in landscapes I prefer to blend exposures, so I don't own any ND grads. 📷

### WHAT DO I DO?



**I'VE BEEN** a professional landscape and nature photographer for over 20 years but my business has changed greatly over that time. I used to earn my living from selling images through various picture libraries and my own stock collection. These days I spend a lot of my time running workshops around the world. This means that I'm constantly out and about with my camera in some of the most interesting and beautiful locations on the planet – fine by me! There are occasions when I've intended to shoot a sunset but ended up photographing otters instead...  
[www.guyedwardes.com](http://www.guyedwardes.com)



## IN GUY'S BAG



## 01 Tripod spikes

**SETTING** up a tripod on top of fallen leaves, grass or moss is a recipe for soft images, especially in the windy UK. To overcome this I use 12cm stainless steel spikes on the feet of my tripod to penetrate through into the earth and provide a really stable support by minimizing vibrations.

## 02 Eyelead SCK-1 Sensor Cleaning Kit

WEB: [www.eyelead.eu](http://www.eyelead.eu)

**IT'S** a fact of life that sensors get dirty, and when you're shooting landscapes using small apertures, dust spots will show in your images. The excellent Eyelead gel stick provides a very safe, quick and simple dry-cleaning method that I've been using for years. I normally clean my sensors after every trip, or more often in dusty conditions. Ever since I've been using it, I rarely have to do any dust-spotting when I'm editing images.

## 03 Smidge Insect Repellent

WEB: [www.smidgeup.com](http://www.smidgeup.com)

**MIDGES** and mosquitoes are a constant nuisance for landscape and nature photographers during the warmer months, and especially early and late in the day when I tend to do most of my work. I've found Smidge to be a highly effective repellent both at home and abroad. As a bonus it contains no DEET, a type of repellent which can damage the plastic on cameras.

## 04 Canon EOS 5DS R

WEB: [www.canon.co.uk](http://www.canon.co.uk)

**INITIALLY** I was reluctant to upgrade to Canon's 50Mp DSLR, because the 5D Mark III produced large enough files for my needs. But since I made the switch I've never looked back. The sensor is not only a step up in resolution, but it also enables the recovery of shadow detail without introducing ugly pattern noise. The increased resolution is also much more noticeable than I anticipated. Once you've shot with 50Mp there's no going back!

## 05 Really Right Stuff Long Lens Support

WEB: [www.reallyrightstuff.com](http://www.reallyrightstuff.com)

**THE** problem with all big telephoto lenses is that when they're mounted on a tripod, the weight of both camera body and lens is supported at only one point – by what is normally a poorly designed tripod collar. I use a Really Right Stuff long-lens support to provide a second support at the end of my lens. This makes the whole set-up much more rigid and less prone to vibrations, for sharper images.

## 06 LED Lenser Headlamp

WEB: [www.ledlenser.com/uk](http://www.ledlenser.com/uk)

**IN** order to make use of the best light of the day around sunrise and sunset, I'm normally walking to or from each location in the dark. A decent headlamp is essential and some of the most powerful models come into their own when you're walking in the dark somewhere you're not familiar with. Mine has saved me from having to spend a night on the hill on numerous occasions! A good head torch should be bright enough to use for light-painting as well.







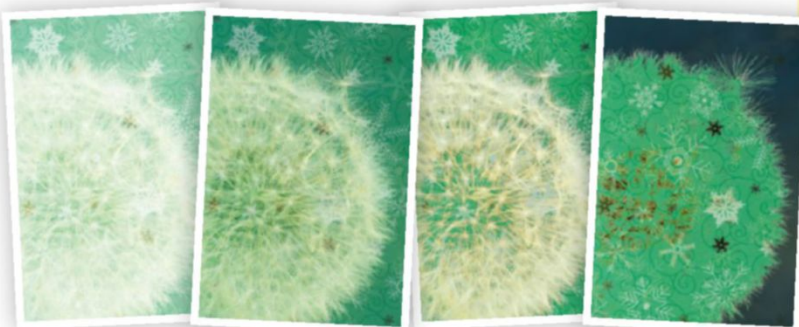
# CANON SCHOOL

*Your ultimate photographic reference guide  
to the complete Canon EOS DSLR system*

## DIGITAL SLR ESSENTIALS

PAGE 84

Get creative  
with your  
camera's  
built-in  
multiple  
exposure mode  
— it's easier  
than you think



WITH  
**PhotoPlus** EXPERT

**MARCUS HAWKINS**

PHOTO EXPERT

Marcus has been passionate about photography for more than 25 years. A former editor of our sister publication *Digital Camera*, he has written about photography for Canon and Jessops, and uses a Canon EOS 5D Mk III.



## SOFTWARE SOLUTIONS

PAGE 88



Discover how the Crop tool in Canon's Digital Photo Professional can help to improve almost any image

WITH  
**PhotoPlus** EXPERT

**GEORGE CAIRNS**

EDITING EXPERT

George Cairns has been writing image-editing tutorials for *PhotoPlus* since our first very issue, back in 2007. He uses a Canon EOS 650D and 70D, and writes for the Canon Professional Network newsletter.



## EOS S.O.S

PAGE 91

Bountiful Brian delves deep into his bottomless pool of wisdom in order to quench your burning Canon queries



WITH  
**PhotoPlus** EXPERT

**BRIAN WORLEY**

CAMERA EXPERT

Brian has unrivalled EOS DSLR knowledge after working for Canon for over 15 years. He now works as a freelance photographer and photo tutor in Oxfordshire.





# DIGITAL SLR ESSENTIALS

Welcome to Canon School. In this issue we look at the venerable art of multiple exposures – updated for your DSLR

## PhotoPlus EXPERT

MARCUS HAWKINS

PHOTO EXPERT

Marcus has been passionate about photography for more than 25 years. A former editor of our sister publication *Digital Camera*, he has written about photography and cameras for a wide range of clients, including Canon and Jessops, and uses a Canon EOS 5D Mk III.



# In-camera multiple exposures

Make the most of this creative function on compatible Canon cameras

**W**hile it's easy to dismiss in-camera multiple exposures as little more than a gimmick, it's a creative tool that really shouldn't be overlooked. After all, there's a reason it's available across the entire enthusiast and professional Canon DSLR range, from the 80D upwards.

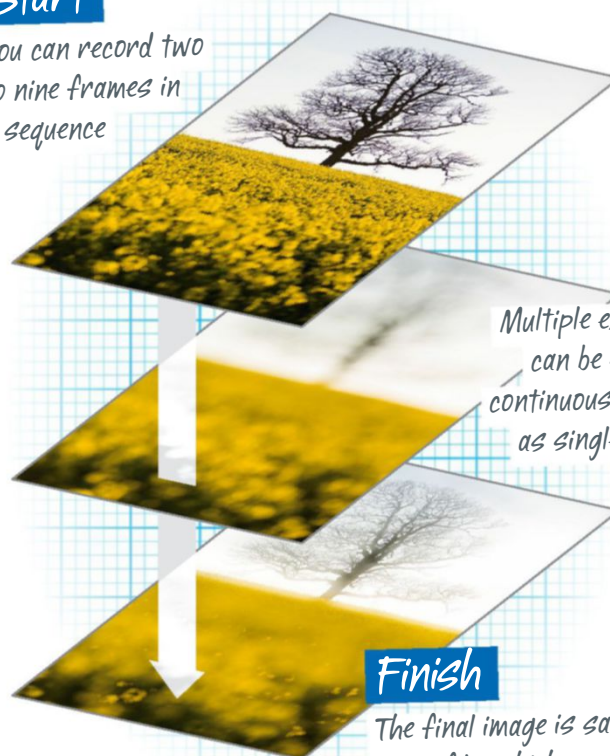
You'll find the option for multiple exposure shooting in the red shooting menu or by pressing the Creative Photo button. With it, you can record two to nine exposures which are then automatically merged into one image. You're free to move the camera between each exposure, allowing you to blend completely different subjects within the same

frame: mixing pictures of flowers, trees and other natural textures with the human form is a popular technique, for example. If you activate Live View mode you can even get a preview of the image as each 'layer' is added, helping you line up later shots.

Although every compatible EOS DSLR gives you access to the basic set of multiple exposure controls, there is some variation. Some models give you the option of saving the original source images, should you wish to combine them manually later in a photo editing package, or to use them as standalone shots. And, while cameras higher up the Canon line give you four different flavours of how exposures are blended, the 80D and 6D get two.

## Start

You can record two to nine frames in a sequence



Multiple exposures can be shot in continuous bursts or as single images

## Finish

The final image is saved as a .CR2 file, which you can process like any other Raw file

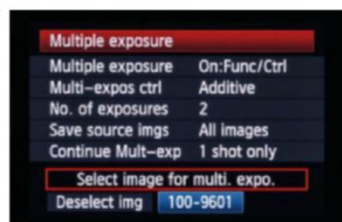
### USEFUL OPTION

## Here's one I made earlier...

**THERE'S NO** pressure to shoot a multiple exposure in one location: all EOS cameras that include multiple exposure allow you to merge exposures with a Raw file already recorded on your memory card.

This image is treated as the first exposure in the sequence, so you won't be able to start shooting a multiple exposure than decide to add

a shot from the card. You'll also have to use the same ISO and picture style settings that were used to record the original image. The multiple exposure is saved as a separate Raw file and you can even use this as the first image in another sequence, enabling you to combine more than the maximum of nine shots available in a standard multiple exposure.



You can use an existing image as the basis for a new multiple exposure with the 'Select image for multi. expo.' option – its ISO value will be used



**BLENDING IN-CAMERA**

# Blending modes

Learn the four different methods for controlling in-camera multiple exposures

**A**s well as choosing the number of frames in your multiple exposure, you'll need to select the 'multiple-exposure control method' – abbreviated to 'Multi-expos ctrl' in the menu.

These control methods act a bit like layer blending modes

in Photoshop, determining how frames in a multiple exposure sequence are merged.

All compatible cameras share a core pair of options – Additive and Average – which essentially do the same thing, albeit with the exposure adjustment between frames being controlled in different

ways. The 5D range, 7D Mark II and 1D X Mark II get two additional options: Bright and Dark. Don't feel put out if you own an 80D or a 6D, as it's all too easy to get gimmicky-looking results with this pair of options.

You'll be unable to change the control method part-way

through a sequence – the option will be greyed out if you return to the Multiple Exposure menu – so check this before you start shooting.

**Additive**

*Each shot adds to the overall exposure, which can lead to over-bright results. Consider dialling in some negative exposure compensation.*

**Average**

*Works in a similar way to Additive, but the camera adjusts the exposure of each frame in the sequence, based on the number you've set.*

**Bright**

*The camera compares the first or 'base' image with the rest of the frames being added, and the brightest parts are given priority.*

**Dark**

*Follows the same process as the Bright one, but the darker areas of the pictures are given priority. It can lead to odd results.*

## Working in Live View

You don't have to shoot blind...

**I**t's worth switching to Live View when you shoot multiple exposures, as you'll be able to see a 'ghost image' of the multiple exposure as it builds. This enables you to compose your next image 'layer' to suit the rest of the image. You'll only be able to do this if you're shooting in Function And Control Priority mode (look for 'On: Func/Ctrl'

in the Multiple Exposure menu. Continuous Shooting Priority (On: ContShtng) is designed for photographing moving subjects, so you won't be able to preview the image as you shoot additional images – Live View will automatically stop after the first shot. Live View also ends in Function And Control Priority mode once you've taken all the frames for an Additive multiple exposure.



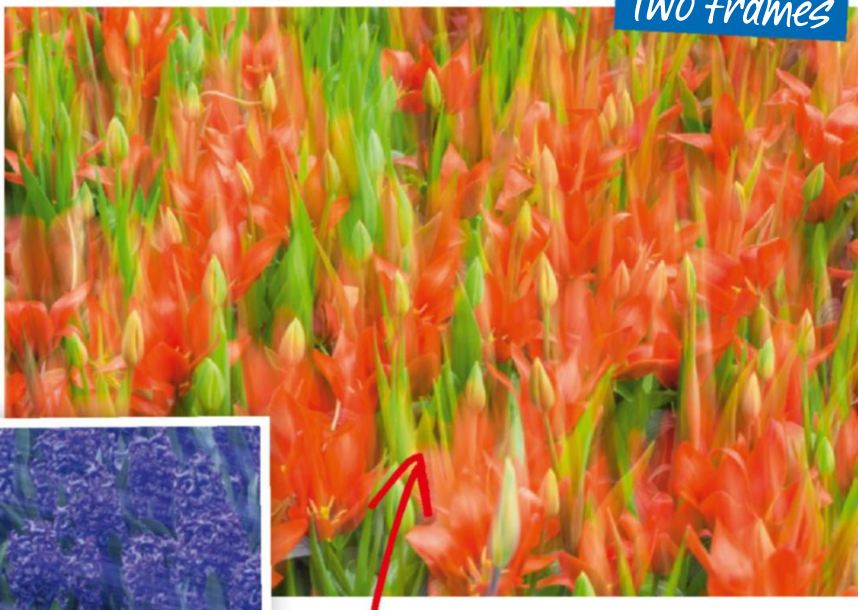


# Multiple exposure techniques

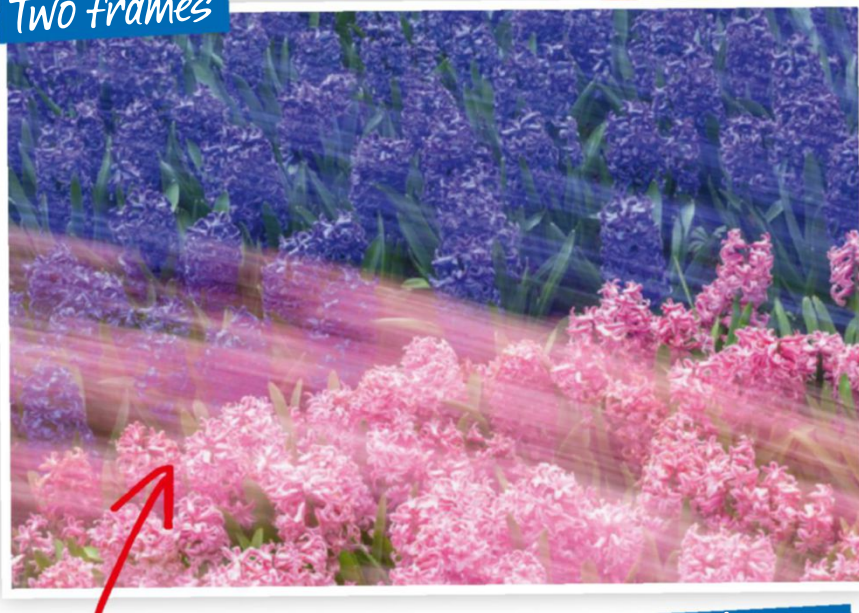
Try these creative treatments for combining images

**M**ultiple exposures enable you to produce very different pictures of familiar subjects, and the often unpredictable results can help to keep your photography fresh. It's a treatment that suits many subjects, from close-ups to landscapes to portraits – try combining the faces of your family members in a single photo for a one-of-a-kind group portrait. It's a technique that requires experimentation, so you'll need to be prepared to burn through frames – make sure you have plenty of room left on your memory card, particularly if you're saving the original files in addition to the merged picture.

Two frames



Two frames



## In and out of focus

**THE ORTON** Effect is a film photography technique developed by Michael Orton in the 1980s. He sandwiched two or three slides of the same scene – one sharply focused and the other(s) out of focus – in an attempt to imitate watercolour paintings. You can achieve a similar look with multiple exposures: with the camera mounted on a tripod, shoot one sharp frame, then slide the switch on the lens to MF (manual focus) before twisting the focus ring to defocus the image before taking another.



## Motion blur

**AN ALTERNATIVE** way to combine sharpness and blur in the same shot is to move the camera during a second, slower exposure rather than defocus it. The final image looks similar to the result you'd get if you used slow-sync flash, with a blend of both sharp detail and motion-blur streaks. ISO remains fixed for each shot in a multiple exposure sequence, so you'll need to use a narrower aperture to achieve a slower speed.

## Landscape image (static)

**IF YOU'VE** exhausted all other treatments, firing off a few multiple exposures can be all the creative release you need – the results can be unique. Although there were hundreds of animals at this watering hole, trying to get across the sheer scale of the scene in a single picture was proving frustrating. Switching to shooting multiple exposures and moving the camera between each shot enabled me to fill the frame and capture the constant toing and froing of the herds in a less literal, more abstract way.

Five frames





**BRING ON THE BLUR**

# Long exposure effects

No ND filter? No problem. Use multiple exposures to boost motion blur

**A**s well as enabling you to creatively combine different parts of a scene, multiple exposure mode can be used to replicate the effects achieved with a solid, strong neutral density (ND) filter.

Typically, you'd attach an ND filter to the front of the lens

to reduce the amount of light entering the camera; this produces a slower exposure that causes moving objects to appear blurred. If you instead switch to multiple exposure mode, you can shoot a sequence of shorter exposures that, combined, help to achieve a similar 'slow mo' look.

Naturally you'll need a reasonably slow shutter speed and some movement in the frame to build up the blurring effect in the combined exposures. Continuous motion, such as a cascading waterfall, waves or wind ruffling the leaves of a tree, works best. To ensure the non-moving parts

of the scene line up in each frame, follow the same technique that you'd use to capture a normal long exposure: mount the camera on a tripod, activate Mirror Lock-up if you're not using Live View, and fire the shutter with a remote release or a remote control app on a smartphone.



## Single exposure

Light levels were reasonably low here, and the fast-moving water didn't require a very slow exposure to deliver the milky look. 1/5 sec, f/10, ISO400 was enough.



## Multiple exposure

The same base exposure setting was used, but with a number of frames combined into a multiple exposure. The result is a greater density of blur without the need for an ND filter.

## School tip Deleting images

Mucked up a multiple exposure? Then take a step back in time...

**YOUR CANON** camera offers a safety net while you're taking a multiple exposure sequence. Perhaps the images don't line up properly, or maybe the difference in position between the exposures is so subtle that it looks like a mistake. Either way, you can delete the previous exposure and shoot an alternative one. You won't be able to do this after the final

frame of the multiple exposure, when the image is being processed, but at every other stage you can simply tap the playback button and hit Delete or Undo. In fact, even if you don't normally use your camera's automatic image review function, now's the time to activate it, as it cuts down on the additional button-press – something you'll come to appreciate!





# SOFTWARE SOLUTIONS

Get to grips with Canon's free Raw image organizing, editing and sharing software – Digital Photo Professional 4

## PhotoPlus EXPERT

GEORGE CAIRNS

IMAGING EXPERT

George Cairns has been writing image-editing tutorials for *PhotoPlus* since our first very issue, back in 2007. He uses a Canon EOS 650D and 70D, and writes for the Canon Professional Network – a newsletter for Canon pro kit users.



# Clever cropping

Turn quick snaps into considered compositions with post-production cropping

**I**n pre-digital days, when shooting on rolls of film, we were limited by the amount of photographs that we could capture while on a shoot. This forced us to consider composition more carefully to avoid wasting film. By contrast, digital photography enables us to shoot hundreds of photos on a single memory card, and with no film or processing

costs it's possible to adopt a more relaxed approach to composition; by shooting hundreds of photographs we are still likely to find a decent shot in our memory card's comparatively large collection of image files.

Thanks to applications such as Digital Photo Professional, it's also possible to turn a mediocre shot into a better image by recomposing it using the Crop tool. When

capturing images on location we may be unaware of distracting objects at the side of the frame. Post-production cropping can remove these objects with ease and create a cleaner composition.

Cropping can overcome lens-related limitations too. In effect you can 'zoom in' on a subject by cropping the shot to make it more prominent in the frame. When shooting landscapes, you can crop to

change the balance of the scene by making the sky or land more dominant. You can also use the Crop tool to straighten tilted horizons and thus create a more stable-looking image.

Although DPP has a crop overlay grid to help you get a truly horizontal horizon, it does lack the useful rule of thirds overlay grid that are found in other photo-editing programs, such as Photoshop.

## STEP BY STEP CROP USING THE GRID

Modify the crop overlay window's grid pitch (or density) to help you crop with precision



### 01 CHOOSE A SHAPE

Browse to crop\_before.tif and choose View>Edit image window. Click on the Crop and Rotate Images panel. Set the Aspect Ratio drop-down to 4:3. Click-and-drag to crop the shot to lose the hut on the left and the boat on the right.



### 02 STRAIGHTEN HORIZON

Drag inside the overlay to create a composition with more sky and less sea. Adjust the Grid Pitch for a denser mesh to help see if the horizon is straight or tilted. Drag the Angle slider to straighten the horizon using the grid as a reference.



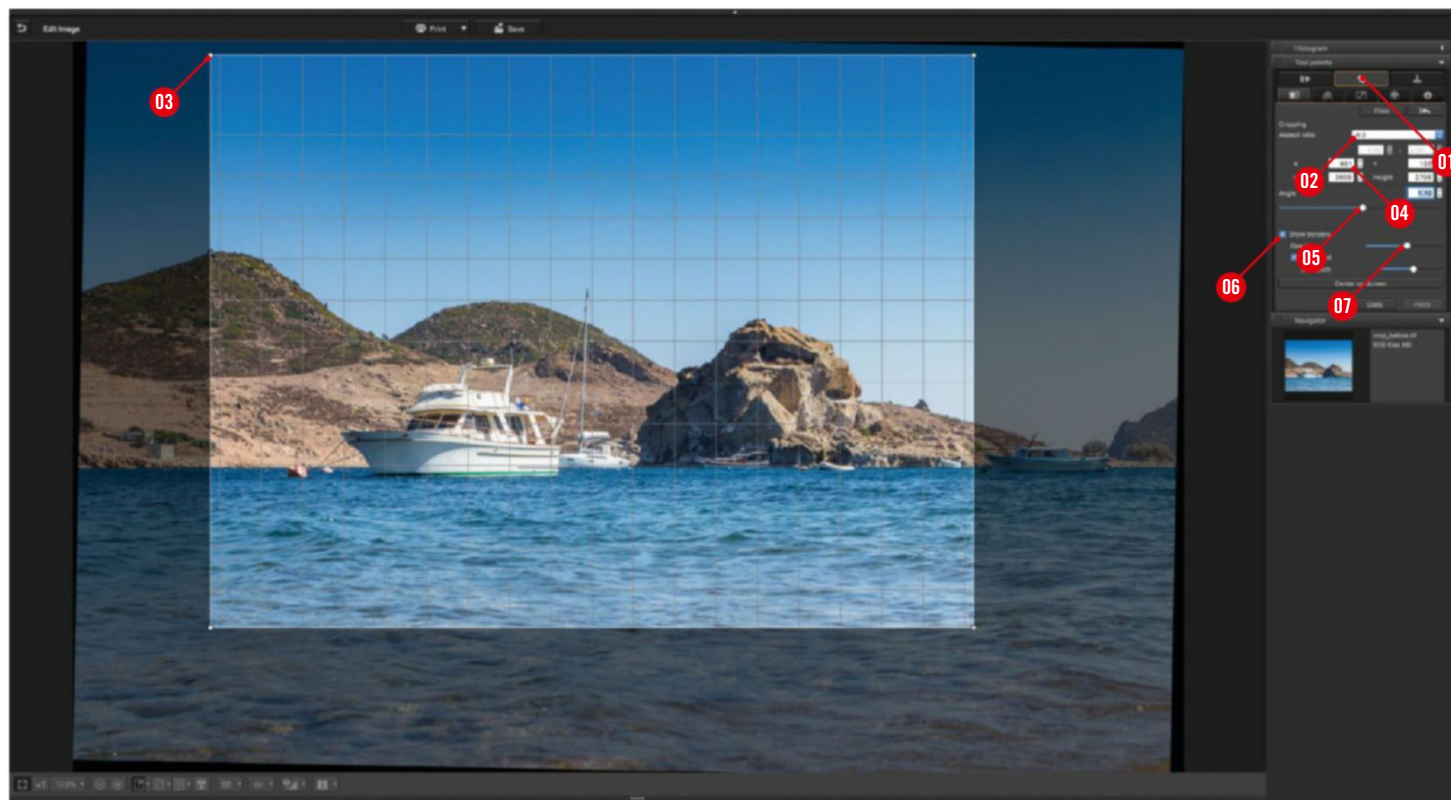
### 03 NON-DESTRUCTIVE

After cropping, click on any other tab in the Tool palette. The overlay will vanish and you'll see the cropped version of the shot. However, you can go back to the Crop panel at any time to fine-tune the crop and even restore missing pixels.



# HOW IT WORKS CROP AND STRAIGHTEN

Counteract tilted horizons, magnify distant subjects and remove distracting objects at the edge of the frame



**01 CROP & ROTATE**  
Our example image features a tilted horizon and distracting clutter at the sides of the frame. This type of shot will benefit from a bit of careful cropping. Click on this tab to access the crop and rotation tools.

**02 ASPECT RATIO**  
Although you can crop the shot to any shape using the Free option from this drop-down menu, it's often more



useful to constrain the shape of the crop. You may want the cropped shot to fit into a specific picture frame, for example. To fill a widescreen TV use the 16:9 ratio. A 1:1 aspect ratio gives a square crop that's ideal for sharing on social media, like Instagram. You can even choose the Custom option and type a ratio in the boxes below.

**03 CROP OVERLAY BOX**  
Click-and-drag over the image to begin cropping. A rectangular crop overlay box appears. Drag the corner handles to change the shape and size of the cropped area. Areas outside of the crop overlay will be greyed out (and disappear once you crop the image). Drag within the crop overlay to reposition the composition of the scene without changing the size of the cropped area.

**04 X,Y, WIDTH & HEIGHT**  
As you adjust the shape and size of the crop overlay box the values of

these fields will change. Fine-tune the shape and size of the cropped shot by typing numbers into these fields.

**05 ANGLE**  
Drag this slider to rotate the crop overlay window to counteract tilted horizons. You can also rotate the crop overlay by placing the cursor over a greyed-out area. The cursor will change to a rotate icon.

**06 SHOW BORDERS**  
Tick this box to toggle the borders of the crop overlay window on and off. It will also show or hide the corner handles. You can still adjust the shape of the cropped area when the borders and handles are hidden.

**07 OPACITY**  
This slider lightens or darkens the overlay's greyed-out area to make it harder or easier to see pixels that will be removed after cropping is applied.

## JARGON BUSTER

**POST-PRODUCTION**  
In photography, the 'production' stage is your shoot. 'Post-production' refers to processing your images after the shoot, in an application such as DPP 4.

**RULE-OF-THIRDS**  
By overlaying a grid of nine rectangles on a photo as you crop, you can create a more balanced and classically composed shot. Unfortunately, DPP 4 lacks this useful feature.

## Can I use DPP 4?

Download the latest version of DPP from [http://bit.ly/get\\_dpp](http://bit.ly/get_dpp). Check the website to see if your DSLR is compatible with DPP 4 – you'll need your serial number to update. DPP 4 works with most recent Canon EOS DSLRs, but for older cameras you may have to use a previous version.

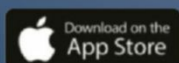


# ON SALE NOW



Essential seasonal advice on shooting landscapes and wildlife from the experts at Digital Camera magazine.

<http://bit.ly/outdoor-photo-winter>



BARNES & NOBLE



# EOSS.O.S

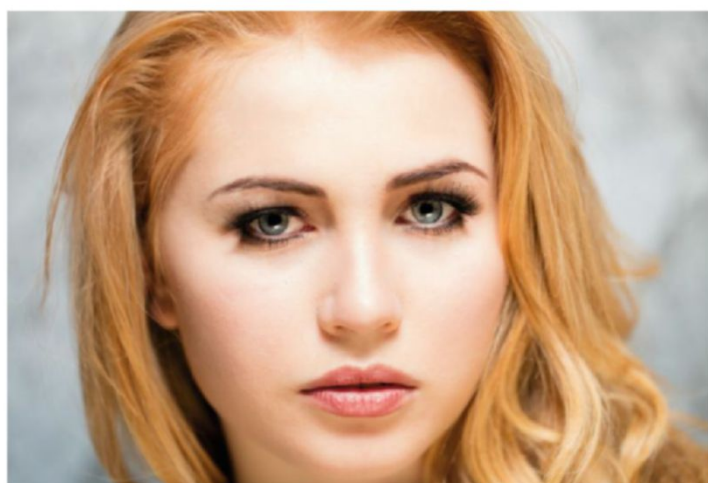
Our technical guru is here to help. No Canon conundrum is too big or small. Get in touch today at [EOSSOS@futurenet.com](mailto:EOSSOS@futurenet.com)

## PhotoPlus EXPERT

**BRIAN WORLEY**

CANON PRO

Brian is a freelance photographer and photo tutor, based in Oxfordshire. He has unrivalled EOS DSLR knowledge, after working for Canon for over 15 years, and is on hand to answer all your EOS and photographic queries



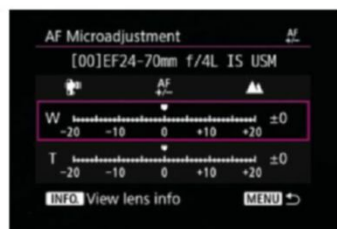
Accurate focusing is important with increasing image resolution, but is often down to technique rather needing to microadjust a lens's focus

## Is it necessary to recalibrate my lenses for use with my new 5D Mark IV?

Jeff Urbach, New Jersey USA

**BRIAN SAYS...** The need to recalibrate – or AF Microadjust – lenses depends on each individual lens and body. All lenses and cameras are produced with certain manufacturing tolerances that mean it's uncommon to need to adjust each lens for every new camera. But if some of your lenses have benefitted from AF Microadjustment before, then it's likely that they will benefit from similar adjustments for the new camera.

I've used my lenses on all my EOS cameras over the past six years without any micro focus adjustment. Even my oldest 85mm f/1.8 USM, which I purchased prior to 1995, is fine, even on an EOS



**AF Microadjustment can be applied to the camera for all lenses, or by specific lens**

5DS R, which will show the slightest focus issues.

There are some third-party applications that automate the micro focus adjustment process, and they have their supporters who value the results, but in my view, what is more important is tuning the AF Case parameters to track moving subjects.



You can use a flashgun on the camera set to second curtain sync to trigger studio flash as they usually have a built-in optical slave trigger

## Why can't I set second curtain sync on a Speedlite 600EX-RT in slave mode?

Carl Grim, Fareham

**BRIAN SAYS...** Neither optical or radio wireless slave flashes in Canon's wireless flash system can be set to be triggered as the shutter curtain closes at the end of the exposure.

Since most studio flashes have a built-in optical trigger, you could put the flashgun on the camera and set it to second curtain sync to trigger the studio lights at the end of the exposure. Turn the flash head away from the subject to avoid light from the Speedlite affecting the exposure.

Some independent wireless flash triggers will also allow second curtain sync

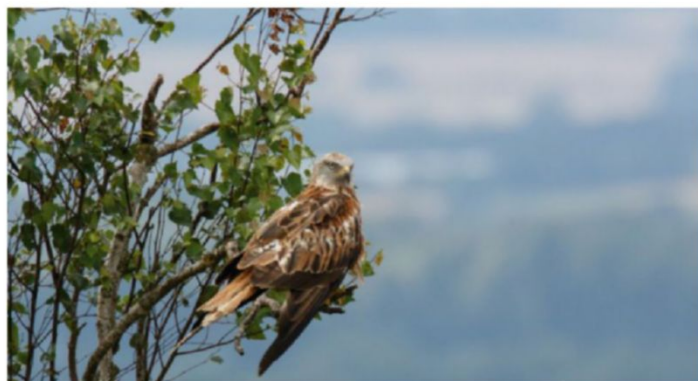
with off-camera flash, such as the Pocket Wizard Flex TT5 and Mini-TTL.

You need to select a slow shutter speed as the camera won't do second curtain sync faster than 1/30 sec.



**Second curtain sync flash can only be set for a single flash mounted on the camera**





Advanced cameras can autofocus at f/8; an EOS 7D Mark II with EF 100-400mm f/4.5-5.6L IS USM plus Extender EF 1.4x was used here

## Why won't my 700D autofocus with my EF 100-400mm f/4.5-5.6L IS lens and Extender EF 1.4x?

Pamela Woodhams, Guildford

**BRIAN SAYS...** Adding a teleconverter reduces the light reaching the camera, for a 1.4x teleconverter this is 1-stop of light and for a 2x it is 2-stops. The effect on your lens is that, while focal length increases to 140-560mm, the maximum aperture reduces to f/6.3-8. Your EOS 700D's AF system needs a minimum aperture of f/5.6 to operate. Only more advanced models of EOS cameras allow AF with f/8 lenses.

The brightness of the light or subject has little influence on this. Some internet sites advise that you might have success by adding some tape to a couple of the pins between the lens and teleconverter to fool the camera, but this still results in very slow and inaccurate AF.

## What is the best way to organize my photos with Canon software?

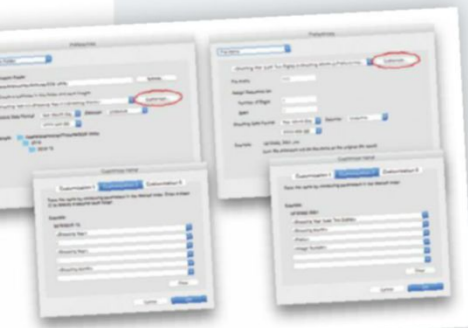
Michael Forbes, Hull

**BRIAN SAYS...** The best way is the one that is most simple for you to use. I create a folder for year and then a subfolder for each month. I also rename my photos by prefixing the year and month to the filename to avoid duplicate files.

This means that I have a 2016 folder, with 2016-01 through to 2016-12 subfolders, and my files then have 1609 prefixed to them if they were shot in September 2016, for example.

You can set EOS Utility to do this automatically as you import your pictures if you connect the camera to the computer with a cable.

**EOS Utility can set folder and file names to organize photos as they are imported**



## QUICK FIXES

### My Speedlite 600EX-RT has a white dot of paint inside the battery door; what does this signify?

Geoff Hunter, Middlesbrough

**BRIAN SAYS...** A white painted dot in the Speedlite indicates that the flash has had a firmware update applied. Some early models of the Speedlite 600EX-RT and Speedlite Transmitter ST-E3-RT have a firmware update available to improve their operation when seven or more flashes are used. Details from Canon here <http://bit.ly/flashfirmware>

### What colour space should I use in Av mode?

Andy Williams, Cardiff

**BRIAN SAYS...** The colour space chosen has no real effect if you shoot Raw as you can choose the colour space when post processing. If you shoot JPEGs, the default sRGB is perfectly fine.

### What do my 70D's Silent Live View Shoot options do?

Tony Sharp, Cumbria

**BRIAN SAYS...** This affects how the shutter curtains operate in Live View. Mode 1 is the default, and results in quieter shutter noise, Mode 2 causes the shutter to fire when the shutter is pressed, but only re-cocks the shutter mechanism when the shutter button is released. Disable does not use the quieter operation.



When updating your camera, check to see if your computer is suitable to run the software

## Having updated my old EOS 30D to an EOS 80D, why can I no longer use Microsoft Photodraw 2000 or Raw converter?

William Preston, Peterborough

**BRIAN SAYS...** I think you will have to update your software for the new camera and maybe your computer too. Microsoft ended mainstream support for the Photodraw application back in 2004. Canon's 80D software needs Windows 7, 8 or 10, so it's likely that a computer update is needed too.



Auto Rotate changes how images are seen on the LCD. The middle option is often preferred

## When a portrait image previews on the LCD it fills the screen, but not in playback mode. Why?

Elaine King, Sutton Coldfield

**BRIAN SAYS...** The Auto Rotate settings determine the picture's orientation in playback on the LCD.

If you shoot a lot of portraits, it helps to set Auto Rotate to the middle option of the three available. This will cause the image to fill the display. However, when you open it on a computer, it will be the right way up.



# Raw or JPEG?

Which picture file type do you choose, and do the experts ever use JPEGs?

**Ask Brian!**  
Confused with  
your Canon DSLR?  
Email [EOSSOS@futurenet.com](mailto:EOSSOS@futurenet.com)

**A** ll EOS DSLR cameras have been able to capture images as either Raw or JPEG files. For some photographers the type of file they choose to shoot is almost like a badge of honour; 'shoot Raw, it's the best'. So what is the difference, why does each new camera need an updated Raw converter and do professionals shoot JPEG after all?

In simple terms you can liken JPEG and Raw to cake. The JPEG cake is simply going to the store, choosing the one you like the look of and buying it. The Raw cake is different, you're buying the ingredients, and when you return from the store there's the additional step of combining the ingredients and baking the cake. Of course, with ingredients you can mix the cake a little different than you originally planned, add cherries or leave out the chocolate to radically change the result. The quality is down to your skills too.

I shoot exclusively Raw virtually all the time, the post-production is part of my photography. The tools have got

sufficiently fast that it's not a major issue for me. For those seeking the most quality and flexibility possible, Raw is the answer.

On the other hand JPEG is universal, just about any program that needs to handle a picture will work with a JPEG. Raw gives the manufacturer the option to add new technology, new information and more quality but it is unique to each camera model, so each time a new camera arrives the Raw processing tools have to be updated. I get better quality from my old Raw images with modern software than when I first processed them.

Novice photographers often start with JPEG, as when you're learning, having a finished file right away makes life easier. Professional news and sports photographers are mainly JPEG shooters. A file that is smaller and easier to move from camera to the agencies and press is highly prized. The quality is important, but equally so is the workflow speed. I sometimes shoot Raw+JPEG to give me a file that



**A Raw image from the EOS-1D X Mark II offers the ultimate in quality, but it's too big and slow to use for press and sports work**

transmits quickly over a wireless connection, yet still retain the quality and capability of the Raw file for later.

For the foreseeable future we will still have Raw and JPEG options and photographers will choose the one that's most appropriate for their pictures and clients.

**You can buy a cake already prepared or source the ingredients and bake it later. It's just like Raw and JPEG...**





## I want to try off-camera flash portraits with my EOS 650D, what flashes do I need and how should they be set up?

Tracy Moorcroft, Worcester

**BRIAN SAYS...** Your EOS 650D can be configured so that its built-in flash controls the off-camera flashes. I would recommend the Speedlite 430EX III-RT as they offer good value and reasonable power output. There are also a large number of independent flashes that

work as slaves with Canon's optical wireless system.

If you opt to get two flashes you will have some flexibility for your photos. You can combine them for increased power, control the balance of the two individually, or have the camera work out the power requirements for each separate flash.

Press the flash button to raise the flash on the camera, then press the Menu button and navigate to the Flash Control Menu item. Choose Built-in Flash Settings and select Easy Wireless, then set the Speedlites to Slave mode. The only other thing to do is check that the camera and flashes are all using the same flash channel. Your camera will trigger the Speedlites together as if they were a

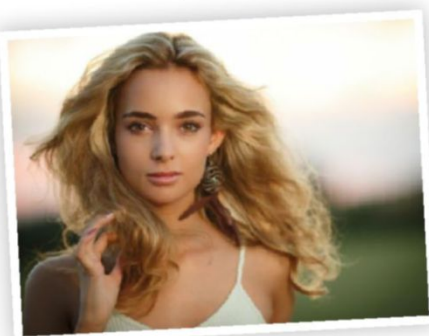


Two Speedlites were used to light this photo. One provides the light on the model's face, and the second adds the backlight behind her hair

single light, and both will be set to the same power for a good exposure. This is ideal if you put both in the same place to light your subject.

For more creative control, you'll need to use the Custom Wireless option and then you will have the flexibility to separately control the

individual flashes by assigning them to different groups. You can have up to three groups, but each group can have multiple flashes. If you opt for the A:B ratio control then the camera will automatically balance the output of two flashes in different groups.



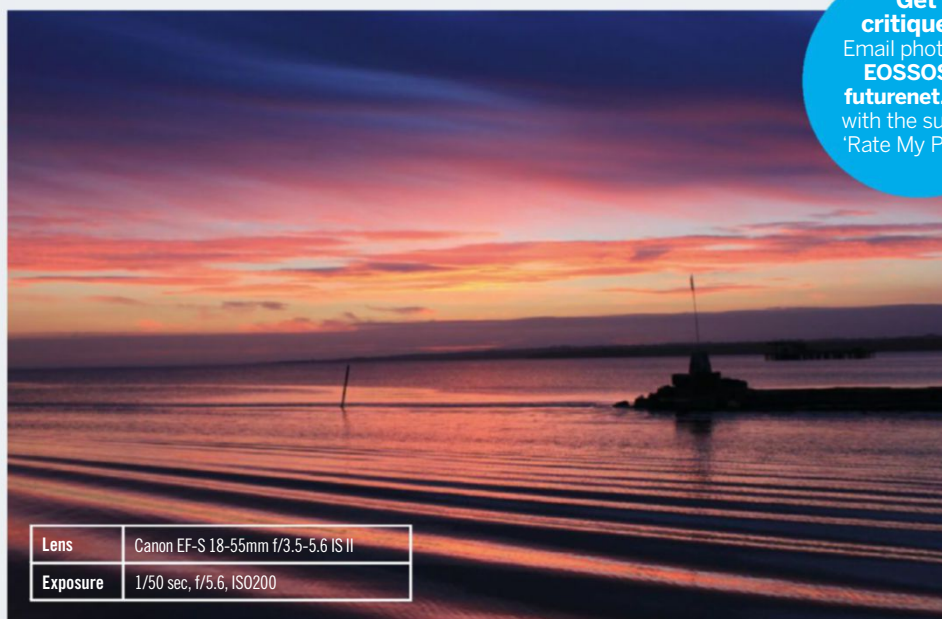
Two flashes were combined in the same group to give more power to balance flash and ambient light

## RATE MY PHOTO

### Lough Neagh by Melanie Steele

**MELANIE SAYS...** I've been taking pictures since I was a teenager, mostly pets and landscapes. I'm fortunate that I can see Lough Neagh from my kitchen window. If the sunset is good, as it was on this evening, I can be down by the lough in a few minutes. I took the photo with my EOS 550D and may even have used the Landscape mode, I can't really remember. I think I was lucky that the lifeboat had just gone through the lough to create additional ripples in the water.

**BRIAN SAYS...** It was the striking colours that made this picture stand out in my inbox. It really pops and could not be skimmed over. On closer inspection I started to feel that the horizon was not as level as it should be, and a 1-degree rotation made a world of difference to me. The picture has great lines that lead



Lens	Canon EF-S 18-55mm f/3.5-5.6 IS II
Exposure	1/50 sec, f/5.6, ISO200

you across the frame, but not necessarily through the picture from front to back. I wondered how it might have looked with the lifeboat in the frame, ideally as a silhouette on the water, and that made me realize that

I was looking for a main point of interest to hold my gaze. I'm not sure the tower or pole sticking up from the water are quite enough. Despite all these criticisms I still like the picture for its colours and peaceful feel.

Get critiqued!  
Email photos to  
**EOSSOS@futurenet.com**  
with the subject  
'Rate My Photo'





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# G E A R

*The latest Canon DSLR and photo gear tested.  
Independent advice to help you buy smarter*



**Rod Lawton**  
Head of testing  
rod.lawton@futurenet.com

## Welcome...

**DIGITAL** imaging brought us the technical precision we all dreamt of in the film days, but now we've got it, we miss the foibles of film! Fortunately, the range, scope and quality of today's film-effect plug-ins is just fantastic, as we discover in this issue's Mini Test. We round up budget telephotos in our Super Test, and check out Canon's updated pro-grade 24-105mm f/4 zoom.

## HOW WE TEST



Lens tests are carried out with Imatest suite, with specially designed charts and data analysis to test lens performance



We test cameras in laboratory conditions using DxO Analyzer hardware and software to check dynamic range, noise and so on

## PAGE 104 BUDGET TELEPHOTO LENSES



## PAGE 102 CANON EF 24-105mm f/4L IS II USM



## PAGE 100 FILM-EFFECT PLUG-INS



## TESTS & AWARDS

**WHEN IT** comes to testing Canon DSLRs, lenses, photo gear and services in PhotoPlus, we tell it like it is. We're 100% independent and we use our in-depth lab tests to find out how kit really performs and compares. Here are our main awards...



Buy for the best combination of quality and value



Only the best of best win our coveted award



# GEAR UPDATE



# GEAR UPDATE

Our round-up of the latest digital photography must-haves





**01 Canon PowerShot G9 X Mark II**

This updated compact is small but mighty

**£449/\$530**[www.canon.co.uk](http://www.canon.co.uk)

**THE ORIGINAL** G9 X grabbed headlines as the world's smallest camera to feature a 1-inch sensor. This Mark II model retains these diminutive dimensions, measuring a mere 98.0x57.9x31.3mm, yet it manages to sport a 3-inch, 1040k-dot touch screen.

Resolution remains at 20.2MP, and Canon has also carried over the bright f/2 10.2-30.6mm (28-84mm equivalent) lens. The addition of a new Digic 7 processor has boosted continuous raw capture speed, from around 1fps in the old G9 X to a far healthier 8.2fps.

**02 Zhongyi Mitakon 20mm f/2.4.5x Super Macro Lens**

A lens that thinks it's a microscope

**£199/\$164**[www.zyoptics.net](http://www.zyoptics.net)

**THIS CHINESE** lens manufacturer wants you to get a closer look at your subjects. The secret to its Super Macro status is a 4.5:1 reproduction ratio. Most macro lenses make do with a 1:1 ratio, meaning that at their minimum focussing distance you can capture an image frame that's the same physical size as your Canon's sensor.

This lens produces 4.5x that magnification for extreme close-up shots – albeit at a focus distance of just 20mm. However, unlike many other macros, the lens can't double as a general-purpose medium-telephoto prime.

**03 Lume Cube**

Video and stills lighting all in one tiny box

**£90/\$80**[www.lumecube.com](http://www.lumecube.com)

**CONTINUOUS** lighting needn't consume much kit-bag space, as this LED light demonstrates. It takes the form of a tiny 1.5-inch cube that's waterproof to a depth of 30m. Illumination is rated at 1500 lumens or 150 Lux at 3 metres, and the manufacturer quotes 20 minutes of full-power lighting, or two hours at 50% brightness, from the built-in Li-Ion battery.

Meanwhile a companion Lume Cube app lets you control brightness from your smart device, as well as enabling a flash feature and allowing you to sync multiple cubes. You can even use the Lume Cube as a slave for your DSLR.

**04 Metz mecablitz M400**

Small flashgun, big performance

**£122/\$154**[www.metz-mecatech.de/en](http://www.metz-mecatech.de/en)

**METZ'S** latest flashgun measures a mere 65x92x87mm, placing it between Canon's Speedlite 430EX III-RT and the ultra-compact 270EX II in the size stakes. The M400's power isn't scaled down though, being rated at an impressive GN40, and it's focused through a motorized zoom head covering a 24-105mm focal range. Extra features include Canon E-TTL compatibility, high-speed sync, master/slave modes, and an OLED display. There's even an integrated LED video light capable of 100 Lux at 1 metre.

**05 Dell UltraSharp UP3218K**

Taking monitor tech to the extreme

**£TBA/\$5000**[www.dell.com](http://www.dell.com)

**FORGET 4K** – it's time for 8K resolution. That means 7680x4320 pixels, which on this 32in panel equates to a pin-sharp 280ppi pixel density. You'll be able to display the entirety of a 5D Mk IV image at 100% and still have room to spare – plus this 10-bit, wide-gamut panel has full Adobe RGB and sRGB colour space coverage. 400 nit maximum brightness and a 1300:1 contrast ratio are somewhat more average figures, but still none too shabby. The only problem might be finding a sufficiently powerful graphics card to drive it without everything grinding to a halt... The monitor is due later this year.

**06 Sevenoak Electronic Ball Head Pro**

Take your Canon for a spin

**£85/\$100**[www.kenro.co.uk](http://www.kenro.co.uk)

**EVER SEEN** a captivating motion panorama timelapse capturing star trails, or a cityscape in fast-forward? Now you can create the same stunning sequences without breaking the bank. This tripod head supports a Canon setup of up to 2kg and can rotate it from 15 to 360 degrees in either direction, over time periods of 5, 15, 30 or 60 minutes.

A rechargeable 1200mAh battery provides six hours of panning power, according to Sevenoak, and the head will attach to any tripod with a standard half- or quarter-inch head mount.





# Film effect plug-ins

Are you a film fanatic? Indulge your analogue nostalgia with one of these retro plug-ins...

**I**T'S FUNNY how, as camera technology gives us ever-increasing image quality, many photographers still hark back to the imperfections of film and the visual character these bring. Thankfully, you can still get all the retro flair of film as there's no shortage of Lightroom and Photoshop plug-ins loaded with effects designed to emulate many of the colour and monochrome film stocks of yesteryear.

Most plug-ins go much further though, incorporating

generic film effects to mimic light leaks, cross-processing and infrared looks, and even double-exposures. The starting point in each plug-in will usually be selecting one of many preset effects, but all our apps will also allow you to fine-tune a preset to create a bespoke look. We've tested these plug-ins in Lightroom, but they're all available as Photoshop versions too, and perform identically.

Different plug-ins emulate the same film stock in different ways. Which is correct? You decide... 📷

## FIVE THINGS TO LOOK OUT FOR

The internet is packed with pukka plug-ins, so consider these tips when choosing your ideal add-on app...

### 01 Plug-in or standalone?

No Lightroom or Photoshop? No problem. All these apps integrate with your workflow, but they can also go it alone or there are separate standalone versions available.

### 02 Selective editing

Lightroom isn't much cop at targeting effects to a specific area, but some plug-ins enable you to brush in effects and create layer masks.

### 03 Little extras

Some plug-ins can do much more than just emulate analogue film, but extra features like image management and cropping tools may not be much use if you already have Lightroom or Photoshop.

### 04 Custom presets

Tweaked a preset effect to create your own unique look? A plug-in with the option to save customized effects as new 'user' or 'custom' presets will store it for future use.

### 05 Power play

Most of these plug-ins need serious processing power to preview and load effects quickly, so check your computer's specs can handle your preferred plug-in's system requirements.

## Alien Skin Exposure X2

£121/\$149 [www.alienskin.com](http://www.alienskin.com)

★★★★★



**EXPOSURE X2** is more than just an effects plug-in, you can also use it to organize photos. New features, such as spot healing and lens distortion correction, further add to Exposure's versatility.

But it's the huge range of over 500 effects presets that impresses most. The selection includes numerous emulations of real film stocks, as well as a decent selection of generic retro looks. All can be extensively customized to adjust everything from colour and detail to grain and vignetting, while a Brush tools allows you to selectively adjust a specific image area or stack multiple effects.

We found general navigation to be slick, with previews loading

almost instantly. It's a pity it lacks the ability to combine images in layers, but it's nonetheless an accomplished film effect plug-in.

### PhotoPlus VERDICT

**PROS:** Vast selection of presets; intuitive interface; selective editing

**CONS:** No layers support; not the cheapest option around

**WE SAY:** Top-notch performance and features make it hard to beat



## Macphun Tonality

£53/\$70 <https://macphun.com>

★★★★☆



**MAC-ONLY** Tonality is billed as a black-and-white plug-in, but it can also create some quite striking colour effects by tweaking the colour sliders in the manual controls. Even so, Tonality is still primarily set up for monochrome transformations.

160 presets are available, including 19 film emulations, which together give a good but not outstanding selection of retro looks. Each preset is applied impressively quickly, and if it looks a little strong, you can easily wind back the percentage with a slider at the base of the preset's thumbnail.

Tonality's presets may be a bit limited, but its manual controls are anything but. Add texture overlays, grain and photo frames,

or tweak clarity and structure, and that's just scratching the surface. There are even inbuilt layers and masking tools to enable localized editing and effect stacking.

### PhotoPlus VERDICT

**PROS:** Clear interface; includes layers and selective editing tools

**CONS:** Limited preset selection; not designed for colour; Mac-only

**WE SAY:** Good value for Mac-users wanting mostly mono effects





## DxO FilmPack 5 Elite Edition

£110/\$134 [www.dxo.com](http://www.dxo.com)



**FILMPACK 5** gets off to a good start with one of the most intuitive interfaces here. It runs as smoothly as Exposure X2, though without any selective editing features.

At FilmPack's heart are 121 film presets, of which around 80 are emulations of analogue stocks, including a good range of iconic films. DxO has digitally replicated each film with scientific accuracy in its processing laboratories, although we noticed its rendition of the famed Fuji Velvia 50 seemed unusually muted.

Aside from this, DxO's film expertise shines through, with an information panel accompanying each preset that provides stats and an interesting backstory



about each film. You can still extensively tweak each preset. Add a frame, light leak, or even the grain characteristics of a different film.

### PhotoPlusVERDICT

**PROS:** Comprehensive selection of film stocks; well-designed interface

**CONS:** Questionable accuracy of some emulations; no selective editing

**WE SAY:** The film connoisseur's choice, but falls short on value

## Google Nik Analog Efex Pro

Free [www.google.com/nikcollection](http://www.google.com/nikcollection)



### ANALOG EFEX Pro

lacks real-world film emulations, instead opting for generic retro looks. Each includes only a handful of presets, but they're all varied and extremely eye-catching. Expect wild vignetting and colour casts, while many presets also make extensive use of light leaks and faux film frames. Each preset can be toned down though, or you can apply individual elements like lens distortion, dirt and scratches, or a photo plate effect separately. It's also possible to tune an effect in a specific image area using the refreshingly simple Control Point tool.

Ultimately, this is tailored to producing stereotypical rather



than realistic film effects, and it's slower and less comprehensive than rival apps, but it's nonetheless a decent option for occasional use.

### PhotoPlusVERDICT

**PROS:** Dramatically transforms images; superb selective editing

**CONS:** Relatively few presets; no Raw support; slow

**WE SAY:** Good for visual punch over more subtle film recreations

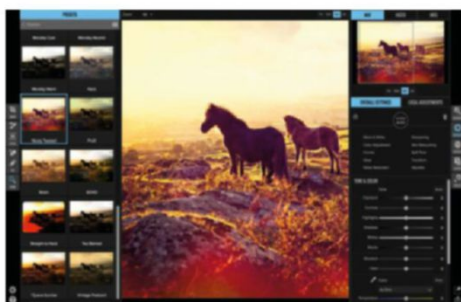
## ON1 Photo RAW 2017

£98/\$120 [www.on1.com](http://www.on1.com)



**ON1 IS** touting Photo RAW as an all-in-one Raw processor and photo editor, and it lived up to its name by opening Raw files from recently released cameras that other apps rejected. You're then greeted by enough preset effects to rival Exposure X2, including 48 real film emulations, plus plenty more generic retro looks.

But that's just the start. In addition to the extensive selection of preset adjustment sliders, you've also got a layers section, masking features, intelligent eraser, clone stamp and batch processing tools, plus much more. This is a plug-in that can easily cut it as a standalone image editor, but its extra features also make it the most



intimidating option here, with a comparably cluttered interface and multiple workspaces. Photo RAW is also a touch slower in operation than some rivals.

### PhotoPlusVERDICT

**PROS:** Good preset selection; lots of extra features; top Raw support

**CONS:** Some presets slow to load; relatively complex to learn

**WE SAY:** Other plug-ins are better suited to film emulation

## Tiffen Dfx 4 Photo Plug-in

£122/\$150 <http://software.tiffen.com>



**AT ITS** heart, Dfx digitally replicates many of Tiffen's own glass filters and gels, but dig deeper and you'll find a huge range of colour and mono film stock emulations, plus many more generic old-school filters. Each can be adjusted to

varying degrees, but those with more extensive customization require you to negotiate a long list of tightly packed sliders to adjust techie parameters like gamma and saturation across each colour channel: no light leaks or grain options here. Elsewhere, some cryptic navigation and view icons further steepen the learning curve. In fact, the interface as a whole could do with an overhaul.

But underneath all this is a fast, powerful plug-in with plenty



of potential. You get layers and blending modes, plus smart masking tools for easy targeting of localized effects. A batch processing feature seals the deal.

### PhotoPlusVERDICT

**PROS:** Lots of presets; selective editing and effect stacking; fast

**CONS:** Limited preset adjustment; somewhat awkward interface

**WE SAY:** A capable option, but not as polished as some rivals





## CANON EF 24-105mm f/4L IS II USM

Revamped and revitalised, the Mark II edition of Canon's 24-105mm aims to strike back with a vengeance

**C**anon's veteran 24-105mm constant-aperture lens is more than a decade old and has faced stiff competition from Sigma's newer Art-line equivalent, and more recently from Canon's own lightweight and relatively inexpensive IS STM variable-aperture counterpart. Indeed, the 24-105mm L-series optic didn't make the grade when Canon drew up its list of approved lenses for use with the high-resolution EOS 5DS and 5DS R. The new Mk II edition has something to prove. Maintaining a constant aperture throughout its extended zoom range, the 24-105mm offers greater telephoto reach than Canon's 24-70mm lenses, making it more ideal for reportage, travel and event photography. As you'd hope for in an L-series lens, weather-seals are

fitted and the Mk II is redesigned to be more resistant to shock and vibration, along with muck-repellent fluorine coatings on the front and rear elements. It certainly feels very well engineered and robust.

Focusing is fully internal, so the front element neither extends nor rotates. The zoom and focus rings

The new lens is rather bigger and heavier than its predecessor, which is more than a decade old

It's much improved over the original 24-105mm, but sharpness is still a little bit lacking

are silky smooth in operation, but there's no hint of zoom creep. It's bigger and 125g heavier than the original lens, being almost as heavy as the EF 24-70mm f/2.8L II USM.

A revamped optical path aims to deliver improved corner-to-corner sharpness throughout the entire zoom range. Canon's top-grade Air Sphere Coatings are a new addition, to further reduce ghosting and



### SPECIFICATIONS

FULL-FRAME COMPATIBLE	Yes
EFFECTIVE FOCAL LENGTH	
With APS-C sensor:	38.4-168mm
With full-frame sensor:	24-105mm
IMAGE STABILIZER	Yes (4-stop)
MINIMUM FOCUS DISTANCE	0.45m
MAX MAGNIFICATION FACTOR	0.24x
MANUAL FOCUS OVERRIDE	Full-time
FOCUS LIMIT SWITCHES	No
INTERNAL ZOOM	No
INTERNAL FOCUS	Yes
FILTER SIZE	77mm
IRIS BLADES	10
WEATHER SEALS	Yes
SUPPLIED ACCESSORIES	Hood, caps
DIMENSIONS (DIA x LENGTH)	84x118mm
WEIGHT	795g
PRICE	£1065/\$1100





flare, while maximizing contrast. A new-generation image stabilizer is rated at four stops, compared with the older edition's 2.5 stops, while also adding a panning mode with automatic detection. And for movie capture, the ring-type ultrasonic autofocus system is re-engineered to give smoother focus transitions.

## Performance

Sharpness is slightly better than the original lens, especially towards the edges and corners of the image frame, but the Mk II still isn't among the sharpest tools in Canon's box. In our tests, we couldn't see any real increase in sharpness over the 24-105mm IS STM, which is far

less expensive to buy. Yet, Canon confirmed to us that the Mk II will be on the hit list of approved lenses for the 5DS and 5DS R.

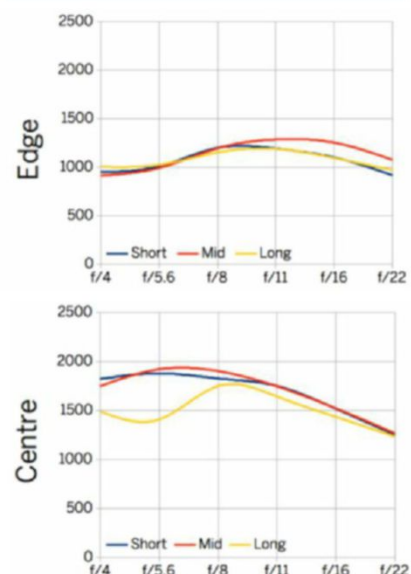
Autofocus is fast for stills but, while it's not massively jerky for video capture, transitions are more jumpy than when using the IS STM (Stepping Motor) lens. Our tests confirmed that the image stabilizer lives up to its four-stop rating.

Barrel distortion at 24mm isn't quite as dreadful as from the original lens, but still quite heavy. Vignetting is also well controlled for this class of lens, while bokeh benefits with an increase from eight to ten diaphragm blades, producing a better-rounded aperture. 📷

## FEATURES

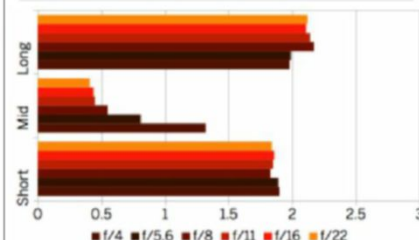
- 01** ASC (Air Sphere Coatings) are applied for maximum resistance to ghosting and flare.
- 02** The focus ring is at the front end of the lens, behind which there's a focus distance scale.
- 03** Image stabilization features automatic panning detection.
- 04** Ring-type ultrasonic autofocus is programmed for fast stills performance and smooth transitions in movie shooting.
- 05** A zoom lock switch can be engaged to lock the extending inner barrel at the shortest 24mm zoom setting.
- 06** Extensive weather-seals are complemented by fluorine coatings on the front and rear elements.

## SHARPNESS



An improvement over the original but sharpness is still lacking at 105mm

## FRINGING (AT EDGE)



Good in the mid-zoom sector, colour fringing becomes more noticeable at either end of the zoom range

## DISTORTION



Thankfully, the heinous barrel distortion of the original at 24mm has been reined in

24mm at f/11



The Mk II delivers better edge-to-edge sharpness at 24mm than the original, and less barrel distortion

105mm at f/11



Centre-sharpness is pretty good throughout most of the zoom range, but drops off a little at the long end

## PhotoPlus VERDICT

Improvements in build quality and image stabilization are welcome. However, enhancements in outright image quality are disappointingly minimal, given the long wait for this popular lens to be updated.

### FEATURES



### BUILD & HANDLING



### IMAGE QUALITY



### VALUE



### OVERALL







## THE CONTENDERS



**Canon EF-S  
55-250mm  
f/4-5.6 IS STM**  
£270/\$300



**Canon EF  
70-200mm f/4L  
USM**  
£500/\$650



**Canon EF  
70-300mm  
f/4-5.6 IS USM**  
£420/\$650



**Sigma  
70-300mm  
f/4-5.6 DG Macro**  
£100/\$140



**Sigma APO  
70-300mm  
f/4-5.6 DG Macro**  
£150/\$180



# BUDGET TELEPHOTO LENSES

*Zoom into action photography without stretching your budget. Matthew Richards rounds up the best cut-price telephotos*

**W**ith starting prices of only £100 (\$140), telephoto zoom lenses don't have to be expensive to buy. Most of the current options give a traditional 70-300mm zoom range, which was something of a favourite back in 35mm film photography days. Another similarity is that they're full-frame compatible, so can be used on any Canon DSLR, while offering an extended 112-480mm 'effective' zoom range on bodies with smaller APS-C format sensors.

Bucking the trend, the Canon EF-S 55-250mm is designed exclusively for APS-C format cameras, and can't be used on full-frame bodies. As such, it's relatively small and lightweight, while still giving powerful telephoto reach – equivalent to using an 88-400mm lens on a full-frame camera. Sigma and Tamron also used to make APS-C-format budget telephoto zoom lenses for Canon cameras, but no longer.

Image stabilization is a massive benefit for handheld telephoto shooting, where camera-shake can be a real problem. Sigma used to make a 70-300mm telephoto zoom lens that included optical image stabilization, but has since dropped the lens from its line-up. Instead, the company continues to market its previous-generation lenses, which include a 0.5x macro facility but lack stabilization.

Another surprise is that one of Canon's 70-200mm L-series lenses squeezes into the budget category. Again, however, it's not stabilized and also lacks some of the 'Luxury' trappings you might expect. Let's see how all the contenders stack up...



**Tamron 70-300mm  
f/4-5.6 Di LD  
Macro**  
£130/\$160



**Tamron SP  
70-300mm  
f/4-5.6 Di VC USD**  
£300/\$450



## CANON EF-S 55-250mm f/4-5.6 IS STM £270/\$300

A slightly unusual offering which delivers decent telephoto reach without weighing you down

**R**efreshingly compact and lightweight, the EF-S 55-250mm is a modest 111mm long and weighs 375g. That's mainly due to this being the only lens in the group designed exclusively for APS-C format cameras. As such, it only has to produce a relatively small image circle.

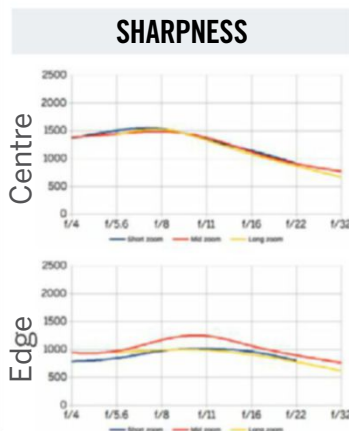
This STM version has a stepping motor rather than a more basic electric motor for its autofocus system. It's much quieter, and enables smooth focus transitions when shooting video on cameras that enable autofocus in movie mode. Handling is also improved, as the focus ring doesn't rotate during autofocus, plus there's a manual override facility in One Shot AF mode.

The STM lens also has a more sophisticated optical design than its predecessor, with an extra three glass elements. These include a UD (Ultra-low Dispersion) element to minimize colour fringing, and Super Spectra

coatings to reduce ghosting and flare. The mounting plate is plastic rather than metal, which weight down. The lens hood is sold separately.

### Performance

A key aspect of any 'budget' telephoto zoom is its sharpness at the widest available apertures. The 55-250mm impresses here, with good wide-aperture sharpness throughout the entire zoom range, along with good overall image quality and effective stabilization too.



### FEATURES

- 01 Super Spectra coating reduces ghosting and flare.
- 02 The optional ET-63 bayonet fitting circular hood costs around £15/\$25.
- 03 Electronically coupled, the focus ring enables manual focusing.
- 04 The image stabilizer includes automatic panning detection.
- 05 Unlike most other lenses on test here, the mounting plate is plastic rather than heavier metal.

### VERDICT

#### FEATURES

★★★★☆

#### BUILD & HANDLING

★★★★☆

#### IMAGE QUALITY

★★★★☆

#### VALUE

★★★★☆

#### OVERALL

★★★★☆

## HOW WE TEST

We combine real-world shooting results with rigorous lab testing to arrive at our overall ratings



**T**o test real-world performance, we use lenses in all sorts of lighting conditions, both indoors and outdoors.

We check for good build quality and handling, smooth and precise operation of all controls, and we test the speed and accuracy of autofocus. We typically test full-frame compatible lenses on a range of full-frame and APS-C format bodies, whereas lenses that are designed specifically for APS-C format bodies are only tested on cameras like the 80D and 7D Mark II.

In-camera corrections for chromatic aberrations and peripheral illumination are disabled throughout all testing, to better reveal the true performance of each lens. We also run a full range of lab tests under controlled conditions, using the Imatest Master and DxO Analyzer suites. Photos of test charts are taken across the range of apertures and zoom settings, then analysed for sharpness, distortion and chromatic aberration.



# CANON EF 70-200mm f/4L USM £500/\$650

Does that off-white paint job mean this lens is the cream of the crop? Not necessarily. . .

Canon's L-series lenses typically demonstrate pro-grade build quality and handling, with image quality to match. There are no less than four L-series 70-200mm lenses on the market but, with an aperture of f/4 rather than f/2.8, and a complete lack of image stabilization, this can be considered a 'budget' buy.

One thing that's immediately obvious is that the 70-200mm comes up short in telephoto reach, compared with the other lenses on test. Even so, the maximum focal length equates to an effective 320mm when you use this full-frame compatible lens on an APS-C format body.

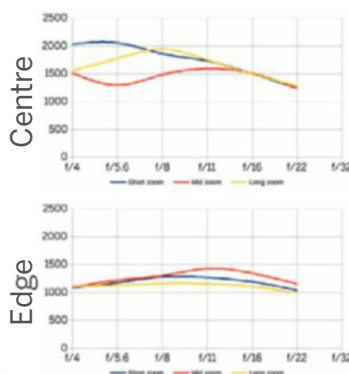
Plus points include top-grade fluorite as well as UD glass elements, ring-type ultrasonic autofocus and a well-rounded aperture based on eight diaphragm blades. Unlike all the other lenses on test, this one has an internal zoom mechanism as well as internal focusing, so the front element remains fixed and

the lens doesn't lengthen at longer zoom settings. Unlike most L-series lenses, however, it's not weather-sealed.

## Performance

The speed of the autofocus system is very fast and image quality is impressive, with excellent sharpness and contrast throughout the entire zoom range, even when shooting wide-open at f/4. However, the lack of image stabilization can really hamper sharpness with handheld telephoto shooting.

## SHARPNESS



## FEATURES

- 01** Its 172mm length makes this the longest lens on test, but it doesn't extend at greater zooms.
- 02** The 67mm filter thread is the largest of any in the group. A hood is supplied.
- 03** The off-white colouring aims to reflect heat from the sun.
- 04** The focus-distance scale is welcome.
- 05** The rear section accommodates an optional Tripod Mount Ring A II.

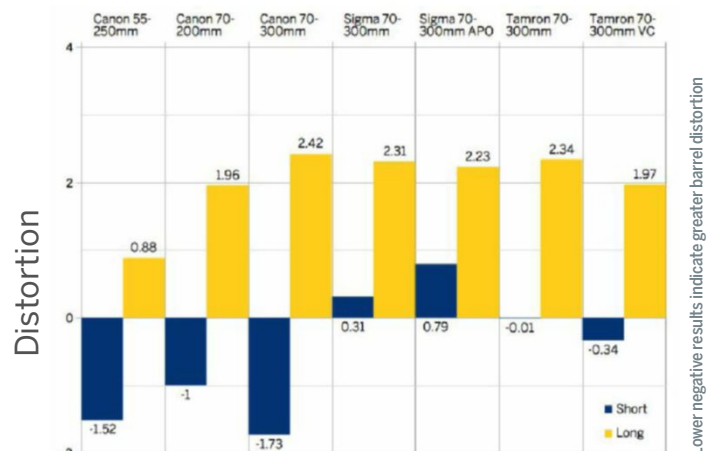
## VERDICT

- FEATURES** ★★★★★
- BUILD & HANDLING** ★★★★★
- IMAGE QUALITY** ★★★★★
- VALUE** ★★★★★
- OVERALL** ★★★★★

## DISTORTION

There's often a swing from barrel to pincushion distortion as you extend through most lens's zoom range

The two Sigma 70-300mm have fairly minor pincushion even at the short end, with more noticeable pincushion at longer zoom settings. The older Tamron 70-300mm has practically identical pincushion at the long end, but hardly any distortion at its 70mm setting. The Canon 70-300mm exhibits the greatest swing of barrel to pincushion distortion, whereas short-end barrel is more restrained in the Tamron VC USD. Long-end pincushion is minimal in the Canon 55-250mm.





## CANON EF 70-300mm f/4-5.6 IS USM £420/\$650

A somewhat pricey lens that's also looking a bit long in the tooth, but it still has some benefits

**W**e'll bring you a full review of Canon's brand new Mk II edition of this lens as soon as we can. For the time being, this version is still on sale and less expensive than the new version.

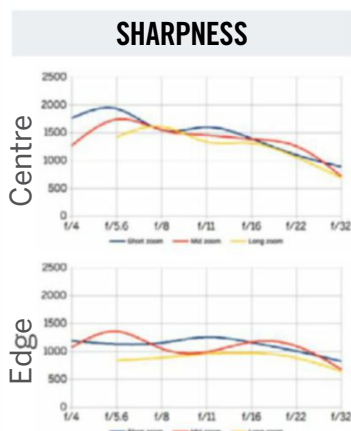
Although badged as having 'ultrasonic' autofocus, it's not a ring-type system. Instead, there's an ultrasonic motor with associated driveshafts and gearwheels, which is comparatively noisy and sluggish in operation. Handling is degraded by the manual-focus ring rotating during autofocus, so you have to be careful not to catch it with your fingers while holding the lens. The front element also rotates during focusing, making filters like circular polarizers hard to use.

The image stabilizer is a relatively old generation, rated at just three stops, although it does at least include a secondary panning mode which can be used in landscape-orientation shooting. On top of the

relatively high asking price for a 'budget' telephoto zoom, the ET-65B hood is sold separately and costs around £35/\$40.

### Performance

Despite the inclusion of a UD glass element and Super Spectre coatings, sharpness and contrast are less impressive than Canon's EF-S 55-250mm lens on test. Colour fringing is also clearly visible towards the corners of images, and distortions are quite pronounced at both ends of the zoom range.



### FEATURES

- 01 The filter thread is the same 58mm as in Canon's EF-S lens.
- 02 The focus ring and front element both rotate during autofocus.
- 03 The stabilizer's lateral panning mode is selected via this switch.
- 04 Autofocus is motor-based instead of being a superior ring-type system.
- 05 Unlike the Sigma and Tamron lenses on test, the Canon lacks focus distance scale.

### VERDICT

- FEATURES**  
★★★★★
- BUILD & HANDLING**  
★★★★★
- IMAGE QUALITY**  
★★★★★
- VALUE**  
★★★★★
- OVERALL**  
★★★★★

## GET REACH QUICK

How much reach do these lenses give on full-frame and APS-C bodies?

**T**he Canon 70-200mm lens is naturally the most limiting lens in the group, in terms of outright telephoto reach. Even so, it has pretty good pulling power to bring distant objects towards you when mounted on an APS-C body.

That's thanks to the 1.6x crop factor of Canon D-SLRs like the 1300D, 750D and 80D. However, the relative lack of

telephoto reach can be disappointing, especially if you're used to the magnifying effect of an APS-C format camera with a 70-300mm lens, and then switch to a full-frame camera.

These images demonstrate how the effective reach works in practice, when using 200mm and 300mm focal lengths on both full-frame and APS-C format cameras.





# SIGMA 70-300mm f/4-5.6 DG MACRO £100/ \$140

This is as cheap as it gets for a Canon-fit telephoto zoom, but does quality suffer as a result?

**Y**ou certainly can't accuse this Sigma lens of being overpriced, yet it boasts some clever tricks. Most notably, it has a 'macro' facility which is available via a switch on the lens barrel. This reduces the close-focusing range from 1.5m to just 0.95m in the 200-300mm sector of the zoom range. Thus if you combine the longest zoom setting with the shortest focus distance, you can get as much as 0.5x macro magnification.

Optical highlights include an SLD (Special Low Dispersion) glass element to reduce colour fringing, and a nine-blade diaphragm that gives better-rounded apertures than the Canon lenses here.

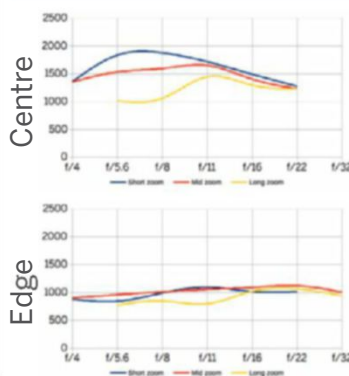
One unwelcome omission, shared by some of the other lenses on test, is the lack of an optical stabilizer. This makes it very difficult to achieve consistently sharp handheld shots, especially when used on an APS-C format camera that boosts the effective maximum focal length to 480mm. The basic electric motor that drives

the autofocus system is also quite loud, and the manual-focus ring rotates during autofocus, as is the case with many of these lenses.

## Performance

Aside from the noisy and somewhat sluggish autofocus system, overall performance is reasonable for such a low-cost lens. Image quality is pretty average in most respects but, while sharpness is very good at the short end of the zoom range, it drops off considerably at 300mm..

## SHARPNESS



## FEATURES

- 01** The Sigma is supplied complete with a hood.
- 02** The filter thread is 58mm, matching that of the Canon 70-300mm lens.
- 03** A focus-distance scale is printed on the focus ring, and there's a macro scale on the inner barrel.
- 04** The focus ring and front element rotate during autofocus.
- 05** The aperture is controlled via a nine-blade diaphragm.

## VERDICT

### FEATURES

★★★★★

### BUILD & HANDLING

★★★★★

### IMAGE QUALITY

★★★★★

### VALUE

★★★★★

### OVERALL

★★★★★

300mm: FULL-FRAME



200mm: APS-C



300mm: APS-C





## SIGMA APO 70-300mm f/4-5.6 DG MACRO £150/\$180

In theory, this APO version of Sigma's lens should offer superior optical performance

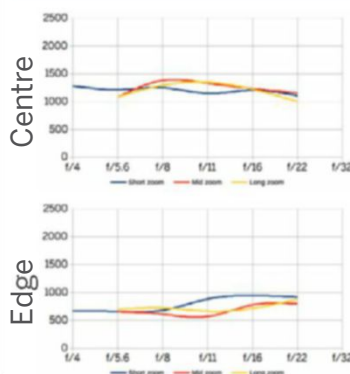
At a glance, there's precious little to distinguish this lens from Sigma's more inexpensive 70-300mm zoom. But as one of Sigma's APO (apochromatic) lenses, this has three SLD (Special Low Dispersion) elements, rather than just the one that's fitted to the cheaper lens. The idea is to boost sharpness and contrast while reducing lateral chromatic aberrations. Moreover, while both lenses have an SLD element in the central grouping, the APO edition adds the extra two at the front, where they're of a wider diameter.

In other respects, the two Sigma lenses are practically identical. They both have the same 0.5x macro facility and sturdy build quality, including a metal mounting plate. Both come with a lens hood. More disappointingly, both lenses have the same basic autofocus system and lack image stabilization. Again, the manual focus ring rotates during autofocus.

### Performance

Surprisingly, there's no real improvement in image quality over Sigma's cheaper lens. Centre-sharpness holds up a little better at the long end of the zoom range, but is actually worse at the short end. Sharpness in the edges and corners of the frame is worse throughout the zoom and aperture ranges and, despite the additional SLD elements, colour fringing proved more noticeable in our tests. It's high time Sigma made a better replacement for this lens.

### SHARPNESS



### FEATURES

- 01 The APO edition is most easily distinguished by this red stripe.
- 02 This switch enables a close-focusing macro mode in the 200-300mm sector.
- 03 Rotation of the manual focusing ring during autofocus impairs handling.
- 04 There are depth-of-field markings for f/11 and f/22.
- 05 Good overall build quality includes this metal mounting plate.

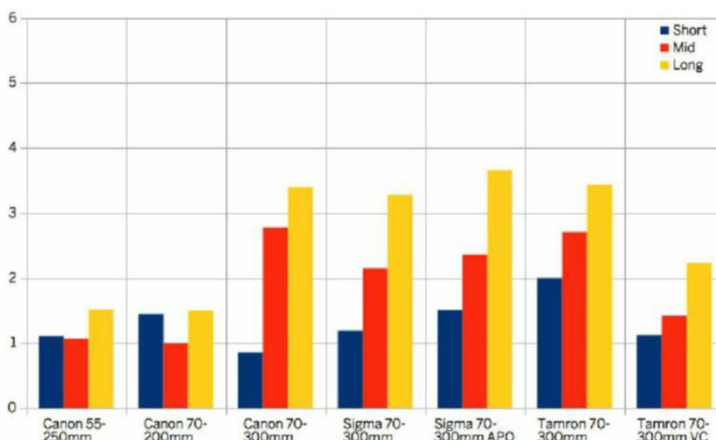
### VERDICT

FEATURES
★★★★★
BUILD & HANDLING
★★★★★
IMAGE QUALITY
★★★★★
VALUE
★★★★★
OVERALL
★★★★★

## COLOUR FRINGING

So-called chromatic aberration around high-contrast edges can be an unwanted distraction

Lateral chromatic aberrations, or colour fringing, can often be prevalent towards the corners of images. You'll often notice them, for example, around high-contrast edges in a scene, such as dark branches and twigs of a tree against a bright sky. Higher lab scores in this chart indicate worse performance in a lens's ability to minimize colour fringing. It's worth noting that most recent and current Canon D-SLRs can correct colour fringing for genuine Canon lenses.





# TAMRON 70-300mm f/4-5.6 DI LD MACRO £130/ \$160

This older-generation lens keeps costs to a minimum, not least because of a lack of image stabilization

**T**amron's original Di (Digitally integrated) 70-300mm telephoto zoom for D-SLRs is a close match to the two Sigma lenses in the group. It's slightly shorter, and nearly 100g lighter, but has most of the same features. These include a 0.5x macro facility available in the 180-300mm sector of the zoom range, a basic electric motor for autofocus, and no image stabilization. Again, the focus ring and front element rotate during autofocus, impairing handling.

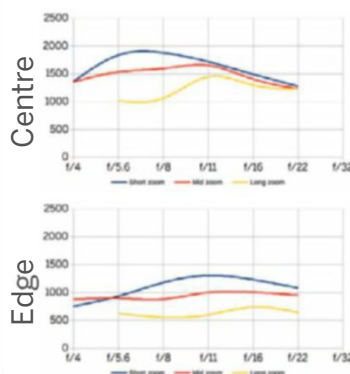
Like the cheaper of the two Sigma lenses, the Tamron includes a single LD (Low Dispersion) glass element in its optical path, but the front element is slightly larger – as is the filter attachment thread, at 62mm rather than 58mm. The aperture is well-rounded, based on a nine-blade diaphragm. Build quality feels good overall but the mounting plate is made from plastic rather than metal. A hood is supplied with the lens and, unusually for a budget

telephoto zoom, Tamron says that the lens is compatible with tele-converters, and recommends the Kenko brand.

## Performance

Sharpness through most of the zoom range is very good, especially if you narrow the aperture by an f-stop from its widest available value. However, sharpness drops off considerably at 300mm, where you need to reduce the aperture to an often impractical f/11 in order to compensate.

## SHARPNESS



## FEATURES

- 01** The front element and filter thread are a little larger than the Sigma lenses'.
- 02** A switchable macro mode is available in the 180-300mm zoom range.
- 03** There's a focus distance scale, but no depth-of-field markings.
- 04** The motor-driven autofocus system is typically noisy and sluggish.
- 05** There's a metal, rather than plastic, mounting plate.

## VERDICT

### FEATURES



### BUILD & HANDLING



### IMAGE QUALITY



### VALUE



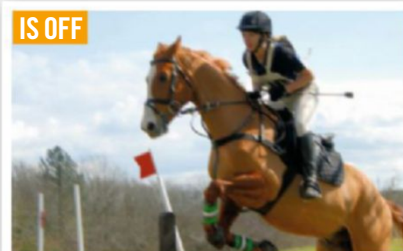
### OVERALL



## STEADY AS SHE GOES

It's hard to over-emphasize the value of image stabilization for handheld shooting

**A**ny 70-300mm lens gives you an effective maximum focal length of 480mm on an APS-C format camera. You're likely to need a shutter speed of at least 1/500 sec to overcome camera-shake and get consistently sharp shots. This can be unattainable in dull lighting conditions, even if you bump up the ISO setting. A three-stop or four-stop image stabilizer enables you to get the same consistency in sharpness with shutter speeds of just 1/60th or 1/30th of a second, respectively.



The Canon lenses on test have a panning mod which is ideal for action shots



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## TAMRON SP 70-300mm f/4-5.6 DI VC USD

£300/\$450

This is a high-tech feast of a lens compared with most competitors – but that doesn't come cheap

Just like the Canon 70-200mm L-series lens on test, this features a fast and quiet ring-type ultrasonic autofocus system, and a focus distance scale neatly positioned beneath a viewing panel.

As well as beating the Canon L-series lens for telephoto reach, it also features Tamron's proprietary image stabilizer or 'VC' (Vibration Compensation), which has an effectiveness of about four stops. The system performs better than Canon's 55-250mm and 70-300mm lenses for static shooting, but is less effective when panning.

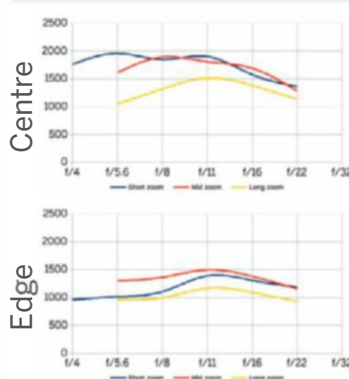
Build quality is very good and, at 765g, the lens feels very substantial, complete with a metal mounting plate. Zoom and focus rings operate very smoothly and, typically for a ring-type ultrasonic lens, the focus ring remains stationary during autofocus but enables full-time manual override in One Shot AF mode. With internal focusing, the front element doesn't rotate,

which is a bonus when using some types of filter.

### Performance

The VC USD lens lacks the macro facility of the older Tamron and both Sigma lenses on test and, in fact, the sharpness scores from our lab tests aren't particularly impressive at close range. However, over longer focus distances, more typical of telephoto shooting, sharpness and contrast are excellent even when using the widest available apertures.

### SHARPNESS



### FEATURES

- 01 A petal-shaped hood is supplied, with 62mm thread.
- 02 The front element neither extends nor rotates.
- 03 The focus ring remains stationary during AF.
- 04 There are both LD and XLD (eXtra Low Dispersion) lens elements.
- 05 Vibration Compensation stabilization has an efficiency of about four stops but is less effective for panning.

### VERDICT

- FEATURES ★★★★★
- BUILD & HANDLING ★★★★★
- IMAGE QUALITY ★★★★★
- VALUE ★★★★★
- OVERALL ★★★★★

## IT'S ALL (UN)DONE WITH MIRRORS

Mirror-bounce can ruin many a telephoto shot








Image stabilization can be a big help to avoid blurring but, even when mounted on a tripod, the jarring action of the camera's reflex mirror flipping up immediately prior to the shutter opening can unsettle it. It's known as mirror-bounce. Most Canon D-SLRs have a Mirror Lockup mode available in the shooting or custom function menus; use this with a two-second self-timer delay or remote control. If your camera doesn't have a mirror lockup function, use Live View.



Ideal for tripod-mounted telephoto shooting, the Mirror Lockup mode gives the camera time to settle after the mirror flips up, avoiding blurred images



## COMPARISON TABLE

							
	CANON EF-S 55-250mm f/4-5.6 IS STM	CANON EF 70-200mm f/4L USM	CANON EF 70-300mm f/4-5.6 IS USM	SIGMA 70-300mm f/4-5.6 DG MACRO	SIGMA APO 70-300mm f/4-5.6 DG MACRO	TAMRON 70-300mm f/4-5.6 DI LD MACRO	TAMRON SP 70-300mm f/4-5.6 DI VC USD
Web	www.canon.co.uk	www.canon.co.uk	www.canon.co.uk	www.sigma-imaging-uk.com	www.sigma-imaging-uk.com	www.tamron.co.uk	www.tamron.co.uk
Full-frame compatible	No	Yes	Yes	Yes	Yes	Yes	Yes
Effective focal length (APS-C)	88-400mm	112-320mm	112-480mm	112-480mm	112-480mm	112-480mm	112-480mm
Internal zoom	No	Yes	No	No	No	No	No
Internal focus	Yes	Yes	No	No	No	No	Yes
Image stabilizer	3.5 stops	No	3 stops	No	No	No	4 stops
Elements/Groups	15/12	16/13	15/10	14/10	14/10	13/9	17/12
Diaphragm blades	7 blades	8 blades	8 blades	9 blades	9 blades	9 blades	9 blades
Autofocus actuator	Stepping motor	Ultrasonic (ring)	Ultrasonic (motor)	Electric motor	Electric motor	Electric motor	Ultrasonic (ring)
AF manual override	Fly-by-wire	Full-time	None	No	No	No	Full-time
Minimum focus distance	0.85m	1.2m	1.5m	0.95m	0.95m	0.95m	1.5m
Max magnification factor	0.29x	0.21x	0.26x	0.5x	0.5x	0.5x	0.25x
Focus distance scale	No	Yes	No	Yes	Yes	Yes	Yes
Filter size	58mm	67mm	58mm	58mm	58mm	62mm	62mm
Mounting plate	Plastic	Metal	Metal	Metal	Metal	Plastic	Metal
Supplied accessories	None	Hood, pouch	None	Hood	Hood, soft case	Hood	Hood
Dimensions (Dia x Length)	70x111mm	76x172mm	77x143mm	77x122mm	77x122mm	77x117mm	82x143mm
Weight	375g	705g	630g	545g	550g	458g	765g
Target price	£270/\$300	£500/\$650	£420/\$650	£100/\$140	£150/\$180	£130/\$160	£300/\$450
FEATURES	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
BUILD & HANDLING	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
IMAGE QUALITY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
VALUE	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
OVERALL	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

## THE WINNER IS... TAMRON SP 70-300mm f/4-5.6 DI VC USD

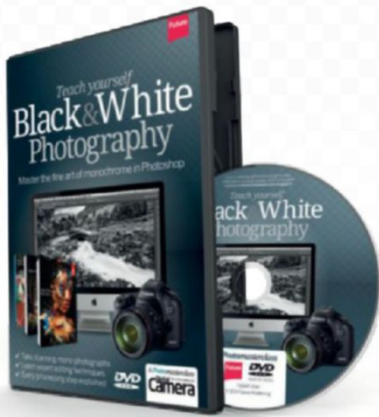
Tamron tops the budget telephoto charts with an outstanding lens

**T**amron's SP 70-300mm lens really lives up to its 'Super Performance' billing, including fast and whisper-quiet ring-type ultrasonic autofocus, highly effective optical stabilization, robust build quality and high-performance optics. The Canon 70-200mm also feels relatively upmarket but, while image quality is excellent, it comes up short on

telephoto reach and lacks stabilization. The lightweight Canon EF-S 55-250mm IS STM is a good buy for APS-C format cameras. Meanwhile, the Canon 70-300mm edges ahead of the Sigma lenses and the older of the two Tamron lenses for performance and handling, but it lacks the macro facility sported by the other three lenses and is comparatively poor value for money. 







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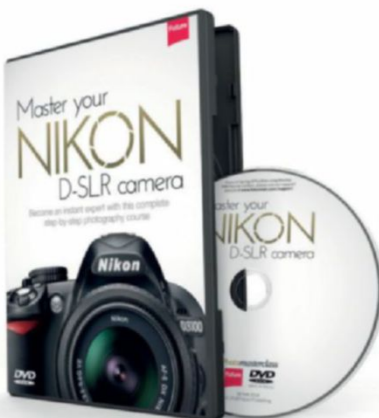


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# PhotoPlus BUYERS' GUIDE

With prices ranging from a couple of hundred quid to several thousand, Canon has a DSLR to suit everyone, from the complete beginner to most demanding pro...



## What to look for

### Canon EOS DSLRs

Canon splits its EOS lineup into entry-level, enthusiast and professional ranges, and the fewer digits the more upmarket the camera; so the new 1300D is the most basic, the 750D/760D for intermediates, while the new 80D is for more advanced enthusiasts. Expect greater ease of use (with thumb-operated scrollwheels replacing cumbersome cursor keys), more robust build quality (with weather-sealing and tough magnesium-alloy shells), more advanced functionality, and full-frame (rather than smaller APS-C) image sensors with more expensive EOS models.

DSLR/CSC prices quoted are body-only unless stated

### CANON EOS 1300D (REBEL T6)

TESTED IN ISSUE 120 PRICE: £289/\$449 (US PRICE WITH KIT LENS)



**CANON'S** entry-level, budget-friendly EOS DSLR gets up a minor upgrade over its predecessor with added Wi-Fi and NFC to make it easy to instantly share images online. A basic 18Mp sensor, ISO6400 and 3fps are all specs ideal for a beginner's first 'proper' camera. ★★★★★

<b>Sensor</b>	18Mp, APS-C (5184x3456 pixels)
<b>Viewfinder</b>	Pentamirror, 0.8x, 95%
<b>ISO</b>	100-6400 (12,800 expanded)
<b>AF</b>	9-point (1 cross-type)
<b>LCD</b>	Fixed, 3-inch, 920k-dot TFT
<b>Max burst (buffer)</b>	3fps (6 Raw/1100 JPEG)
<b>Memory card</b>	SD/SDHC/SDXC

### CANON EOS 100D (REBEL SL1)

TESTED IN ISSUE 120 PRICE: £309/\$399



**IT'S SMALLER** than any other Canon DSLR but is big on features and is something of a step up in sophistication from the 1200D, with a newer-generation image processor, high-res touchscreen and 'hybrid CMOS AF' for effective continuous autofocus during movie capture. ★★★★★

<b>Sensor</b>	18Mp, APS-C (5184x3456 pixels)
<b>Viewfinder</b>	Pentamirror, 0.87x, 95%
<b>ISO</b>	100-12,800 (25,600 expanded)
<b>AF</b>	9-point (1 cross-type)
<b>LCD</b>	3in touchscreen, 1040K dots
<b>Max burst (buffer)</b>	4fps (7 Raw/28 JPEG)
<b>Memory card</b>	SD/SDHC/SDXC

### CANON EOS 700D (REBEL T5i)

TESTED IN ISSUE 120 PRICE: £469/\$649



**WITH A** faster continuous drive rate than the 100D, better AF and the bonus of a vari-angle touchscreen, the 700D is more versatile for shooting from extreme angles or around corners. It's a lovely lightweight camera but is now outclassed by the newer 750D. ★★★★★

<b>Sensor</b>	18Mp, APS-C (5184x3456 pixels)
<b>Viewfinder</b>	Pentamirror, 0.85x, 95%
<b>ISO</b>	100-12,800 (25,600 expanded)
<b>AF</b>	9-point (all cross-type)
<b>LCD</b>	3in touchscreen vari-angle, 1040K dots
<b>Max burst (buffer)</b>	5fps (6 Raw/22 JPEG)
<b>Memory card</b>	SD/SDHC/SDXC

### CANON EOS 750D (REBEL T6i)

TESTED IN ISSUE 120 PRICE: £519/\$749



**HEADLINE** attractions include a new 24.2Mp high-resolution image sensor and DIGIC 6 processor, plus a 19-point autofocus system. It beats the older 700D in all these respects, and adds Wi-Fi and NFC connectivity for easy image sharing and printing. ★★★★★

<b>Sensor</b>	24.2Mp, APS-C (6000x4000 pixels)
<b>Viewfinder</b>	Pentamirror, 0.82x, 95%
<b>ISO</b>	100-12,800 (25,600 expanded)
<b>AF</b>	19-point (all cross-type)
<b>LCD</b>	3in touchscreen vari-angle, 1040K dots
<b>Max burst (buffer)</b>	5fps (8 Raw/940 JPEG)
<b>Memory card</b>	SD/SDHC/SDXC

### CANON EOS 760D (REBEL T6s)

TESTED IN ISSUE 108 PRICE: £579/\$849



**BUILDING** on the impressive features of the 750D, the 760D adds a secondary info LCD on the top and Quick Control Dial on the rear. This improves handling and makes it feel more like an 'enthusiast' model, rather than an entry-level DSLR, and is worth the extra outlay. ★★★★★

<b>Sensor</b>	24.2Mp, APS-C (6000x4000 pixels)
<b>Viewfinder</b>	Pentamirror, 0.82x, 95%
<b>ISO</b>	100-12,800 (25,600 expanded)
<b>AF</b>	19-point (all cross-type)
<b>LCD</b>	3in touchscreen vari-angle, 1040K dots
<b>Max burst (buffer)</b>	5fps (8 Raw/940 JPEG)
<b>Memory card</b>	SD/SDHC/SDXC



## CANON EOS M3



★★★

TESTED IN ISSUE 102 PRICE: £349/\$479

Sensor	24.2Mp, APS-C (6000x4000 pixels)
ISO	100-12,800 (25,600 expanded)
AF	Hybrid CMOS AF III & 49 AF points

## CANON EOS M5



★★★★★

TESTED IN ISSUE 122 PRICE: £1149/\$1099

Sensor	24.2Mp, APS-C (6000x4000 pixels)
ISO	100-25,600
AF	Dual CMOS AF & 49 AF points

## CANON EOS 80D



**THE 80D** builds upon its 70D predecessor with 25% more pixels, 45 cross-type AF points, improved ISO performance and retains the ability to capture 7fps bursts. It can record movies at double-speed 50/60fps for slow-motion, and has NFC data transfer in addition to Wi-Fi. ★★★★★

TESTED IN ISSUE 113 PRICE: £999/\$1099

Sensor	24.2Mp, APS-C (6000x4000 pixels)
Viewfinder	Pentaprism, 0.95x, 100%
ISO	100-16,000 (25,600 expanded)
AF	45-point (all cross-type)
LCD	3in touchscreen vari-angle, 1040K dots
Max burst (buffer)	7fps (25 Raw/110 JPEG)
Memory card	SD/SDHC/SDXC

## CANON EOS 7D Mk II



**HERE'S** the king of action-packed APS-C format cameras. A long-overdue revamp of the original 7D, it has 65-point AF with advanced tracking, 10fps continuous drive, dual DIGIC 6 processors and GPS, all wrapped up in a tough, weather-sealed magnesium alloy shell. ★★★★★

TESTED IN ISSUE 108 PRICE: £1249/\$1349

Sensor	20.2Mp, APS-C (5472x3648 pixels)
Viewfinder	Pentaprism, 1.0x, 100%
ISO	100-16,000 (51,200 expanded)
AF	65-point (all cross-type)
LCD	3in, 1040K dots
Max burst (buffer)	10fps (31 Raw/unlimited JPEG)
Memory card	CompactFlash + SD/SDHC/SDXC

## CANON EOS 6D



**AMAZINGLY** good value for a full-frame EOS DSLR in a medium-sized body, the 6D combines a respectable 20.2Mp sensor with super-high sensitivities of up to ISO102,400. Image quality is excellent and there's built-in Wi-Fi and GPS, but the 6D has a fairly basic AF system. ★★★★★

TESTED IN ISSUE 108 PRICE: £1249/\$1269

Sensor	20.2Mp, full-frame (5472x3648 pixels)
Viewfinder	Pentaprism, 0.71x, 97%
ISO	100-25,600 (50-102,400 expanded)
AF	11-point (1 cross-type)
LCD	3in, 1040K dots
Max burst (buffer)	4.5fps (17 Raw/1250 JPEG)
Memory card	SD/SDHC/SDXC

## CANON EOS 5D Mk IV



**A SUPERB** all-rounder, the pro-level weather-sealed full-frame 5D Mk IV combines a stunning hi-res 30Mp sensor with a swift 7fps frame rate. Its impressive specs list includes 4K video, a touchscreen LCD, Wi-Fi and NFC connectivity, and GPS to automatically geotag images. ★★★★★

TESTED IN ISSUE 119 PRICE: £3499/\$3499

Sensor	30.4Mp, full-frame (6720x4480 pixels)
Viewfinder	Pentaprism, 0.71x, 100%
ISO	100-32,000 (50-102,400 expanded)
AF	61-point (41 cross-type, 5 dual-cross)
LCD	3.2in touchscreen, 1620K dots
Max burst (buffer)	7fps (21 Raw/unlimited JPEG)
Memory card	CompactFlash + SD/SDHC/SDXC

## CANON EOS 5DS (5DS R)



**THE** world's first 50Mp full-frame DSLR delivers huge and amazingly detailed hi-res images. The higher-cost 5DS R adds a 'low-pass cancellation filter' for marginally sharper shots. As expected with such a high-res sensor, max ISO and drive rate are lower than with the 5D Mk IV. ★★★★★

TESTED IN ISSUE 103 PRICES: £2799/\$3499 (£2899/\$3699)

Sensor	50.6Mp, full-frame (8688x5792 pixels)
Viewfinder	Pentaprism, 0.71x, 100%
ISO	100-6400 (50-12,800 expanded)
AF	61-point (41 cross-type, 5 dual-cross)
LCD	3.2in, 1040K dots
Max burst (buffer)	5fps (14 Raw/510 JPEG)
Memory card	CompactFlash + SD/SDHC/SDXC

## CANON EOS-1D X MARK II



**CANON'S** Mark II flagship full-frame pro-level EOS boasts ultra-fast 14fps shooting (16fps in Live View) and super-high ISO, along with sublime handling. It sports 4K video, body build quality is rock-solid, yet its 20Mp image resolution is relatively modest when compared to the 50Mp 5DS/R. ★★★★★

TESTED IN ISSUE 115 PRICE: £4799/\$5999

Sensor	20.2Mp, full-frame (5472x3648 pixels)
Viewfinder	Pentaprism, 0.76x, 100%
ISO	100-51,200 (50-409,600 expanded)
AF	61-point (41 cross-type, 5 dual-cross)
LCD	3.2in, 1620K dots
Max burst (buffer)	14-16fps (170 Raw/Unlimited JPEG)
Memory card	CompactFlash + CFast



# BUYERS' GUIDE

With over 150 lenses available for Canon DSLRs, picking the best for the job can be a minefield. Here's the lowdown on all currently available EOS-fit glass

## Choosing lenses

Key factors to watch out for



**THE MAIN** factors to consider in a lens are its focal length, maximum aperture, and whether or not it's full-frame compatible. We've categorized lenses by focal length range – from wide-angle to telephoto. The larger a lens's maximum aperture, the 'faster' it's considered to be – allowing you to control depth of field more, and offering better options in low light. Zooms are more flexible than primes, but tend not to have such fast maximum apertures. Full-frame lenses will also work with 'crop-sensor' EOS D-SLRs, but crop-sensor lenses aren't compatible with full-frame cameras.

**KEY:** ● BEST VALUE AWARD ● BEST ON TEST AWARD

### WIDE-ANGLE ZOOMS

WIDE-ANGLE ZOOMS	Price	Full frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF 8-15mm f/4L Fisheye USM	£1020/\$1250	Yes	1.9x	No	f/4	540g	0.15m	0.34x	None	7	90	★★★★★	
Canon EF-S 10-18mm f/4.5-5.6 IS STM	£180/\$280	No	1.8x	Yes	f/4.5-5.6	240g	0.22m	0.15x	67mm	7	113	★★★★★	●
Canon EF-S 10-22mm f/3.5-4.5 USM	£470/\$650	No	2.2x	No	f/3.5-4.5	385g	0.24m	0.17x	77mm	6	113	★★★★★	
Canon EF 11-24mm f/4L USM	£2700/\$2800	Yes	2.2x	No	f/4	1180g	0.28m	0.16x	None	9	116	★★★★★	
Canon EF 16-35mm f/2.8L III USM	£2350/\$2200	Yes	2.2x	No	f/2.8	790g	0.28m	0.22x	82mm	9	120	★★★★★	
Canon EF 16-35mm f/4L IS USM	£900/\$1000	Yes	2.2x	Yes	f/4	615g	0.28m	0.23x	77mm	9	116	★★★★★	●
Canon EF 17-40mm f/4L USM	£550/\$750	Yes	2.4x	No	f/4	500g	0.28m	0.24x	77mm	7	113	★★★★★	
Sigma 8-16mm f/4.5-5.6 DC HSM	£500/\$700	No	2.0x	No	f/4.5-5.6	555g	0.24m	0.13x	None	7	113	★★★★★	
Sigma 10-20mm f/3.5 EX DC HSM	£330/\$450	No	2.0x	No	f/3.5	520g	0.24m	0.15x	82mm	7	113	★★★★★	
Sigma 12-24mm f/4 DG HSM A	£1650/\$1600	Yes	2.0x	No	f/4	1150g	0.24m	0.2x	None	9	122	★★★★★	
Sigma 12-24mm f/4.5-5.6 II DG HSM	£530/\$950	Yes	2.0x	No	f/4.5-5.6	670g	0.28m	0.16x	82mm	9	113	★★★★★	
Sigma 24-35mm f/2 DG HSM A	£700/\$900	Yes	1.5x	No	f/2	940g	0.28m	0.23x	77mm	7	113	★★★★★	
Tamron SP AF 10-24mm f/3.5-4.5 Di II LD	£410/\$500	No	2.4x	No	f/3.5-4.5	406g	0.24m	0.2x	None	9	113	★★★★★	
Tamron SP 15-30mm f/2.8 Di VC USD	£930/\$1200	Yes	2.0x	Yes	f/2.8	1100g	0.28m	0.2x	None	6	87	★★★★	
Tokina 10-17mm f/3.5-4.5 AT-X DX Fisheye	£430/\$530	No	1.7x	No	f/3.5-4.5	350g	0.14m	0.39x	82mm	9		★★★★	
Tokina 11-16mm f/2.8 AT-X PRO DX II	£480/\$500	No	1.8x	No	f/2.8	560g	0.28m	0.12x	77mm	9	87	★★★★	
Tokina 12-28mm f/4 AT-X Pro DX	£450/\$400	No	2.3x	No	f/4	530g	0.25m	0.2x	82mm	9	116	★★★★★	
Tokina 14-20mm f/2 AT-X PRO DX	£850/\$800	No	1.43x	No	f/2	750g	0.28m	0.12x	None	9		★★★★	
Tokina 16-28mm f/2.8 AT-X PRO FX	£580/\$690	Yes	1.8x	No	f/2.8	950g	0.28m	0.19x	82mm	9		★★★★	
Tokina 17-35mm f/4 AT-X PRO FX	£550/\$450	Yes	2.1x	No	f/4	600g	0.28m	0.21x	82mm	9		★★★★	

### TELEPHOTO ZOOMS

TELEPHOTO ZOOMS	Price	Full frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF-S 55-250mm f/4-5.6 IS STM	£270/\$300	No	4.5x	Yes	f/4-5.6	375g	0.85m	0.29x	58mm	7	123	★★★★★	
Canon EF 70-200mm f/2.8L IS II USM	£1850/\$1950	Yes	2.9x	Yes	f/2.8	1490g	1.2m	0.21x	77mm	8	116	★★★★★	
Canon EF 70-200mm f/2.8L USM	£1190/\$1250	Yes	2.9x	No	f/2.8	1310g	1.5m	0.16x	77mm	8	64	★★★★★	
Canon EF 70-200mm f/4L IS USM	£1020/\$1100	Yes	2.9x	Yes	f/4	760g	1.2m	0.21x	67mm	8	107	★★★★★	
Canon EF 70-200mm f/4L USM	£500/\$650	Yes	2.9x	No	f/4	705g	1.2m	0.21x	67mm	8	123	★★★★★	
Canon EF 70-300mm f/4-5.6 IS USM	£420/\$650	Yes	4.3x	Yes	f/4-5.6	630g	1.5m	0.26x	58mm	8	123	★★★★	
Canon EF 70-300mm f/4-5.6 IS II USM	£355/\$550	Yes	4.3x	Yes	f/4-5.6	710g	1.2m	0.25x	67mm	9		★★★★	
Canon EF 70-300mm f/4-5.6L IS USM	£1030/\$1350	Yes	4.3x	Yes	f/4-5.6	1050g	1.2m	0.21x	67mm	8	117	★★★★★	
Canon EF 70-300mm f/4-5.6 DO IS USM	£1190/\$1400	Yes	4.3x	Yes	f/4-5.6	720g	1.4m	0.19x	58mm	6	90	★★★★	
Canon EF 75-300mm f/4-5.6 III	£200/\$200	Yes	4.0x	No	f/4-5.6	480g	1.5m	0.25x	58mm	7	15	★★★★	
Canon EF 75-300mm f/4-5.6 III USM	£240/\$190	Yes	4.0x	No	f/4-5.6	480g	1.5m	0.25x	58mm	7	70	★★★★	
Canon EF 100-400mm f/4.5-5.6L IS II USM	£1800/\$2000	Yes	4.0x	Yes	f/4.5-5.6	1640g	0.98m	0.31x	77mm	9	117	★★★★★	
Canon EF 200-400mm f/4L IS USM Extender 1.4x	£9800/\$11,000	Yes	2.8x	Yes	f/4	3620g	2.0m	0.15x	52mm	9	77	★★★★★	
Sigma 60-550mm f/4.5-6.3 DG OS HSM	£850/\$1660	Yes	10.0x	Yes	f/4.5-6.3	1970g	0.5-1.8m	0.32x	95mm	9	117	★★★★★	
Sigma 70-200mm f/2.8 EX DG OS HSM	£730/\$1150	Yes	2.9x	Yes	f/2.8	1430g	1.4m	0.13x	77mm	9	107	★★★★★	
Sigma 70-300mm f/4-5.6 DG Macro	£100/\$140	Yes	4.3x	No	f/4-5.6	545g	0.95m	0.5x	58mm	9	123	★★★★	
Sigma APO 70-300mm f/4-5.6 DG Macro	£150/\$180	Yes	4.3x	No	f/4-5.6	550g	0.95m	0.5x	58mm	9	123	★★★★	
Sigma 120-300mm f/2.8 DG OS HSM S	£2500/\$3400	Yes	2.5x	Yes	f/2.8	3390g	1.5-2.5m	0.12x	105mm	9	98	★★★★★	
Sigma 150-600mm f/5-6.3 DG OS HSM C	£740/\$990	Yes	4.0x	Yes	f/5-6.3	1930g	2.8m	0.2x	95mm	9	117	★★★★★	●
Sigma 150-600mm f/5-6.3 DG OS HSM S	£1300/\$2000	Yes	4.0x	Yes	f/5-6.3	2860g	2.6m	0.2x	105mm	9	117	★★★★★	●
Sigma 200-500mm f/2.8 EX DG	£12,700/\$26,000	Yes	2.5x	No	f/2.8	15,700g	2.0-5.0m	0.13x	72mm	9		★★★★	
Sigma 300-800mm f/5.6 EX DG HSM	£5500/\$6800	Yes	2.7x	No	f/5.6	5880g	6.0m	0.14x	46mm	9		★★★★	
Tamron SP AF 70-200mm f/2.8 Di VC USD	£1100/\$1500	Yes	2.9x	Yes	f/2.8	1470g	1.3m	0.13x	77mm	9	107	★★★★★	
Tamron AF 70-300mm f/4-5.6 Di LD Macro	£130/\$160	Yes	4.3x	No	f/4-5.6	458g	0.95m	0.5x	62mm	9	123	★★★★	
Tamron SP AF 70-300mm f/4-5.6 Di VC USD	£300/\$450	Yes	4.3x	Yes	f/4-5.6	765g	1.5m	0.25x	62mm	9	123	★★★★★	●
Tamron SP 150-600mm F/5-6.3 Di VC USD	£830/\$1000	Yes	4.0x	Yes	f/5-6.3	1951g	2.7m	0.2x	95mm	9	117	★★★★★	
Tamron SP 150-600mm f/5-6.3 Di VC USD G2	£1350/\$1400	Yes	4.0x	Yes	f/5-6.3	2010g	2.2m	0.26x	95mm	9	121	★★★★★	



**KEY:** ● BEST VALUE AWARD ● BEST ON TEST AWARD

STANDARD ZOOMS	Price	Full frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF-S 15-85mm f/3.5-5.6 IS USM	£580/\$800	No	5.7x	Yes	f/3.5-5.6	575g	0.35m	0.21x	72mm	7	84	★★★★★	
Canon EF-S 17-55mm f/2.8 IS USM	£600/\$800	No	3.2x	Yes	f/2.8	645g	0.35m	0.17x	77mm	7	84	★★★★★	●
Canon EF-S 18-55mm f/3.5-5.6 IS II	£140/\$200	No	3.1x	Yes	f/3.5-5.6	200g	0.25m	0.34x	58mm	6	110	★★★★	
Canon EF-S 18-55mm f/3.5-5.6 IS STM	£190/\$250	No	3.1x	Yes	f/3.5-5.6	205g	0.25m	0.36x	58mm	7	110	★★★★	
Canon EF 24-70mm f/2.8L II USM	£1690/\$1750	Yes	2.9x	No	f/2.8	805g	0.38m	0.21x	82mm	9	116	★★★★★	
Canon EF 24-70mm f/4L IS USM	£695/\$900	Yes	2.9x	Yes	f/4	600g	0.38m	0.7x	77mm	9	93	★★★★★	
Canon EF 24-105mm f/3.5-5.6 IS STM	£350/\$600	Yes	4.4x	Yes	f/3.5-5.6	525g	0.4m	0.3x	77mm	7			
Canon EF 24-105mm f/4L IS USM	£800/\$1000	Yes	4.4x	Yes	f/4	670g	0.45m	0.23x	77mm	8	93	★★★★★	
Canon EF 24-105mm f/4L IS II USM	£1100/\$1100	Yes	4.4x	Yes	f/4	795g	0.45m	0.24x	77mm	10	123	★★★★★	
Sigma 17-50mm f/2.8 EX DC OS HSM	£280/\$400	No	2.9x	Yes	f/2.8	565g	0.28m	0.2x	77mm	7	84	★★★★★	
Sigma 17-70mm f/2.8-4 DC Macro OS HSM C	£320/\$500	No	4.1x	Yes	f/2.8-4	465g	0.22m	0.36x	72mm	7	84	★★★★★	
Sigma 18-35mm f/1.8 DC HSM A	£550/\$800	No	1.9x	No	f/1.8	810g	0.28m	0.23x	72mm	9	90	★★★★★	
Sigma 24-70mm f/2.8 IF EX DG HSM	£530/\$750	Yes	2.9x	No	f/2.8	790g	0.38m	0.19x	82mm	9	93	★★★★★	
Sigma 24-105mm f/4 DG OS HSM A	£600/\$900	Yes	4.4x	Yes	f/4	885g	0.45m	0.22x	82mm	9	85	★★★★★	
Tamron SP AF 17-50mm f/2.8 XR Di II VC	£380/\$500	No	2.9x	Yes	f/2.8	570g	0.29m	0.21x	72mm	7	84	★★★★★	
Tamron SP AF 24-70mm f/2.8 Di VC USD	£780/\$1300	Yes	2.9x	Yes	f/2.8	825g	0.38m	0.2x	82mm	9	93	★★★★★	●
Tamron SP AF 28-75mm f/2.8 XR Di	£400/\$500	Yes	2.7x	No	f/2.8	510g	0.33m	0.26x	67mm	7	57	★★★★	

STANDARD ZOOMS

SUPERZOOMS	Price	Full frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF-S 18-135mm f/3.5-5.6 IS STM	£295/\$400	No	7.5x	Yes	f/3.5-5.6	480g	0.39m	0.28x	67mm	7	92	★★★★★	
Canon EF-S 18-200mm f/3.5-5.6 IS	£390/\$700	No	11.1x	Yes	f/3.5-5.6	595g	0.45m	0.24x	72mm	6	92	★★★★★	
Canon EF 28-300mm f/3.5-5.6L IS USM	£1980/\$2450	Yes	10.7x	Yes	f/3.5-5.6	1760g	0.7m	0.30x	77mm	8	6	★★★★★	
Sigma 18-200mm f/3.5-6.3 DC Macro OS HSM C	£250/\$400	No	11.1x	Yes	f/3.5-6.3	430g	0.39m	0.33x	62mm	7	92	★★★★★	
Sigma 18-250mm f/3.5-6.3 DC Macro OS HSM	£280/\$350	No	13.9x	Yes	f/3.5-6.3	470g	0.35m	0.34x	62mm	7	92	★★★★★	●
Sigma 18-300mm f/3.5-6.3 DC Macro OS HSM C	£340/\$500	No	16.7x	Yes	f/3.5-6.3	585g	0.39m	0.33x	72mm	7			
Tamron 16-300mm f/3.5-6.3 Di II VC PZD Macro	£430/\$550	No	18.8x	Yes	f/3.5-6.3	540g	0.39m	0.34x	67mm	7	92	★★★★★	●
Tamron 18-200mm f/3.5-6.3 Di II VC	£200/\$200	No	11.1x	Yes	f/3.5-6.3	400g	0.49m	0.25x	62mm	7	110	★★★★★	
Tamron AF 18-270mm f/3.5-6.3 Di II VC PZD	£300/\$450	No	15.0x	Yes	f/3.5-6.3	450g	0.49m	0.26x	62mm	7	92	★★★★★	
Tamron 28-300mm f/3.5-6.3 Di VC PZD	£600/\$850	Yes	10.7x	Yes	f/3.5-6.3	540g	0.49m	0.29x	67mm	7			

SUPERZOOMS

WIDE-ANGLE PRIMES	Price	Full frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
Canon EF 14mm f/2.8L II USM	£1600/\$2100	Yes	None	No	f/2.8	645g	0.2m	0.15x	None	6			
Canon TS-E 17mm f/4L (tilt & shift)	£1800/\$2150	Yes	None	No	f/4	820g	0.25m	0.14x	77mm	8	90	★★★★★	
Canon EF 20mm f/2.8 USM	£385/\$540	Yes	None	No	f/2.8	405g	0.25m	0.14x	72mm	5	114	★★★★★	
Canon EF 24mm f/1.4L II USM	£1350/\$1550	Yes	None	No	f/1.4	650g	0.25m	0.17x	77mm	8			
Canon EF 24mm f/2.8 IS USM	£435/\$550	Yes	None	Yes	f/2.8	280g	0.2m	0.23x	58mm	7	114	★★★★★	
Canon EF-S 24mm f/2.8 STM	£130/\$150	No	None	No	f/2.8	125g	0.16m	0.27x	52mm	7	110	★★★★★	
Canon TS-E 24mm f/3.5L II (tilt & shift)	£1520/\$1900	Yes	None	No	f/3.5	780g	0.21m	0.34x	82mm	8			
Canon EF 28mm f/1.8 USM	£360/\$510	Yes	None	No	f/1.8	310g	0.25m	0.18x	58mm	7	67	★★★★	
Canon EF 28mm f/2.8 IS USM	£390/\$500	Yes	None	Yes	f/2.8	260g	0.23m	0.2x	58mm	7	114	★★★★★	
Canon EF 35mm f/1.4L USM	£960/\$1000	Yes	None	No	f/1.4	580g	0.3m	0.18x	72mm	8			
Canon EF 35mm f/1.4L II USM	£1800/\$1700	Yes	None	No	f/1.4	760g	0.28m	0.21x	72mm	9	116	★★★★★	
Canon EF 35mm f/2 IS USM	£420/\$600	Yes	None	Yes	f/2	335g	0.24m	0.24x	67mm	8	114	★★★★★	●
Peleng 8mm f/3.5 Fisheye	£250/\$215	Yes	None	No	f/3.5	400g	0.22m	0.13x	None				
Peleng 17mm f/2.8 Fisheye	£290/\$290	Yes	None	No	f/2.8	630g	0.3m		None				
Samyang 8mm f/3.5 IF MC CSII DH Circular	£240/\$260	No	None	No	f/3.5	435g	0.3m	N/S	None	6			
Samyang 10mm f/2.8 ED AS NCS CS	£300/\$400	No	None	No	f/2.8	600g	0.25m	N/S	None	6			
Samyang 12mm f/2.8 ED AS NCS Diagonal	£380/\$470	Yes	None	No	f/2.8	530g	0.2m	N/S	None	7			
Samyang 14mm f/2.8 IF ED UMC	£300/\$330	Yes	None	No	f/2.8	560g	0.28m	N/S	None	6	74	★★★★	
Samyang 16mm f/2 ED AS UMC CS	£330/\$360	No	None	No	f/2	590g	0.2m	N/S	77mm	8			
Samyang 24mm f/1.4 ED AS UMC	£480/\$470	Yes	None	No	f/1.4	680g	0.25m	N/S	77mm	8			
Samyang T-S 24mm f/3.5 ED AS UMC (tilt & shift)	£680/\$760	Yes	None	No	f/3.5	680g	0.2m	N/S	82mm	8	90	★★★★★	
Samyang 35mm f/1.4 AS UMC AE	£420/\$480	Yes	None	No	f/1.4	660g	0.3m	N/S	77mm	8	100	★★★★★	
Schneider 28mm f/4.5 PC-TS (tilt & shift)	£4980/\$6000	Yes	None	No	f/4.5	1560g	0.15m	0.16x	122mm				
Sigma 4.5mm f/2.8 EX DC HSM Circular Fisheye	£600/\$900	No	None	No	f/2.8	470g	0.14m	0.17x	None	6	87	★★★★★	
Sigma 8mm f/3.5 EX DG Circular Fisheye	£600/\$900	Yes	None	No	f/3.5	400g	0.14m	0.22x	None	6	87	★★★★★	●
Sigma 10mm f/2.8 EX DC HSM Diagonal Fisheye	£500/\$600	No	None	No	f/2.8	475g	0.14m	0.11x	None	7	87	★★★★★	
Sigma 15mm f/2.8 EX DG Diagonal Fisheye	£500/\$610	Yes	None	No	f/2.8	370g	0.15m	0.26x	None	7	44	★★★★★	
Sigma 20mm f/1.4 DG HSM A	£630/\$900	Yes	None	No	f/1.4	950g	0.28m	0.14x	77mm	9	114	★★★★★	
Sigma 24mm f/1.4 DG HSM A	£600/\$850	Yes	None	No	f/1.4	665g	0.25m	0.19x	77mm	9	114	★★★★★	●
Sigma 35mm f/1.4 DG HSM A	£600/\$900	Yes	None	No	f/1.4	665g	0.3m	0.19x	67mm	9	100	★★★★★	●
Tamron SP 35mm f/1.8 Di VC USD	£600/\$600	Yes	None	Yes	f/1.8	480g	0.2m	0.4x	67mm	9	114	★★★★★	
Voigtlander 20mm f/3.5 Color-Skopar SL II	£505/\$500	Yes	None	No	f/3.5	240g	0.2m	N/S	52mm	9			
Voigtlander 28mm f/2.8 Color-Skopar	£440/\$480	Yes	None	No	f/2.8	230g	0.22m	N/S	52mm	9			
Zeiss Milvus 15mm f/2.8 ZE	£2330/\$2700	Yes	None	No	f/2.8	947g	0.25m	0.11x	95mm	9			
Zeiss Distagon T* 18mm f/3.5 ZE	£1090/\$1395	Yes	None	No	f/3.5	510g	0.3m	0.08x	82mm	9	44	★★★★★	●
Zeiss Milvus 18mm f/2.8 ZE	£2000/\$2300	Yes	None	No	f/2.8	721g	0.25m	0.1x	77mm	9			
Zeiss Milvus 21mm f/2.8 ZE	£1300/\$1850	Yes	None	No	f/2.8	851g	0.22m	0.2x	82mm	9			
Zeiss Distagon T* 25mm f/2 ZE	£1270/\$1700	Yes	None	No	f/2	600g	0.25m	0.17x	67mm	9			
Zeiss Distagon T* 28mm f/2 ZE	£980/\$1285	Yes	None	No	f/2	580g	0.24m	0.21x	58mm	9			
Zeiss Otus 28mm f/1.4 ZE	£3630/\$5000	Yes	None	No	f/1.4	1350g	0.3m	0.2x	95mm	9			
Zeiss Distagon T* 35mm f/1.4 ZE	£1300/\$1845	Yes	None	No	f/1.4	850g	0.3m	0.2x	72mm	9			
Zeiss Milvus f2/35 ZE	£830/\$1120	Yes	None	No	f/2	702g	0.3m	0.19x	58mm	9	114	★★★★★	

WIDE-ANGLE PRIMES

# PhotoPlus

# BUYERS' GUIDE

## Contacts

**Canon** [www.canon.co.uk](http://www.canon.co.uk)

**Peleng** [www.digitaltoyshop.co.uk](http://www.digitaltoyshop.co.uk)

**Samyang** [www.samyang-lens.co.uk](http://www.samyang-lens.co.uk)

**Schneider** [www.linhofstudio.com](http://www.linhofstudio.com)

**Sigma** [www.sigma-imaging-uk.com](http://www.sigma-imaging-uk.com)

**Tamron** [www.tamron.co.uk](http://www.tamron.co.uk)

**Tokina** [www.tokinalems.com](http://www.tokinalems.com)

**Voigtlander** [www.robertwhite.co.uk](http://www.robertwhite.co.uk)

**Zeiss** [www.zeiss.co.uk](http://www.zeiss.co.uk)

**KEY:** ● BEST VALUE AWARD ● BEST ON TEST AWARD

### STANDARD PRIMES

	Price	Full-frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
<b>Canon</b> EF 40mm f/2.8 STM	£170/\$180	Yes	None	No	f/2.8	130g	0.3m	0.18x	52mm	7	110	★★★★★	
<b>Canon</b> TS-E 45mm f/2.8 (tilt & shift)	£1200/\$1400	Yes	None	No	f/2.8	645g	0.4m	0.16x	72mm	8		★★★★★	
<b>Canon</b> EF 50mm f/1.2L USM	£1280/\$1350	Yes	None	No	f/1.2	580g	0.45m	0.15x	72mm	8	103	★★★★★	
<b>Canon</b> EF 50mm f/1.4 USM	£300/\$330	Yes	None	No	f/1.4	290g	0.45m	0.15x	58mm	8	116	★★★★★	
<b>Canon</b> EF 50mm f/1.8 STM	£100/\$125	Yes	None	No	f/1.8	160g	0.35m	0.21x	49mm	7	110	★★★★★	●
<b>Samyang</b> 50mm f/1.4 AS UMC	£285/\$350	Yes	None	No	f/1.4	575g	0.45m	N/S	77mm	8		★★★★★	
<b>Sigma</b> 30mm f/1.4 DC HSM A	£300/\$500	No	None	No	f/1.4	435g	0.3m	0.15x	62mm	9	100	★★★★★	●
<b>Sigma</b> 50mm f/1.4 DG HSM A	£580/\$950	Yes	None	No	f/1.4	815g	0.4m	0.18x	77mm	9	103	★★★★★	●
<b>Tamron</b> 45mm f/1.8 Di VC USD	£600/\$600	Yes	None	Yes	f/1.8	540g	0.29m	0.29x	67mm	9	110	★★★★★	
<b>Zeiss</b> Milvus 50mm f/1.4 ZF.2	£950/\$1200	Yes	None	No	f/1.4	922g	0.45m	0.15x	67mm	9		★★★★★	
<b>Zeiss</b> Planar T* 50mm f/1.4 ZE	£560/\$725	Yes	None	No	f/1.4	380g	0.45m	0.15x	58mm	9		★★★★★	
<b>Zeiss</b> Otus 55mm f/1.4	£2700/\$3990	Yes	None	No	f/1.4	1030g	0.5m	0.15x	77mm	9		★★★★★	

### TELEPHOTO PRIMES

	Price	Full-frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
<b>Canon</b> EF 85mm f/1.2L II USM	£1500/\$1900	Yes	None	No	f/1.2	1025g	0.95m	0.11x	72mm	8	116	★★★★★	
<b>Canon</b> EF 85mm f/1.8 USM	£280/\$350	Yes	None	No	f/1.8	425g	0.85m	0.13x	58mm	8	103	★★★★★	
<b>Canon</b> TS-E 90mm f/2.8 (tilt & shift)	£1240/\$1400	Yes	None	No	f/2.8	565g	0.5m	0.29x	58mm	8		★★★★★	
<b>Canon</b> EF 100mm f/2 USM	£370/\$500	Yes	None	No	f/2	460g	0.9m	0.14x	58mm	8	46	★★★★★	
<b>Canon</b> EF 135mm f/2L USM	£825/\$1000	Yes	None	No	f/2	750g	0.9m	0.19x	72mm	8		★★★★★	
<b>Canon</b> EF 200mm f/2L IS USM	£4800/\$5700	Yes	None	Yes	f/2	2520g	1.9m	0.12x	52mm	8	98	★★★★★	
<b>Canon</b> EF 200mm f/2.8L II USM	£550/\$750	Yes	None	No	f/2.8	765g	1.5m	0.16x	72mm	8	98	★★★★★	
<b>Canon</b> EF 300mm f/2.8L IS II USM	£5300/\$6100	Yes	None	Yes	f/2.8	2400g	2.0m	0.18x	52mm	9	54	★★★★★	
<b>Canon</b> EF 300mm f/4L IS USM	£1140/\$1350	Yes	None	Yes	f/4	1190g	1.5m	0.24x	77mm	8	117	★★★★★	
<b>Canon</b> EF 400mm f/2.8L IS II USM	£8390/\$10,000	Yes	None	Yes	f/2.8	3850g	2.7m	0.17x	52mm	9	54	★★★★★	
<b>Canon</b> EF 400mm f/4 DO IS II USM	£7000/\$6900	Yes	None	Yes	f/4	2100g	3.3m	0.13x	52mm	9		★★★★★	
<b>Canon</b> EF 400mm f/5.6L USM	£1100/\$1180	Yes	None	No	f/5.6	1250g	3.5m	0.12x	77mm	8	117	★★★★★	
<b>Canon</b> EF 500mm f/4L IS II USM	£7600/\$9000	Yes	None	Yes	f/4	3190g	3.7m	0.15x	52mm	9		★★★★★	
<b>Canon</b> EF 600mm f/4L IS II USM	£9600/\$11,500	Yes	None	Yes	f/4	3920g	4.5m	0.15x	52mm	9		★★★★★	
<b>Canon</b> EF 800mm f/5.6L IS USM	£11,900/\$13,000	Yes	None	Yes	f/5.6	4500g	6.0m	0.14x	52mm	8		★★★★★	
<b>Samyang</b> 85mm f/1.4 IF MC	£300/\$270	Yes	None	No	f/1.4	513g	1.0m	N/S	72mm	8		★★★★★	
<b>Samyang</b> 135mm f/2 ED UMC	£370/\$530	Yes	None	No	f/2	830g	0.8m	N/S	77mm	9		★★★★★	
<b>Samyang</b> 500mm MC IF f/6.3 Mirror	£125/\$150	Yes	None	No	f/6.3	705g	2.0m	N/S	95mm	0		★★★★★	
<b>Samyang</b> 800mm MC IF f/8 Mirror	£170/\$190	Yes	None	No	f/8	870g	3.5m	N/S	30mm	0		★★★★★	
<b>Sigma</b> 85mm f/1.4 EX DG HSM	£620/\$970	Yes	None	No	f/1.4	725g	0.85m	0.12x	77mm	9	103	★★★★★	
<b>Sigma</b> 85mm f/1.4 DG HSM A	£1200/\$1200	Yes	None	No	f/1.4	TBA	0.85m	0.12x	86mm	9		★★★★★	
<b>Sigma</b> APO 300mm f/2.8 EX DG HSM	£2200/\$3400	Yes	None	No	f/2.8	2400g	2.5m	0.13x	46mm	9	98	★★★★★	
<b>Sigma</b> APO 500mm f/4.5 EX DG HSM	£3600/\$4400	Yes	None	No	f/4.5	3150g	4.0m	0.13x	46mm	9		★★★★★	
<b>Sigma</b> 500mm f/4 DG OS HSM S	£6000/\$6000	Yes	None	Yes	f/4	TBA	3.5m	0.15x	46mm	9	9	★★★★★	
<b>Sigma</b> APO 800mm f/5.6 EX DG HSM	£4300/\$6600	Yes	None	No	f/5.6	4.9kg	7.0m	0.11x	46mm	9	21	★★★★★	
<b>Tamron</b> SP 85mm f/1.8 Di VC USD	£750/\$750	Yes	None	Yes	f/1.8	700g	0.8m	0.14x	67mm	9	115	★★★★★	
<b>Zeiss</b> Milvus 85mm f/1.4 ZE	£1380/\$1800	Yes	None	No	f/1.4	1280g	0.8m	0.14x	77mm	9		★★★★★	
<b>Zeiss</b> Milvus 135mm f/2 ZE	£1550/\$2200	Yes	None	No	f/2	1123g	0.8m	0.28x	77mm	9		★★★★★	

### MACRO

	Price	Full-frame	Max zoom	Image stabilization	Max aperture	Weight	Min focus distance	Max magnification	Filter size	Iris blades	Issue reviewed	Rating	Awards
<b>Canon</b> EF-S 60mm f/2.8 Macro USM	£350/\$400	No	None	No	f/2.8	335g	0.20m	1.0x	52mm	7	118	★★★★★	
<b>Canon</b> MP-E65mm f/2.8 1-5x Macro	£850/\$1050	Yes	None	No	f/2.8	710g	0.24m	5.0x	58mm	6	50	★★★★★	
<b>Canon</b> EF 100mm f/2.8 Macro USM	£375/\$600	Yes	None	No	f/2.8	600g	0.31m	1.0x	58mm	8	118	★★★★★	
<b>Canon</b> EF 100mm f/2.8L Macro IS USM	£700/\$800	Yes	None	Yes	f/2.8	625g	0.3m	1.0x	67mm	9	118	★★★★★	
<b>Canon</b> EF 180mm f/3.5L Macro USM	£1210/\$1400	Yes	None	No	f/3.5	1090g	0.48m	1.0x	72mm	8	69	★★★★★	
<b>Sigma</b> Macro 105mm f/2.8 EX DG OS HSM	£320/\$620	Yes	None	Yes	f/2.8	725g	0.31m	1.0x	62mm	9	118	★★★★★	●
<b>Sigma</b> APO Macro 150mm f/2.8 EX DG OS HSM	£650/\$1100	Yes	None	Yes	f/2.8	1150g	0.38m	1.0x	72mm	9	118	★★★★★	
<b>Sigma</b> APO Macro 180mm f/2.8 EX DG OS HSM	£1100/\$1700	Yes	None	Yes	f/2.8	1640g	0.47m	1.0x	86mm	9	102	★★★★★	
<b>Tamron</b> SP AF 60mm f/2 Di II LD (IF) Macro	£350/\$525	No	None	No	f/2	350g	0.23m	1.0x	55mm	7	118	★★★★★	
<b>Tamron</b> SP AF 90mm f/2.8 Di Macro	£350/\$500	Yes	None	No	f/2.8	400g	0.29m	1.0x	55mm	9	102	★★★★★	
<b>Tamron</b> SP AF 90mm f/2.8 Di VC Macro	£580/\$650	Yes	None	Yes	f/2.8	610g	0.3m	1.0x	62mm	9	118	★★★★★	●
<b>Tamron</b> SP AF 180mm f/3.5 Di Macro	£730/\$740	Yes	None	No	f/3.5	985g	0.47m	1.0x	72mm	7	69	★★★★★	
<b>Tokina</b> 100mm f/2.8 AT-X PRO Macro	£350/\$410	Yes	None	No	f/2.8	540g	0.3m	1.0x	55mm	9	118	★★★★★	
<b>Zeiss</b> Makro Planar T* 50mm f/2 ZE	£940/\$1285	Yes	None	No	f/2	570g	0.24m	0.5x	67mm	9		★★★★★	
<b>Zeiss</b> Milvus Makro Planar 100mm f/2 ZE	£1300/\$1840	Yes	None	No	f/2	843g	0.44m	0.5x	67mm	9	50	★★★★★	
<b>Zeiss</b> Makro Planar 100mm f/2 T* ZE	£1300/\$1545	Yes	None	No	f/2	680g	0.44m	0.5x	67mm	9		★★★★★	



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Next issue we test these five full-frame EOS cameras:  
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	£119.99	£42.99	£43.99	£24.99	£81.99	£17.99	£46	£23.99	£209	£17.99	£8.99	£10.99	£8.99	£29.99	£39			
	BG-E14	LP-E6	CBC-E6	LC-E6E	HL-E6	ACK-E6	RC-6	HTC-100	AVC-DC400S1	Angle Finder C	Eyecup EB	Focusing Screen EF-O	Hand Strap E2	RS-60E3	EH21-L	10EG		320EX £180
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	BG-E16	LP-E6N	CBC-E6	HL-E6	ACK-E6	RS-80N3	RC-6	HTC-100	IFC-500U	Angle Finder C	Anti-Fog Eyecups III	Eyecup EB	Holmi Twin Charger	Hand Strap E2	EW-R057D Wide strap	10EG		
	£209	£65	£159	£29.99	£119.99	£39.99	£17.99	£46	£33.99	£209	£30.99	£14.99	£64.99	£29.99	£19.99	£69.99		
	BG-E11	LP-E6	CBC-E6	HL-E6	ACK-E6	RS-80N3	LC-5 Set	HTC-100	IFC-200U	Angle Finder C	Anti-Fog Eyecups III	Eyecup EB	Focusing Screen EF-O	WFT-E7B	L7 Strap	10EG		270EX II £135
	£249	£64.95	£159	£29.99	£119.99	£39.99	£399	£46	£23.99	£209	£30.99	£14.99	£30.99	£599	£18.49	£69.99		





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**NON FULL FRAME LENSES**

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18-55 F3.5/5.6 IS STM no box .....	£169
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24 F1.4 L II USM .....	£1478
24 F2.8 IS USM .....	£429
24 F3.5 L II TSE .....	£1499
24-70 F2.8 L II USM .....	£1897
24-70 F4 L IS USM .....	£747
24-105 F4 L IS USM MKII .....	£1049
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35 F1.4 USM LII .....	£1798
35 F2 IS USM .....	£468
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50 F1.2 L USM .....	£1249
50 F1.4 USM .....	£328
50 F1.8 STM .....	£108
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70-200 F2.8 non IS L USM .....	£1097

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70-200 F4 L USM .....	£648
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300 F2.8 IS L USM II .....	£5777
300 F4 L IS USM .....	£1138
400 F2.8 IS L USM II .....	£8997
400 F4 DO II IS USM .....	£6777

400 F5.6 L USM .....	£1098
500 F4 IS L U II .....	£8297
600 F4 IS L USM II .....	£10444
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BG-E18 (fit 750/760D) .....	£99
BG-E14 (fit 80D) .....	£178
BG-E13 (fit 6D) .....	£147

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USM

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**Canon 300mm**  
f2.8 L IS  
USM MKII

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**Canon 500mm**  
f4 L IS USM  
MKII

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**SIGMA**

10-20 F3.5 EX DC HSM .....	£328
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17-50 F2.8 EX DC OS .....	£279
18-35 F1.8 DC HSM Art .....	£519
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20 F1.4 DG HSM Art .....	£629
24 F1.4 DG HSM Art .....	£598
24-35 F2 DG HSM Art .....	£699

24-70 F2.8 EX DG .....	£526
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50 F1.4 EX DG HSM Art .....	£569
50-100 F1.8 DC HSM Art .....	£829
70-200 F2.8 EX DG OS .....	£697
105 F2.8 EX DG OS HSM .....	£318
150 F2.8 EX DG OS .....	£647
150-600 F5/6.3 OS Cont. ....	£697
150-600 F5/6.3 OS Sport .....	£1197
TC1401 converter .....	£228
TC2001 converter .....	£269
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Di II VC PZD  
**£388**



150-600 f5/6.3 VC USD G2 .....	£1349
150-600 f5/6.3 SP VC USD .....	£728
18-200 f3.5/6.3 Di II VC .....	£189

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### CANON DIGITAL AF USED

1DX MKII body	£4399
1DX body box	£2299/2799
1D MKIV b/o serviced	£1499
1D MKIV body	£1299
1D MKIII body	£699
1Ds body	£299
7D body	£499
5D MKIV body box	£2699
5D MKIII body box	£1399/1799
5D MKII body	£799
5D MKI body box	£499
60D body	£399
50D body	£299
30D body	£129
20D body	£99
EVF-DC1 for G3X	£149
BG-E2	£39
BG-E2N	£49
BG-E4 box	£69
BG-E5	£49
BG-E6	£79
BG-E7	£79
BG-E8	£69
BG-E11	£169
BG-E13	£119

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EOS 600 body	£39
EOS 50E body	£29
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18-135 F3.5/5.6 IS USM	£349
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24-105 F4 L	£599
28 F2.8	£129
28-80 F3.5/5.6	£79

28-90 F3.5/5.6	£79
28-135 F3.5/5.6	
IS USM	£169
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50 F1.4 USM	£239
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70-200 F2.8 USM L	£799
70-200 F4 U L	£399
70-300 F4/5.6 L	
IS USM	£699/799
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IS USM	£249
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135 F2 L M- box	£499
180 F3.5 L mac	£799
300 F2.8 LI IS U	£2799
300 F4 L IS USM box	£799
400 F4 DO ISII L U	£5799
400 F5.6 L box	£749
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2x extender MKIII	£269
2x extender MKII	£199
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10-20 F4/5.6	
HSM box	£219
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18-50 F2.8 EX DC	£149
18-50 F2.8/4.5 DC	£99
18-125 F3.8/5.6 OS DC	£149
18-200 F3.5/6.3	
HSM OS	£149/199
24-70 F2.8 HSM	£469
28-135 F3.8/5.6	£99
50 F2.8 EX macro	£149
50-500 F4/6.3 EX DG	£399
70-200 F2.8 EX DG	£399
120-300 F2.8 DG OS	
Sport box	£1799
120-300 F2.8 EX DG	£699
120-400 F4/5.6 DG	£399
150 F2.8 EX DG OS mac	£499
150-500 F5/6.3 HSM	£499
150-600 F5/6.3 DG OS	£999

170-500 F5/6.3 APO DG	£299
180 F3.5 EX DG	
HSM macro	£399
1.4x EX DG conv	£149
1.4x EX conv	£99
Kenko Pro 300 1.4x conv	£99
Kenko ext tubes	£79
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VCL	£169
TAM 28-75 F2.8 XR Di	£199
TAM 70-300 F4/5.6	£99
TAM 90 F2.8	£249
TAM 150-600 F5/6.3	
USD	£649
TAM 200-500 F5/6.3	£449
ZEISS 50 F1.4 ZE	
M- box	£599
<b>CANON FLASH USED</b>	
ST-E3 transmitter box	£189
ST-E2 transmitter	£79
MR-14EX ringflash	£349
430EXII	£169
550EX	£149
580EX box	£179
580EX MKII	£299

<b>Used Canon</b> 70-200mm f2.8 LI IS USM  <b>£999</b>	<b>Used Canon</b> 100-400mm f4.5/5.6 L IS USM  <b>£899</b>	<b>Used Canon</b> 300mm f2.8 LI IS USM  <b>£2799</b>	<b>Used Canon</b> 300mm f4 L IS USM box  <b>£799</b>	<b>Item not listed?</b> Try our website for full list	<b>Used Canon</b> 400mm f4 DO ISII L U  <b>£5799</b>	<b>Used Canon</b> 500mm f4 LI IS USM  <b>£4499</b>	<b>Used Sigma</b> 120-300mm f2.8 DG OS Sport CAF fit  <b>£1799</b>	<b>Used Sigma</b> 150-600mm F5/6.3 DG OS CAF fit  <b>£999</b>
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# FOCUSPOINT

We'd love to hear your thoughts on the mag and all things photographic! Email us at [photoplus@futurenet.com](mailto:photoplus@futurenet.com)

## An Australian abroad

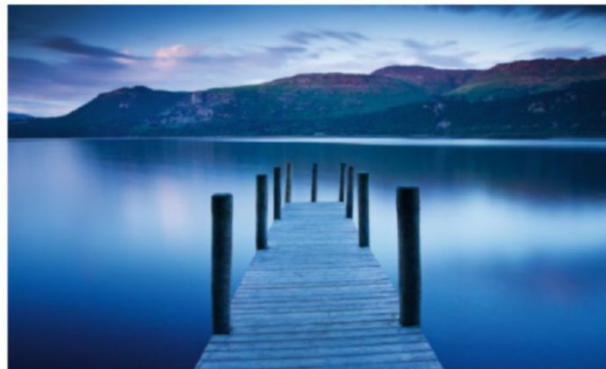
I am undertaking a trip around the UK in April/May, and part of my research for locations to shoot has been your magazine. Thanks to the wonders of the Internet it's so easy to get and read on my iPad.

I am looking at spending roughly a week in Wales, The Lakes, and London then jumping over to Paris for the romantic stuff. What great locations can I get to easily using public transport and the like?

I mostly shoot landscapes, wildlife and sport here in Australia, but I'm not planning on taking long, heavy glass with me.

**Haydn Davies, Perth, Australia**

Sounds like a great trip! London and Paris are littered with iconic landmarks that are easy to access via the Tube and Metro. In London, try St Paul's Cathedral, Big Ben and its bridges; Paris has Le Louvre, Arc de Triomphe, Notre Dame and the



Eiffel Tower. Postcards can be a good source of inspiration for photo ops.

For Wales and the Lakes, you'll need a hire car; or a great alternative is to join a photo workshop, where you'll be whisked to photogenic locations and get top tuition to boot.

**There are tons of beauty spots in the Lake District, but getting around can be tricky...**

## STAR LETTER PRIZE!

Each issue, every letter printed wins an Experience Seminars EOS training DVD. More info at [www.eostrainingacademy.co.uk](http://www.eostrainingacademy.co.uk)



## THE SOCIAL NETWORK

The most popular stories found on the web this month



Kim Ayres

### Time for tea

The winner of one of our 'Time for Tea' photography competition has just posted a blog about receiving his prize: <http://bit.ly/kimayres>



Alex Webb

### On the stage

Albert Watson, Nadav Kander, David Alan Harvey, Julia Fullerton-Batten, Alex Webb, Frans Lanting, Clive Arrowsmith, Jill Furmanovsky, Louis Cole. All of these legendary photographers are talking on the Super Stage at The Photography Show... <http://bit.ly/supstage>



### Photo Week

A digital dose of photo news, reviews, tips, techniques and inspiration EVERY Friday... and just 28 cents a pop! <http://bit.ly/pwsub>

## PhotoPlus The month in numbers

**360**

degrees of rotation with Sevenoak's panoramic time-lapse ball head (p98)

**27**

years Guy Edwardes has been using Canon gear (p80)

**-3**

degrees Celsius on our frosty landscapes shoot (p58)

**1984**

year Simon Bruty started at the Allsport agency (p68)

**33,177,600**

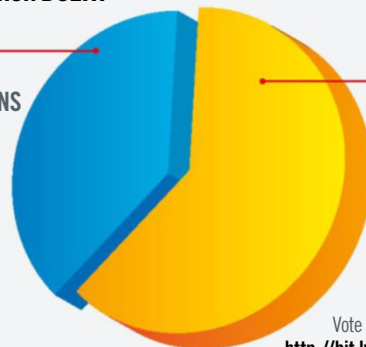
number of pixels in Dell's forthcoming 8K monitor (p98)

**623**

secs exposure for David Noton's image of Kimmeridge Bay at dusk (p42)

How often do you shoot HD video with your Canon DSLR?

**38%**  
ON RARE OCCASIONS



**62%**  
NEVER

**0%**  
MORE OFTEN THAN STILLS

Vote in our next poll at [http://bit.ly/ppluss\\_poll124](http://bit.ly/ppluss_poll124)

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## EOS 5D Mark IV

**No matter who you are, or what you're shooting, the EOS 5D Mark IV delivers uncompromising image quality and a professional performance.** The Canon 5D Mark IV DSLR joins the 5D family and adds a brilliant new 30.4 MP sensor, 4K video, built-in Wi-Fi, GPS and NFC all to make image capture of the highest standards and file transfer of the utmost ease.

Renowned for enabling people to tell the stories that need to be told, the EOS 5D series has captured many of the world's most significant moments in history. As successor to the EOS 5D Mark III, the camera has been designed using first-hand feedback from the photographic community to create the most versatile EOS model yet.



### BECAUSE THE DEVIL IS IN THE DETAIL

From the darkest shadow to the brightest highlight, a 30-megapixel CMOS sensor captures fine detail even in the toughest conditions, with a maximum native sensitivity of ISO 32,000. Shoot Dual Pixel RAW files for post-production adjustments like you've never seen before.



### PRECISION AS STANDARD

Stay focused, with an expanded 61-point AF system that tracks even the most erratic subjects, and that can be customised to every situation. Accurate exposures come from a metering system so advanced it has its own 150,000-pixel RGB+IR sensor.



### STEP UP TO CINEMATIC 4K

Following in the footsteps of its predecessors, the EOS 5D Mark IV once again offers DSLR movie makers new ways in which to be creative. Capture 4K footage at 30fps, from which 8-MP still images can be extracted as JPEG files.



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80D + 18-55 IS STM £1,029.00 80D + 18-135 IS USM £1,219.00

## Canon EOS 7D Mark II

Chasing the ultimate photographic moment

**20.2 MEGA PIXELS** **10 fps** **1080p**



**Body only in stock at only £1,249.00**

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## Canon EOS-1D X Mark II

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**20.2 MEGA PIXELS** **14 fps** **4K**



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### Canon EF-S 55-250mm f/4-5.6 IS STM



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### Canon EF 70-300mm f/4-5.6 IS II USM



**In stock at £499.00**

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### Canon EF 70-200mm f/4 L USM



**In stock at £659.00**

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### Tamron AF 70-300mm f/4-5.6 VC USD



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### Sigma 70-300mm f/4-5.6 APO DG MACRO



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