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## Ripples

CLAYTON HAIRS

## Wedded to the moment

PIOTREK ZIOLKOWSKI

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# That's not how I remember it

## ARE PICTURES MEMORIES?

The moon is the worst. Month in and month out, every full moon generates untold thousands of disappointed snapshooters all over the world.

It had looked so big and beautiful coming up over a beautiful landscape, or a city skyline or even a suburban backyard still aglow in the twilight. But now, as a picture, it's nothing more than a tiny, featureless, white dot and a stark reminder that photographs are not the same as memories.






In his book *The Forgetting Machine: Memory, Perception, and the 'Jennifer Aniston Neuron'*, neuroscientist Rodrigo Quian Quiroga argues that perception and memory are so entwined that they're closer to being a whole rather than two separate phenomena. What you perceive is transformed by the process of being added to your memory and what you remember is changed simply by being recalled.

All those dud moon pictures could be seen as evidence for Quiroga's contention – to the photographers the moon felt like it was huge – and it is that *feeling* which shaped the memory, psychically enlarging the moon to better fit the emotional intensity/size of the experience.

So, which is a better approximation of the original event? The two-dimensional image with its blown out highlights and tiny dot of a moon, or the vivid recollection of a huge orb coming up over the horizon? An astronomer might choose the former, but a poet would almost certainly opt for the latter.

From the moment of its invention, photography has confronted its practitioners with a dilemma: within the limits of lenses, imaging capture technology and display media, it is an optically correct record of what the camera was pointed at. But to be in any way

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expressive, it needs something more, it needs to be in some way closer to our experience of memory.

A snapshooter points the camera at something and hopes for some relation between the result and the feeling of the occasion. A photographer masters the tools, practices endlessly and works hard in every frame to bridge the chasm between what the camera records and what he or she sees.

Along with regular practice behind the lens, one of the best ways to learn how to see photographically is by studying the work of those who are consistently expressive image makers. We think you'll agree that our profiled photographers in this issue clearly qualify as accomplished practitioners of the art.

South African born Clayton Hairs was drawn to the landscape from the moment he picked up the camera as a young man. Now, informed by a two decades of regular meditation, he's exploring new ways to express the profound connection he feels between authorship and the final image.

Piotrek Ziolkowski, too, has come to Australia to make his home and as he details to Steve Packer, he has found great success in the highly competitive business of wedding photography by blending intensive preparation with a willingness to think outside the usual confines and fads of his chosen field.

Our technical editor Margaret Brown touches upon matters memory and picture taking by observing that producing one's own photobook from scratch, rather than using a third party service (please see page 46) delivers its own satisfactions. Compiling your own book is, in her words, to 'make valuable *aide-memoires*, both now and for the future.'

Margaret also gets behind the lens once more for her latest Locations feature. This time the focus is on the many photographic possibilities to be found at the Muogamarra Nature Reserve north of Sydney. It's only open for a limited time during wildflower season each year and is a must-visit for macro and wildlife photographers alike.

Thanks to our annual surveys, Margaret tells readers on page 39 in this issue, we know that *Photo Review's* audience loves landscape photography. So what better topic for her expert opinion than a review of the equipment decisions every landscape shooter needs to consider?

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Don Norris  
Editor



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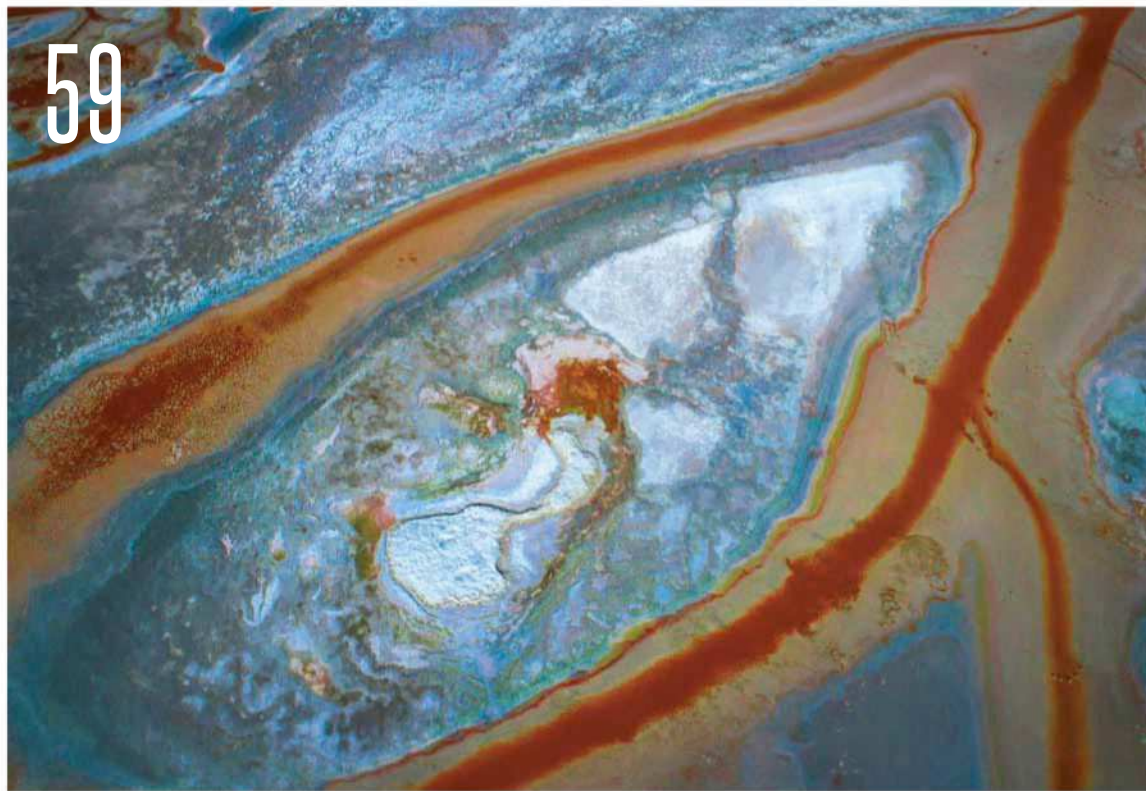
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# Ripples

CLAYTON HAIRS TOSSED A ROCK INTO THE WATER AND  
FOUND HIS PHOTOGRAPHIC PURPOSE.

Don Norris



## ‘You're not thinking about what ISO am I on and that sort of thing. You're just doing.’

I'm not one given to the grand narrative about how I picked up a camera the moment I finished suckling at my mother's breast,' said South African born and raised Clayton Hairs. 'I don't come from an artistic family. While I probably had inclinations to the artistic side, I had quite a domineering father and I was always aware of his, "how are you going to make a living mate" attitude to career choices. So I did undergraduate things that I really didn't care much for – and which, quite frankly, took me far too long to actually complete.

'When I finished my undergraduate studies, I decided to buy an old 1976 Land Rover and together with my partner at the time we drove for two years through Africa, up to the Red Sea and down again.

'My partner had just finished her graphic design degree and it was through her that the artistic fires were lit, if I'm honest. I took a camera with me on the trip and I thought "this is something I've never engaged with – but I love it!"

As the rolls of film accumulated, an interesting trend became apparent in his work. 'Out of all the images I took, there were barely any portraits,' he said. 'In retrospect, having done landscape photography for the last 10 years, it's almost as if there had been some sort of undertow there,

a fascination with the landscape... and particularly with the idea that I was witnessing scenes that I'd never before seen – and this idea has flowed through into my current work.'

The contrast was particularly noticeable when he saw the pictures other travellers around him were taking. 'Their photographs were mostly about the people and especially close ups of them. And I thought why didn't I take any people pictures?' It was, he decided, because of 'the fact that I had been born and lived in Africa. So African people weren't a novelty to me. I had always been around black people and that's just the way things were. I was, however, seeing new views and aspects of the land that really did interest me.

'It was 1996 and I decided I want to tell stories about Africa. Being brought up as a white South African in essentially a police state while all the time being ignorant of that fact (it was pre-internet!). The fact that we lived in Africa was actually an abstract idea we never really engaged much with. So when I got back from my overland trip, I thought, well it's the stories of Africa that we need to know. And of course I was – vaingloriously – the one who was destined to tell them!' he laughed.

'So I decided to do a journalism degree. And it just so happened that I got an internship at

the South African equivalent of *60 Minutes*. Very soon thereafter one of the researchers was leaving and I was offered a permanent position as a journalist. It was quite a shock in many ways – least of all the fact that I had only done three months of a journalism diploma – to be catapulted into the premier television production company in the country.'

Describing himself as initially being quite clueless and not really cut out to be a journalist, Clayton narrowly avoided being fired by switching roles to focus more on the camera as a video journalist. And the life of production meetings with top television producers in the country brought a wealth of on-the-job learning. 'It was really quite brutal in lots of ways,' he said. 'But I learned to dissociate my emotional self from my output. I was a very precious youth and if anyone criticised me I would have been incredibly hurt, offended and found a little shell to occupy. So the experience really taught me that in order to make it in this world I would need to be far more dispassionate about what I was doing.

'There is another thing to add.' Clayton said. 'I've done a daily meditation practice (Heartfulness Meditation) for the best part of 20 years now. It's been a really important companion and has become part of my work.

*The Hatters Exit – This image is a selfie. It's about me walking 'into the light' and away from pedestrian image making (where the sole intent is to impress others). The background image was shot two years prior to the shot of myself (in drag!). I shot both with a Phase One IQ 260 with an 80mm Schneider lens, so the degree of detail in every aspect of the shot is remarkable. I added the 'tin type' feel in post along with some 'texture' to give it a bit more of a tactile (organic) sense and be less digitally harsh.*





## ‘It's better to be discerning than judging’

*BELOW: Mollymook – This is a multiple exposure (in camera) image of two images. I was camping in a motorhome the night before I shot the wave component of this image - it had been raining and I liked the water droplets on the window so shot that with a narrow depth of field using a Nikkor 50mm f/1.4 lens. The following morning I went down to the beach and the most beautiful backlight was coming through the little 2-3 foot surf. I shot the (wave) image with an 1839 Achromat Daguerreotype chrome lens on my Nikon D800E, so the milky highlights and blurred vignette are all ‘in camera’. In fact pretty much everything here is ‘in-camera’. I just gave it the ‘tin type’ toning in post and needed to spot one distracting bit of highlight from the centre of the final composite.*

*RIGHT: Butterfly wings.*



I find I'm evolving at both the conscious and subtle levels of myself... and it's often the conscious that needs to catch up with what the subtle is seeing or wanting to express... so it's a very natural companion to photography.

'Looking back, I can't really thank these experiences enough. Now I'm not afraid to experiment, and I know that I need to fall down in order to grow. I need to fail. And it's OK to fail. The only way we grow is through some degree of pain and discomfort. I like growth and I like evolving,' he chuckled.

'You know if we want to grow, as people and I believe as artists, then we must necessarily fail so that we learn what we ought to do. But the point is that failure shouldn't lead to self-pity or nihilism. You really need to know where the limit of self-criticism is. It can quite easily tip too far.'

Asked how as a photographer he strikes the delicate balance in his work between too much self-judgement and not enough, he responds, 'You've used the word "judgement". I would prefer to use the word discernment. It's better to be discerning of your work than to judge it. Judging means there is an emotional component

to your assessment and that you are assessing your work relative to something or someone outside of yourself. Discernment is a more intuitive thing. It's not as brutal and I would say is an active part of the ongoing image-making process. If you can feel when something's not "right" in an image, then that implies there must be something in the picture that you know is right. It's like solving a puzzle – you know that when you finally feel that you've got it, you really have nailed it... through a sort of internalising process.'

So how, you might wonder, does Clayton approach the challenge of photographing a landscape or devising one of his more abstract multi-exposure compositions?

'It's always different but I push through what my heart feels. So whatever I'm drawn to, whether it's a tree in the landscape or a feeling, I'll just go with it and work with it.

'I've been fortunate to have Jackie Ranken as my creative mentor for a number of years now and being a part of that creative inner circle has brought me a liberation to return to a first love of the camera. The thing I've always loved about Jackie is one of her mottos – "Go play!"

So whatever it is that first grabs my attention, it's the incitement to go play, to absolutely go and play, and see where the inclination is going to take me.

'When we lose that sense of playfulness, we can start getting a little bit too self-reverential. We can forget about that beautiful thing – that organic thing – that we almost have to catch up with. It's a part of ourselves that has been identified at the unconscious or more subtle levels and it's the conscious part of ourselves that is having to play catch-up and work out what that other part of us has already worked out... It can be quite beautiful if we manage to pull it off!'

Cultivating an almost Zen-like attitude to one's photography – important as it is – only works if you've earned your chops first. Citing Henri Cartier-Bresson's famous line that 'your first 10,000 photographs are your worst', Clayton said, 'I just got the new Nikon D850 in October last year and I've already shot 11,000 images. The point is, it all comes down to experience; experience with your camera so that you know what it can do and you're not really thinking about it.



‘The ripples were a representation of me as the author. And that idea has been one I've pursued for the last five or six years in various ways.’

*The Beginning of Authorship.*





*Subtle Beauty.*

'When you're driving a car, you don't think about changing the gears. And I think that's why Jackie often describes this as "doing your chops". If you have done that, then it's there at your fingertips. Now you're thinking with your heart, pushing to find that subtle essence... you're not thinking about what ISO am I on and getting bogged down in technicalities... You're just doing and experiencing the wonder of creating.'

While Clayton still shoots intimate landscapes, in recent years his photographic explorations have moved in what might be described as a more pictorialist direction. About five years ago he had an epiphany of sorts while photographing at Milford Sound in New Zealand. After setting the camera up and taking a few shots, he picked

up a rock and threw it into the water. He said that as he triggered the shutter, 'the idea of authorship really knocked me on the head. I thought "that's exactly what it is. It's an image offered by you – and authored by you."' In that instance, by throwing these rocks, I was including myself in this beautiful scene. The ripples were a representation of me as the author. And that idea has been one I've pursued for the last five or six years in various ways.'

More recently, Clayton has been experimenting with alternative processes (including collodion tin-type) and has started applying the ancient Encaustic technique to his prints. 'Encaustic is essentially beeswax,' he explains. 'So I print to beautiful textured cotton rag media. This gives it a mixture of

texture and sharpness, but the beeswax makes it far more tactile, and it's something the viewer engages with at an emotive level. It's no longer about them engaging with a flat print that can be pumped out 10 to the dozen, but with something beyond that, in much the same way as I like to think about my photographic images themselves. As an artist you are literally putting your hands into your work. You're scraping it, you're making it "you" by somehow leaving a part of yourself in it.' 📷



*Marble Cathedral*

**W** Clayton Hairs lives and works in the Southern Highlands of NSW.

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*A candid moment on the way back to the reception venue, Perth 2018.*





# Wedded to the moment

IN LESS THAN FOUR YEARS, PIOTREK ZIOLKOWSKI HAS GONE FROM BEING 'JUST A GUY WITH A CAMERA' TO AN ESTABLISHED PERTH WEDDING PHOTOGRAPHER WITH A DISTINCT CREATIVE STYLE.

Steve Packer



Amy and her bridesmaids. Yallingup, WA, 2017.



**‘We have amazing cameras now, but it still takes skill to capture those very fast moments when everything is perfect.’**

**We all know what wedding photos look like. But yours don't look like that. Can you explain why?**

Right from the start, I didn't know what I liked, but I knew what I didn't like.

The photography you do and the style you end up doing is a representation of who you are inside. I'm a very genuine sort of person and I love capturing real, raw emotion in a moment.

You know what [pioneering French street photographer] Henri Cartier-Bresson called 'the decisive moment'? In the wedding context, I prefer to call them peak moments, and they're very important to me because most people can't catch them. We have amazing cameras now, but it still takes skill to capture those very fast moments when everything is perfect.

For example, I was with a bride and her bridesmaids when they were getting ready (left). One of the little flower girls came in and she was so proud and happy with her dress, she started spinning around. I took four or five images. I'm an f/2.8 kind of guy, for the ambient light, and that adds another layer of difficulty [due to the narrow depth of field and critical point of focus]. But it was a perfect moment. All the girls were smiling, looking up with their eyes open, and the little girl's dress and hair were flying, her face full of joy.

People almost never see themselves in scenarios like this. Considering what has to go into capturing them, it makes me super happy when I hear, 'Oh my god! How did you get this?'

Usually followed by 'You have an amazing camera.' But I just make a joke of that: 'There's a person behind the camera, you know.'

**Would you say you've tapped into, or even created, your own niche in the wedding market?**

My images attract a certain type of people who share my vision and want something different. They want passion and creativity, and they know I don't pose people, because I say so on my website and when I first speak to them.

All photographers want to attract their ideal clients, and I try to be very genuine with the website. I only put up images I personally like. It's a filter. If they like what they see, I know we share certain values and I'll like them back.

It's usually the women who organise just about everything with weddings, and I get a lot of strong women. I've photographed several weddings of women who are themselves photographers. Also quite a few multi-ethnic couples. I'm not sure why. I suppose me displaying photos of mixed couples leads to more.

**What about the romantic portraits of the bride and groom together that are always part of wedding day portfolios? They're usually based on contrivance and posing, but yours are anything but typical.**

I try to take couples on a little emotional journey while I'm photographing them to bring out who they are as people.

I quickly found that people are scared of cameras, but the moment I start talking to them and interacting, they aren't scared because they are talking to me and laughing. They can't think of two things at the same time, and while we're

talking about the early days of their relationship, or what they initially found attractive about each other, there's the way they look at each other, the way they touch, and I'm capturing unposed moments.

At first it was accidental, but then I intentionally pursued this path and developed a technique. Sometimes I see a beautiful place with, say, a shaft of light, maybe a shape in the setting somewhere, and I tell people, 'Can you just stand here for a few seconds while I check my light with a test shot.' And I'll shoot, shoot, shoot while they think nothing significant is happening.

### **You don't seem to take couples to the typical portrait locations.**

I avoid the cliché wedding shoot places in Perth, such as certain boatsheds, sites in Fremantle... A good way to distinguish your images is to do stuff that no-one else is doing, and I love getting off the beaten track. I love going into the bush – and I'll go first, to check for snakes. I grew up in Poland, where there are also snakes, so I'm okay with that.

### **How long have you been photographing weddings?**

The first one was in 2014. Before that, I was doing many things, but not photography.

I came to Australia in 2009, in my early 30s, and now I'm Australian, living in Fremantle with my English girlfriend. One of the things I did earlier was work as a scuba diving guide in Africa. Africa was very visually stimulating and, like anyone, I had a camera and took pretty pictures.

I've learnt lessons from the many other things I've done that I apply to wedding photography – even with scuba diving. Being confident in the equipment and double-checking everything before the boat took off was part of the routine. With weddings you get only one go. There's no redoing it the next day if something goes wrong.

### **So what drew you to photography?**

I was working as a chef and kitchen manager in a restaurant, and I came across a website explaining how to make a pinhole camera out of a matchbox. I tried it, it worked and got

me hooked. I got a plastic Russian camera, then a rangefinder, then a Nikon F100. Then a full-frame Nikon D600 and a 50mm lens, and I got right into street photography. I was still a chef and not really using my brain at work, so I needed a creative outlet. Some photographers like landscapes and the peace of nature, but I found I really liked the hustle and bustle of the street and having to blend in. Which also prepared me for weddings.

The first one was when a friend from work who knew my street photos asked me to photograph hers. I said I'd do my best and I spent time online, doing a couple of workshops, reading a lot, until I was confident I wouldn't stuff it up. And it turned out to be fun.

I work well under pressure. Or maybe due to some weird quirk, I just don't feel it. I really enjoy the chase.

### **And that's when you decided wedding photography was for you?**

In the first nine months, I did two or three weddings. Then I got so fed up with the



Above: Weddings in Singapore are a little different to what we normally do in Perth. They are more about the family and a bit less about fun. So Alvan and Sarah decided to treat themselves to some pre-wedding fun while visiting Perth. We mixed adventure and love with some of the best locations in and around Perth. Perth Hills, 2017. Right: Portrait of Maddy not long after she got married to Phil. I wanted to create a strong, graphic image including trees at the banks of Swan River in South Perth, Perth, 2017.



## ‘I try to take couples on a little emotional journey while I’m photographing them to bring out who they are as people.’

drudgery of cooking, I jumped. I decided that either I do it now or I’m going to be unhappy for the rest of my life, doing jobs I hate.

It was tough at the beginning because I had little understanding of the business side of photography. I knew I needed to connect with other professionals, so I showed some images from the three weddings to an experienced pro, and he hired me for a year. He gave me carte blanche to do it the way I wanted to. I was doing weddings for him and for myself, and he taught me some things and I was constantly learning by myself. I wrote everything down in notebooks. If I watched a video on YouTube or read something useful

in a book, I wrote it down. I analysed the best wedding images I could find and tried to absorb everything. What’s the light like? How close are they standing to the camera? How is the couple holding hands?

Slowly, slowly, it all stuck in my subconscious. And I’m still doing it. Still learning.

### What equipment do you use?

It’s not about the equipment. But I can tell you that I still use my Nikon D600, and a D800. I stay away from zooms as much as possible, but I have to use them sometimes, during ceremonies and receptions when I can’t get close to what’s happening and

move around as much as I’d like to. At other times, I like prime lenses for the light [capture capability], sharpness and speed. I very often have a 50mm on the D600 and a 70-200mm zoom on the D800, with a leather harness that allows me to switch cameras in an instant.

When I’m photographing the couples, I give them little games to play that might only take 10 seconds each. I want to maximise the moments and the images I can get from them, and I change cameras and move around a lot.

I actually have a scar from that. At City Beach in Perth, I started running towards my couple and smashed my shin on the edge of a steel bench. I managed to jump over it and took several staggering steps. But I still got the shot! With torn trousers and a bleeding shin. 📷

W To see more of Piotrek Ziolkowski’s photos, visit [www.piotrekziolkowski.com](http://www.piotrekziolkowski.com)

*When I was starting a few years ago Leila (pictured) and her sister Kara met me in Fremantle to see my portfolio. I had only one wedding under my belt and I was rough around the edges (photographically speaking). Lots of passion and good instinct but not a lot of experience. The images they saw convinced them to trust and hire me. I feel privileged to have photographed the second Di Torro wedding, Fremantle, 2016.*



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Margaret Brown

## Why visit?

Muogamarra Nature Reserve, which is located within easy reach of Sydney and the NSW Central Coast, covers the remains of a volcano. The park sits astride a hilltop overlooking the Hawkesbury River with good views of the Brooklyn Bridge and Berowra Creek.

People flock to the park when it opens to the public in spring to see a spectacular display of wildflowers endemic to the Hawkesbury sandstone environment. For nature lovers, it's hard to find an area with so many iconic plants in their native environment.

More than 900 species of plants live in the park, an extraordinary number given its relatively small size and proximity to the city. Expect to see tall Gynea lilies, waratahs, banksias, pink boronias and eriostemons as well as delicate native orchids in flower under the canopies of majestic angophoras and scribbly gums.

The area is also rich in native animals and birds with 16 reptile species and 140 native birds having been recorded. The flowering plants draw nectar-feeding birds like honeyeaters and lorikeets while wedge-tail eagles and sea eagles often circle overhead. Kookaburras are common.

**‘For nature lovers, it’s hard to find an area with so many iconic plants in their native environment.’**

Brush turkeys wander through the parking areas and lyrebirds are occasionally glimpsed. The bush is also home to echidnas and swamp wallabies as well as nocturnal animals like possums and gliders, although you're unlikely to see them when visiting.

Located on the traditional lands of the Guringai people, the area is also important to the First Australians. It was occupied for at least 20,000 years prior to European settlement and evidence can be seen in engravings and shell middens found throughout the reserve and viewed on the special Muogamarra Indigenous Heritage Walk.

There are also remnants of colonial history in the form of old roads that provided links between Sydney and the Hawkesbury River as well as the remains of dry stone walls, culverts and foundations of buildings and water tanks.

## When to go

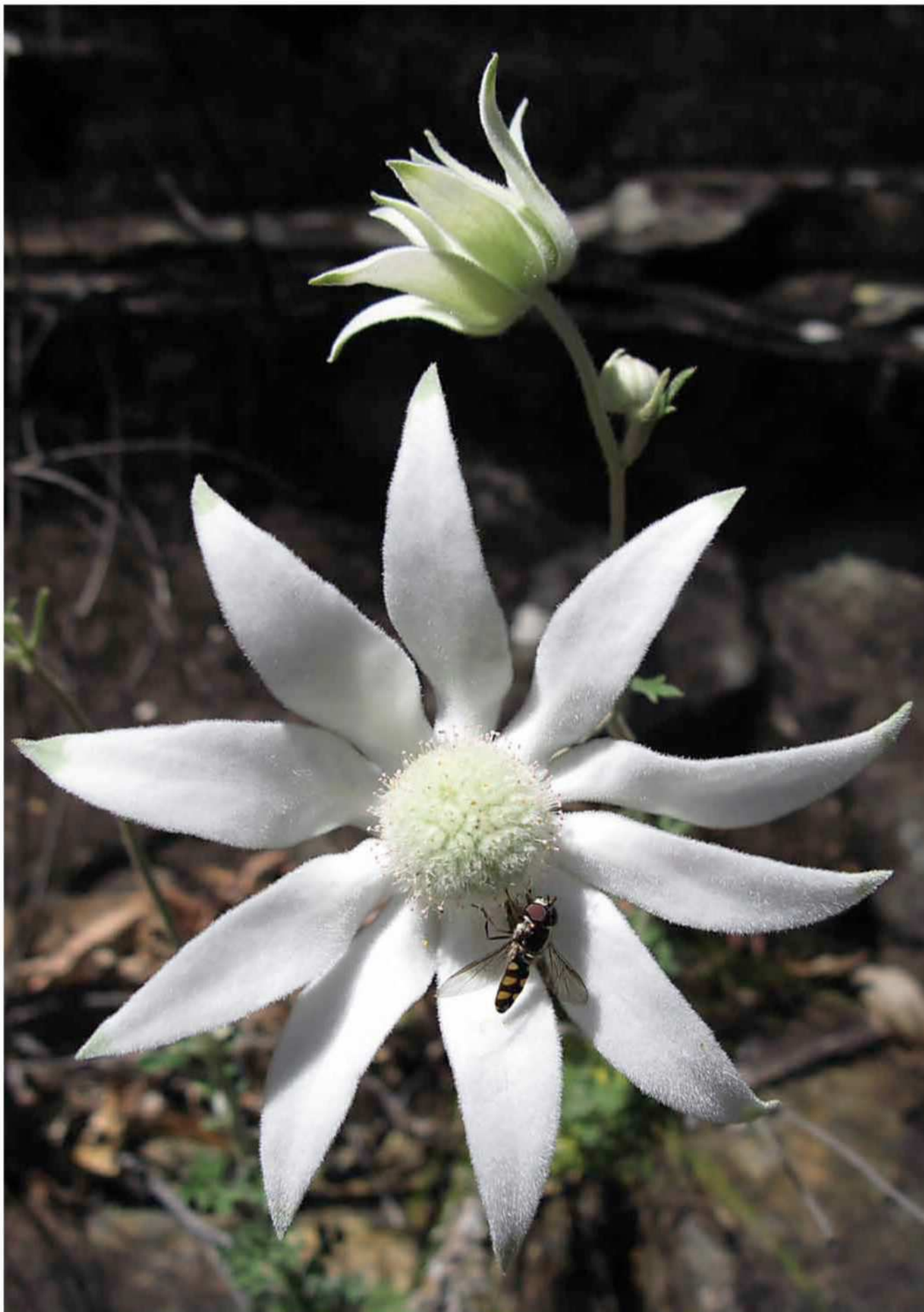
The reserve is only open to the public on six weekends during the spring wildflower season between mid August to mid-to-late September. The reserve is closed to the public at other times to protect sensitive natural and cultural heritage values. The gate to the reserve opens at 9:00 am and admissions close at 4:30 pm.

The car parks near the visitor's centre tend to fill quickly so it's best to arrive early. Pets and domestic animals (other than certified assistance animals) are not permitted.

## Getting there

Sydneysiders can drive to the park by heading north and taking the Pacific Highway turnoff from the F3 Freeway at the Berowra exit. The park entrance is on the left, approximately three kilometres north of Cowan.





*Flannel flowers are endemic to the area but may be difficult to find, even though they usually flower in spring.*





If driving from the Central Coast, the Old Pacific Highway is reached via the Mooney Mooney exit from the F3 Freeway. The park entrance is on the right, approximately six kilometres from the freeway exit.

The nearest train station to Muogamarra Nature Reserve is Cowan Station, on the Newcastle and Central Coast line. Cowan Station is approximately six kilometres from the reserve. For more information, visit the NSW transport info website at [www.transportnsw.info](http://www.transportnsw.info).

The visitors' centre is about a kilometre from the entrance. A parking fee applies to all vehicles.

### Getting around

Because of its relatively compact size, the area is best explored on foot. All walks radiate from the visitors' centre, which contains a display area with pictures and examples of plants you might see as well as the birds and animals that live in the park. Picnic tables and toilets are located close by.

There are several self-guided walks available, ranging from short trails, like the J D Tipper loop, to challenging six-hour adventures like the Peats Crater walk. The Point Loop trail provides an easy stroll amongst the wildflowers, while more adventurous visitors can follow the old convict-built roads on the Lloyd Trig and Deerubbin Lookover walks.

The National Parks and Wildlife Service runs a number of Discovery tours with specially trained guides. These are very popular, so early bookings are recommended. Contact the Kalkari Discovery Centre by phoning (02) 9472 9300 or (02) 9472 9301 between 9.00 am. and 5.00 pm. on any day except Christmas Day.

To help you plan your trip, start by visiting the National Parks and Wildlife Service's dedicated website, which contains comprehensive information: [www.bit.ly/phr-muogamarra](http://www.bit.ly/phr-muogamarra).

Check out the Bushwalking safety tips if you're planning a longer walk.

### What gear to take

Although you can capture most of the features in the park with a camera and standard zoom lens, many visitors will want to take close-up shots of flowers. Be aware that some flowers, such as *Dampiera* and *Pimelea*, are so small they can only be captured in detail at a true 1:1 magnification. If you'd like to photograph them, we recommend bringing a macro lens.

Zoom lenses with 'macro' capabilities will suffice for larger flowers, including many that are also quite small. You can obtain good close-up shots of *Crowea* and *Boronia* flowers with a typical tele-zoom lens – or even a standard zoom lens. The latter will also provide scope for photographing views of the Hawkesbury River from the various viewpoints.

Longer lenses will be required if you want to photograph most of the birds, although the brush turkeys are so tame they generally ignore people. There's usually no shortage of light so fast lenses won't be needed, unless you require a very shallow depth of field.

Consider adding a lightweight monopod if you're venturing into the valleys, which are often shaded. Tripods should be avoided as they take up too much space and can get in other people's way.

**‘Some flowers, such as *Dampiera* and *Pimelea*, are so small they can only be captured in detail at a true 1:1 magnification.’**

#### CLOCKWISE:

The view over the Hawkesbury River and Brooklyn Bridge from the lookout on the Tippers Lookout track.

A macro lens will be needed if you want to photograph tiny flowers like the *Dampiera stricta* shown here.

Waratahs are common in the area and usually flower in the spring when the park is open.

Flowers like the *Crowea* shown here and similarly-sized *Boronia* can easily be photographed in close-up with 'macro' zoom lenses.

Stabilised cameras and/or lenses should allow you to shoot hand-held in most places, particularly if you've developed good shooting techniques.

It can be worth adding a spare battery and one or more additional memory cards to your kit, particularly if you're using a compact digicam or a mirrorless camera. Both have roughly half the battery capacity of a typical DSLR because power is required for their electronic viewfinders. Batteries also tend to be smaller.

### Shooting tips

If you're planning to take one of the longer walks, keep your equipment simple and as light as possible. Otherwise almost any camera and lens will do for most shots, including a cameraphone.

If flowers are your main interest, it's worth spending time in the visitors' centre, where you can check out what's in flower. This will also give you the chance to photograph flowers in reasonably well controlled lighting and take shots of any you didn't see on the walks you took.

Built-in flashes can provide fill in backlit situations where it can be difficult to balance the exposures. Reduce the flash intensity by a stop or two to avoid unnatural-looking results when shooting close-ups.

Be aware of the limits of your flash when shooting larger flowers like Gynea lilies if they are backlit against a bright sky. Light falls off with the square of the distance between camera and subject so you may need the full intensity of the flash to provide an adequate fill-in light.

Depth of field can be an issue when taking close-up shots. We'd suggest stopping down to about f/4 if you're using a 'full frame' camera to balance depth of focus against separation from the background. But be prepared to experiment. 📷



*The Spotted sun orchid (Thelymitra ixiodes) occurs in the park but, even though it flowers in spring, it may be difficult to spot since the flowers only open fully on warm, sunny days.*



*Brush turkeys wander through the area without paying much attention to people, making them very easy to photograph with even a simple camera.*



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# How important are megapixels?

WE RETURN TO THE AGE-OLD ISSUE OF DETERMINING HOW MANY MEGAPIXELS ARE ENOUGH TO MEET YOUR NEEDS.

Margaret Brown

**H**asselblad's announcement of a medium format camera that could capture 400-megapixel images got us thinking: are the 'megapixel wars' of a decade ago really over? And how many photographers would actually *need* such high resolution? (Very few, we suspect.)

Recently, most camera manufacturers have promoted features other than resolution when advertising cameras, although most consumers still check the megapixel count of cameras before they buy. So why do we obsess about megapixel counts and ignore other, often more important, features? And with more pictures being taken with smartphones and shared via social media, how much do megapixels matter?

Megapixels resonate because numbers are easy to understand and quantitative measures are difficult to dispute. High megapixel counts imply superiority because we're conditioned to believe that more of something is always better.

Unfortunately, little thought is given to defining what 'better' actually represents and how much of it you really need. Venture beyond the numbers, and you'll find other things may be more important.

If you're dreaming of an ultra-high-resolution camera – ask yourself a couple of questions:

1. What would I need this kind of resolution for?
2. How would I actually use it?
3. Could I see any real difference between shots taken with such a camera and my current camera?

## More pixels vs enough pixels

With today's technology, any competent photographer can take a great shot with just about any camera provided they're shooting a static subject in light with a limited dynamic range plus a wide angle of view. Unless those four conditions align, factors like the size of the photosites – individual pixels – on the sensor, AF responsiveness, low light noise control and the performance of the lens will matter more than resolution *per se*.

A common argument for more pixels is that it provides more scope for cropping. Yet, aside from changing aspect ratios, most cropping represents poor shooting technique, because the result can't match the picture you would obtain with the correct lens and shooting distance. Even with a high megapixel camera, great shots are more likely to result from having appropriate equipment, setting best exposure parameters and processing the image data correctly.

Whether you would be able to see any difference between photos taken with a 400-megapixel camera and a 24-megapixel one also depends on what you do with your photos. If they're only viewed on the screens of smartphones or with computer or TV screens, it would be impossible to decide which was which.

The only justifiable applications we can think of for 400 megapixels are photographing art and cultural heritage objects (archiving) and for some scientific applications. But even then, 400 megapixels may be over-kill.



*Because they're easy to use, close at hand and versatile, smartphones are the cameras most people choose for everyday picture taking and image sharing, particularly when travelling.*



While a 4K TV set can only display 8.3 megapixels, future 8K screens will offer a display resolution of 33 megapixels.

## Screen viewing

How do you view your photos? Even quite ordinary, low resolution photos can look great on a screen because of its wide dynamic range and high saturation levels.

Currently, the highest screen resolution for smartphones is 4K (3840 x 2160 pixels), although most phones restrict resolution to between 2160 x 1080 and 1280 x 720 pixels. Larger images are always down-sampled to fit on these screens so higher resolution is pointless.

How about if you view images on a TV screen? TVs with 4K resolution are relatively common and those looking to the future will be aware of the 8K (7680 by 4320 pixels) monitors displayed at this year's CES Show in January. A resolution of 8K is becoming increasingly common in movie cameras.

But 8K is only 33 megapixels, which is a long way short of 400 megapixels. And even on a high-quality 4K screen, few people can see clear differences between JPEG images from a 16-20+ megapixel camera and shots from a high-end smart-phone with the latest image processing technologies.

## Printing

Photographers who print are in another category because printing substantially reduces the dynamic range of images. Because of this, it takes a trained eye to identify images that will print well when they are viewed on a screen.

Even with large sensors and versatile, high-performing lenses, when shooting in low light levels at ISO 6400 or higher, more pixels won't be as useful as the 'better' pixels delivered by larger photosites. The same is true with

respect to dynamic range; larger photosites capture more light, which means they can record a wider range of tones between the brightest and darkest areas in an image. It's up to the photographer to utilise the full range of tones recorded and that's where the choice of file format and editing skills come into play.

Raw files record images with a wider tonal depth than JPEGs, which are limited to 8-bit depth. Even entry-level DSLRs and mirrorless cameras will record 12-bit raw files, with many capturing 14-bit depth.

The human eye can only discern about 10 million different colours so, if the image is only intended for screen viewing, saving it with more than 8-bit depth is unwarranted. On the other hand, images with higher bit depths hold up better in post-processing, where the more data you start with the more detail and tonal subtlety you can retain when adjusting an image for printing.

## How many megapixels do you need for printing?

Although printer resolution is different from – but related to – image resolution, parallels

can be drawn between the dots per inch (dpi) measurement used for printers and the pixels per inch (ppi) resolution of images. An output resolution of 300 dpi is the normal standard for professional printing.

To find the maximum print size for images you will print, simply divide the number of pixels in the width of the file by 300 dpi. The table below shows typical sizes for prints from a range of popular image file sizes, assuming you print at 300 dpi and fill the sheet of paper with the image in at least one of its dimensions.

Because image sizes and paper aspect ratios seldom match precisely, it's useful to divide the number of pixels in both dimensions of the file by 300 dpi and take the paper size that's the best overall fit.

Editing programs like Photoshop can interpolate files to make larger images fit onto small paper sizes and smaller files onto larger sheets of paper. Don't push these interpolations far when interpolating upwards, as the added pixels are derived from surrounding pixels and won't be as 'good' as the pixels recorded by the camera.

Camera Parameters		Output Parameters	
File size in pixels	Camera Megapixels	Paper size in inches	Minimum image size
2.2 megapixels	2-3 megapixels	6 x 4	1800 x 1200 px
8.8 megapixels	8-10 megapixels	11.7 x 8.3 (A4)	3510 x 2490 px
17.4 megapixels	18 megapixels	16.5 x 11.7 (A3)	4950 x 3510 px
22.3 megapixels	20-24 megapixels	19 x 13 (A3+)	5700 x 3900 px
34.7 megapixels	36 megapixels	23.4 x 16.5 (A2)	7020 x 4950 px



## ‘High megapixel counts imply superiority because we’re conditioned to believe that more of something is always better.’

### ‘Better’ pixels

If you view each photosite on a sensor as a bucket that collects in-coming light, it’s obvious that the larger the bucket the more light it can collect. More light collected means a higher signal-to-noise ratio, which means you obtain more image data to work with relative to the unavoidable background noise level.

This makes it easy to see why larger photosites are preferable to more photosites for a given sensor area. Photosites with larger surface areas will provide more usable image data to work with.

The table below compares the latest cameras from the leading manufacturers, separated by sensor size. The M4/3 cameras are identified in yellow, cameras with APS-C sized sensors are shown in blue while those with ‘full frame’ (35mm sized) sensors are grouped on an orange background. Out of interest we’ve included one medium-format camera which combines a relatively large sensor with the highest megapixel count. (Interestingly it also has the third largest photosites.)

From this table it’s clear that, for any sensor size, cameras with the lowest megapixel counts have the largest photosites. The Sony  $\alpha$ 7S II, with 12-megapixel resolution and a ‘full frame’ sensor is the stand-out winner. Interestingly, the Canon EOS 6D Mark II achieves third place by keeping resolution to a sensible 26-megapixels with a ‘full frame’ sensor.

Panasonic’s Lumix DC-GH5S, with a M4/3 sensor roughly a quarter the size of a 35mm frame achieves a remarkable sixth position by adopting a relatively low 10.3 megapixel count. This gives it ‘better’ pixels than most of the latest APS-C DSLRs and many ‘full frame’ cameras.



Sony's ILCE-7SM2 ( $\alpha$ 7S II), shown here with the Carl Zeiss Vario-Tessar 24-70mm f/4 lens, is the stand-out winner in the current race for ‘better’ pixels. (Source: Sony.)

Camera	Sensor size	Megapixels	Photosite size	Ranking
Olympus OM-D E-M1 Mark II	17.3 x 13.0 mm	20.4	0.00333 mm	13
Panasonic Lumix DC-GH5				
Panasonic Lumix DC-GH5S		10.3	0.00462 mm	6
Canon EOS 77D	22.3 x 14.9 mm	24	0.00371 mm	11
Fujifilm X-H1	23.5 x 15.6 mm	24	0.00392 mm	9
Nikon D7500	23.5 x 15.7 mm	21	0.00422 mm	8
Pentax KP	23.5 x 15.6 mm	24	0.00391 mm	10
Sony $\alpha$ 6500	23.5 x 15.6 mm	24	0.00392 mm	9
Canon EOS 6D Mark II	35.9 x 24 mm	26	0.00575 mm	3
Pentax K-1 Mark II	35.9 x 24 mm	36	0.00488 mm	5
Sony $\alpha$ 7R III	35.9 x 24 mm	42	0.00451 mm	7
Nikon D850	35.9 x 23.9 mm	46	0.00345 mm	12
Sony $\alpha$ 7 III	35.8 x 23.8 mm	24	0.00597 mm	2
Sony $\alpha$ 7S II	35.6 x 23.8 mm	12.2	0.0084 mm	1
Fujifilm GFX 50S	44 x 33 mm	51	0.00533 mm	4

Raw files give you more data (particularly colour bit depth) than JPEGs, which are created by discarding data that is unlikely to be noticed. By default, cameras save JPEGs at 72 ppi and raw files at resolutions upwards of 200 ppi.

Images to be printed on A3 or larger paper can have output resolutions below 300 dpi because they are viewed from further away. At the normal viewing distance for a poster-sized print, it's difficult to pick up minor irregularities, including those introduced when images are modestly up-sampled. Snapshot-sized prints should stick with 300 dpi.

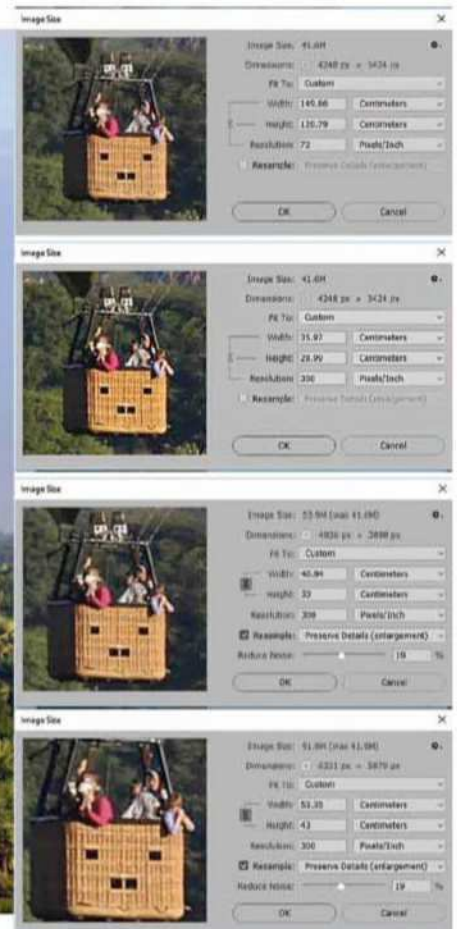
The ideal viewing distance for prints is between two and 2.5 times the image diagonal. Hence, a poster-sized (A3+) print viewed from two metres can handle a resolution between 100 ppi and 150 ppi. Extrapolate up to a

billboard viewed from about 10 metres and the resolution drops to less than 50 ppi.

### What if you don't print?

The main (and for some people, only) reason for most photographers to use anything but a smartphone is when they want the versatility of interchangeable lenses and/or the differential focusing controls provided by fast, high-quality optics. Those who shoot in dim lighting can also find smartphone photos are quite noisy.

Fortunately for casual users, smartphone cameras are getting smarter. Most have built-in stabilisation and many include portrait modes that can simulate differential focusing, while some provide raw file support. However, they can't beat a larger sensor's ability to record noise-free detail plus a broad dynamic range. 📷



This image was taken with a 15-megapixel camera, which produced a JPEG file at 72 pixels/inch (top screen grab). Adjusting the resolution to 300 ppi for printing shows the image can easily be printed to A3 size (42 x 29.7 cm) with a narrow white border. Checking the Resample box and selecting Preserve Details (enlargement) would enable it to be enlarged for printing on A2 sized paper, although you can see in the bottom screen grab how the image would suffer from even such modest enlargement.



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*Horse Head Pink*

# Lauren Bath, Instagrammer

In August of 2011, then-chef Lauren Bath came across an interesting little app called Instagram. It changed her life.

Instagram was barely a year old when Lauren Bath first discovered it. While she'd used a camera to take the usual family and friends snapshots, when it came to creative expression it was her work as a chef, rather than photography that scratched the itch. But that changed when she stumbled across Instagram. 'Instagram was about photography,' she said, 'and I started to experiment with that medium.'

It turned out that others liked her experiments. Within 18 months she'd built a following of 200,000. Along the way she began to acquire a few clients who were impressed by her travel work. Not one to do things by halves, she decided to take off the chef's hat and adopt a title that previously didn't exist.

'Basically "professional instagrammer" is a title that I made up when I quit my job and I was trying to define what I did,' she said. 'People often asked if I worked professionally for Instagram but for me the name just symbolised that I had effectively monetised my Instagram reach, before that was a thing.'

'Having had a career as a chef, and being 30 years old when I quit my job, has put me in great stead in this career,' she said, adding, 'I understood the importance of business, having run profitable kitchens for years, and I knew that in order to quit my job I needed an income. Many creatives struggle to be fairly paid for their work but for me it was black and white – I didn't have a job, Instagram was my job and I needed to be paid

for my work. I was also mature enough and understood the importance of relationships and professionalism.'

Lauren started out capturing images on her iPhone, moved to a big DSLR for a time and then, in 2015 she moved to an all-Olympus system. 'I started on the OM-D E-M1 Mark I but the second I laid my hands on the Mark II it was love at first sight and that's what I shoot with now.'

Asked how Olympus has changed her working life, she said 'It's so light and that means I can bring more lenses away with me, which has given me a lot more choice in my work. My favourite guilty pleasure? Packing my 300mm f/4 in the kit, even if I may not use it.'

As someone who find herself photographing two or three weeks out of the average month, she has refined her kit down to the essentials. 'Typically I carry two bodies (OM D-E M1 Mark II) and the standard pro kit of 7-14mm f/2.8, 12-40mm f/2.8, and 40-150mm f/2.8, plus a handful of prime lenses. I just got my hands on the new 17mm f/1.2 and I'm very excited to play around with it.'

Shooting for the original Instagram square format came easily to Lauren. 'I fell in love with square images from the day I downloaded Instagram. I'm fairly OCD, so the idea of all that symmetry makes my heart sing. Ever since Instagram opened the platform up to landscape and portrait images I've posted a non-square twice – and hated both uploads,' she laughed.



‘Leaving yourself open to photographic opportunities is also part of the Lauren Bath philosophy.’



*Breath Cranes*

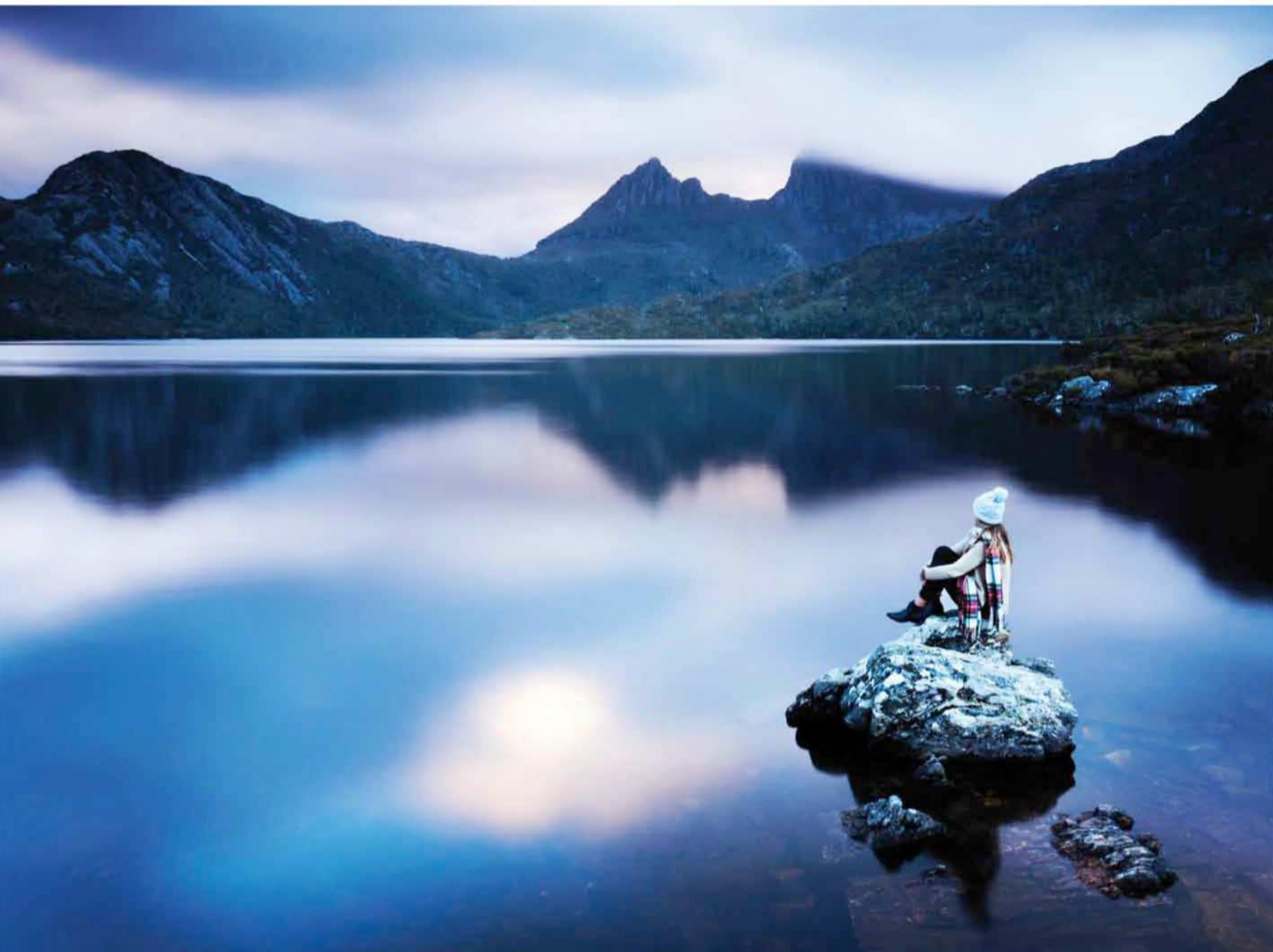
'I always shoot for the square but edit in all orientations for my other social media platforms. I therefore edit a landscape first, then crop out the square and then resize for Facebook and finally go back to the original and crop out a portrait for Steller and Instagram stories.'

Leaving yourself open to photographic opportunities is also part of the Lauren Bath philosophy. 'I love to rock up to a new destination and experience it exactly like a tourist would. This way my images are never contrived or copied, and my stories and adventures are genuine.'

Lauren's succinct advice to aspiring Instagrammers is to get the prerequisites right. That means having 'professional camera gear, a good attitude, an excellent work ethic and good friends around you. It can be a cut-throat industry but it's important not to compare yourself to others and to be willing to put in the hard work.'

[www.instagram.com/laurenepbath](https://www.instagram.com/laurenepbath)

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# Equipment for landscape photography

A GUIDE TO CHOOSING THE MOST SUITABLE EQUIPMENT FOR LANDSCAPE PHOTOGRAPHY, WHEREVER YOU HAPPEN TO BE.

Margaret Brown

**L**andscape photography consistently rates among the three most popular genres in *Photo Review's* regular reader surveys.

Entries in our image reviews, competitions and online galleries confirm its popularity, so we decided it was time to provide an overview of equipment our readers should consider if they are looking to extend their capabilities and/or address a specific sub-set of the genre.

Just as there's no definitive subject for the genre, no single camera or lens can be claimed as the 'best' device for taking landscape photos. But some types of equipment will suit particular shooting situations better than others and the ways in which the resulting shots are used will influence the resolution required.

## Camera choices

Serious photographers can choose from four main types of cameras:

- 1. Medium format interchangeable-lens** models with large (43.8 x 32.8mm to 53.4 x 40.0mm) sensors and high (50 megapixels or higher) resolution. The prices of these cameras and lenses will usually put them out of the reach of enthusiasts. They are also relatively large, heavy and conspicuous.
- 2. Digital SLR** cameras with sensors ranging from approximately 23 x 15mm ('APS-C') to 36 x 24mm ('full frame') and interchangeable lenses. Entry-level APS-C models are often light, compact and relatively low-priced. However, full frame professional models are usually heavy, large and expensive. The optical viewfinders have some advantages but can't be used while shooting video.



*Being in the right place at the right time is more important than having the most sophisticated gear. Even in foul weather, you can get interesting shots with a weather-sealed APS-C mirrorless camera with a standard kit lens. Shooting data: ISO 800, 35mm focal length, 1/500 second at f/8.*

- 3. Mirrorless** interchangeable-lens cameras are generally more compact than similarly-featured DSLRs. Sensor sizes range from 17.3 x 13.0mm (M4/3) to 36 x 24mm. Most models include electronic viewfinders (EVFs), which display the scene as it will be recorded and can be used while shooting movies. Resolutions range from 10-20 megapixels for the M4/3 models to 12.2 to 42.4 megapixels for Sony's 'full frame'  $\alpha$ -Series cameras. Models with low megapixel counts tend to be designed for video and low-light shooting.

- 4. Fixed-lens digicams** often have smaller sensors, typically ranging from 6.17 x 4.55mm through to 12.8 x 9.6mm and many come with very long zoom lenses, with 20x and 25x zooms being relatively common and a few models offering 60x optical zoom. The so-called 'super-zoom' models tend to have smaller sensors. Cameras with larger (APS-C or full frame sized) sensors usually have single focal length lenses or very short zooms.

Your choice of camera will depend on where you like taking pictures and the kinds of pictures

you take. Simpler equipment usually works best for photographers on the move as it allows them to concentrate upon taking pictures, rather than worrying whether their equipment is safe.

If you enjoy hiking to and within wilderness areas, a light camera and versatile lens will be the easiest to carry. Such equipment will also be ideal for travellers. Look for a 'weatherproof' model that can withstand the occasional shower of rain or wind-blown dust. Take care if you swap lenses to prevent dust and moisture from entering the camera body, where they will damage the electronics.

Heavier, more complex equipment is often best for photographers who work close to their vehicles and have plenty of space and time to set-up before shooting. When you have a lot to carry – a couple of camera bodies plus several lenses and other peripherals – carrying it on your back will slow you down and tire you. Unless you are fit, you're unlikely to get to locations that can only be reached on foot.

### Resolution

As we explained in the Insider article on page 29, resolution is only important if you make large prints of your photos because it gives you more data to work with. Instead of obsessing over resolution, it's better to evaluate your needs on a realistic basis.

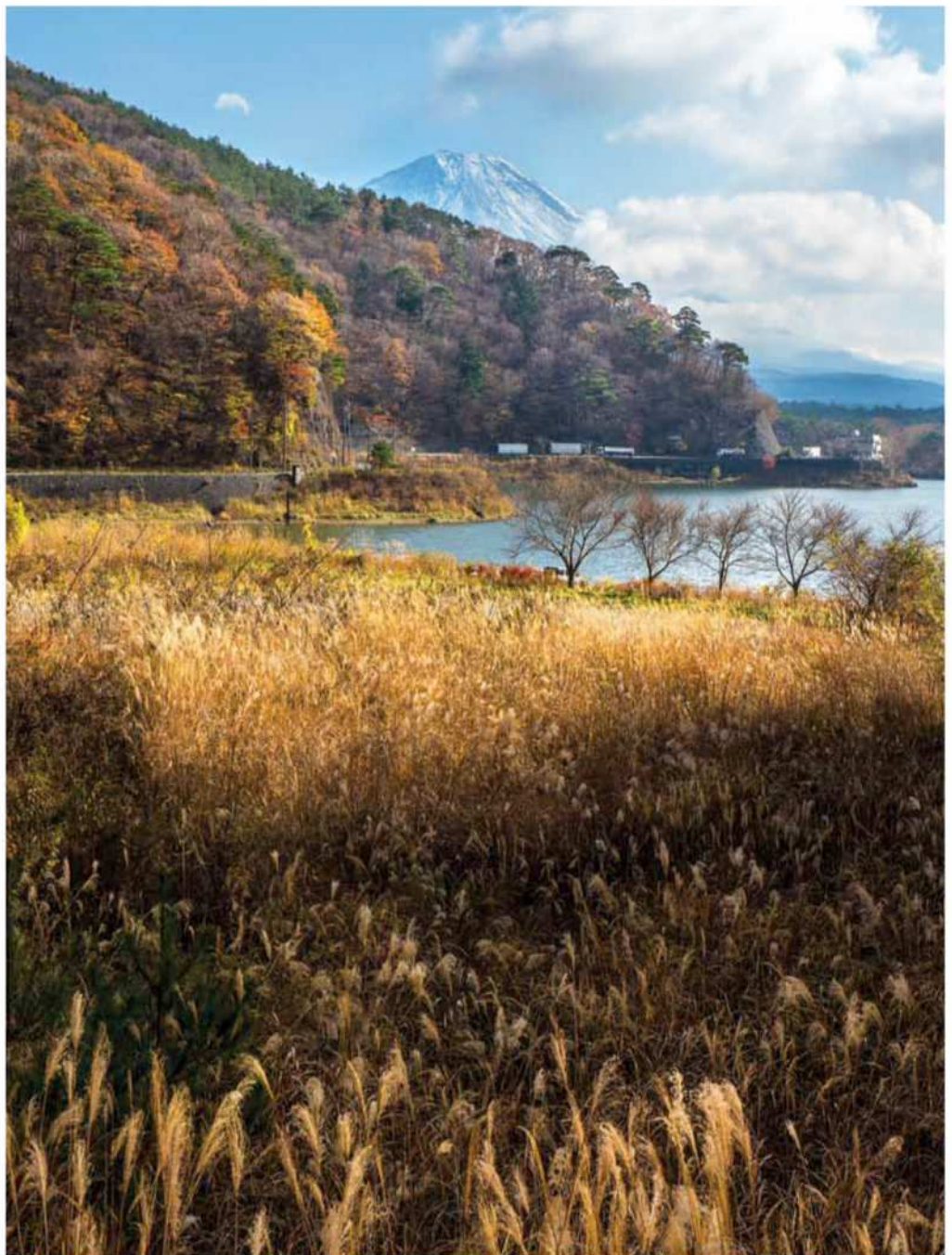
The largest output size for consumer printers is A3+ (483 x 329mm), which can be filled at optimal quality with a 20-24 megapixel image. Serious enthusiasts may have A2 printers but, even here, 36-megapixels is more than enough for high-quality prints. However, you can get away with lower resolution because large prints are generally viewed from at least a metre away; often even further.

### Lenses

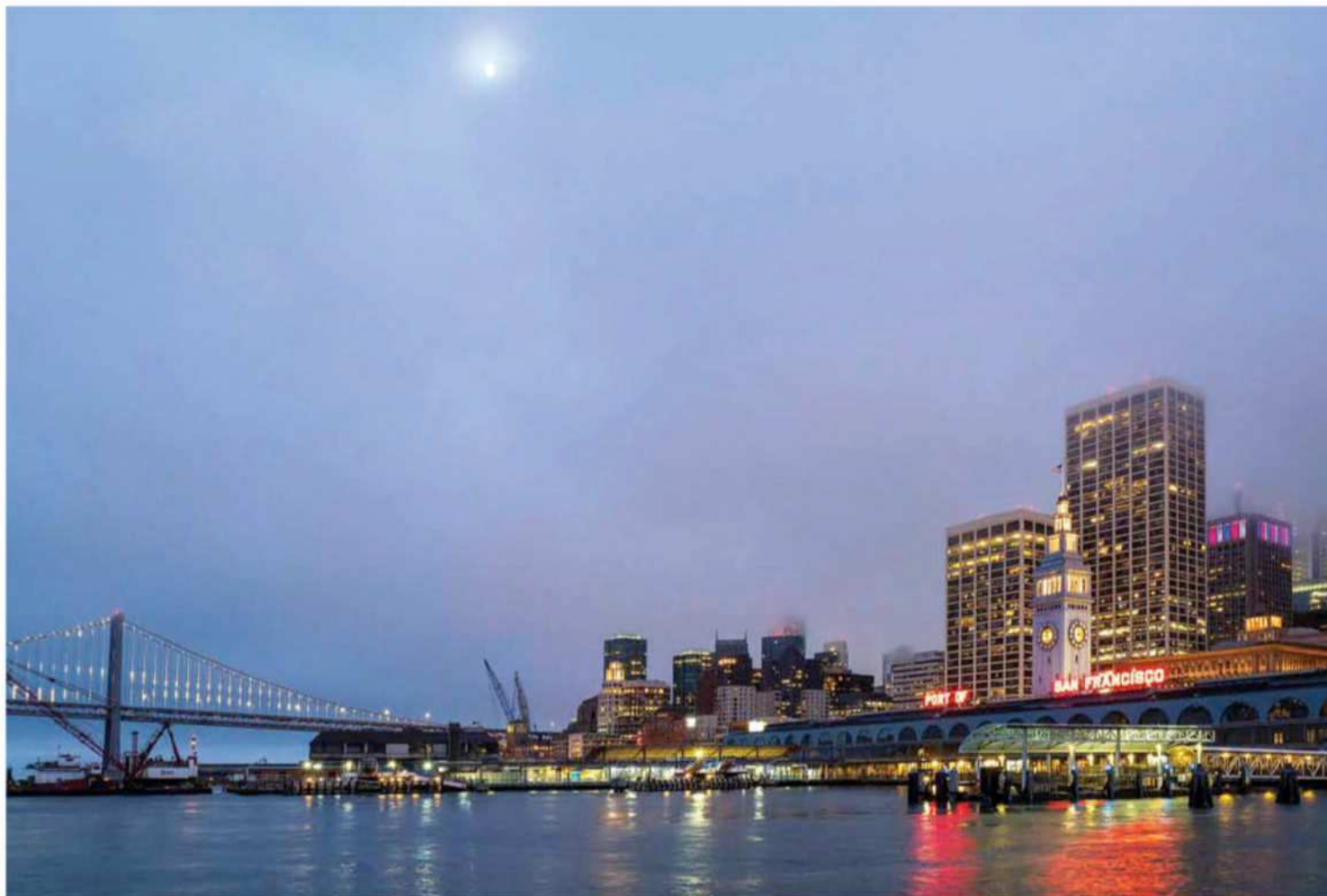
By tradition, wide-angle lenses are recommended for landscape photography because they can encompass sweeping panoramas. However, other lens types may be preferable in some situations, either because of their creative benefits or to accomplish a specific effect.

Wide-angle lenses often have in-built distortion that can be either beneficial or disastrous, depending upon how the lens is used. Extreme distortion is a characteristic of fisheye lenses, which are often used specifically for the effects they produce. Some deliver a 180-degree circular image while with others, the image extends to the corners of the frame, 'stretching' towards the periphery. It is impossible to correct these distortions.

‘If you enjoy hiking to and within wilderness areas, a light camera and versatile lens will be the easiest to carry.’



*This shot, which was taken with a 20-megapixel M4/3 camera, has been successfully printed at A2 size, where it was indistinguishable from a similar image from a 'full-frame' DSLR camera shot with similar settings and printed at the same size. Shooting data 24mm focal length, ISO 200, 1/125 second at f/11.*



Being generally smaller and lighter than equivalent DSLRs, mirrorless cameras are ideal for travellers and can produce excellent image quality in a wide variety of shooting situations.



The image was recorded with a 15-megapixel digicam, which was built in 2008 and had a 7.44 x 5.58mm sensor (crop factor of 4.7x). Even though a low ISO 80 sensitivity was selected, the enlarged image shows traces of noise and careful editing of the raw file was necessary to minimise the loss of highlight and shadow details. These factors are all higher with small sensors.

With very wide-angle lenses, even a slight tilt will cause keyhole distortion in which subjects in the upper part of the frame appear to recede while those in the lower part of the frame are enlarged. (Some cameras include 'keystone compensation' to correct this phenomenon.) To minimise distortion, shoot with the back of the camera parallel to the subject.

Telephoto lenses compress perspective, making distant objects appear closer together than they are in actuality. This effect can be used creatively in landscape photography, particularly if you want an aerial perspective (where more distant objects appear fainter and more blue).

The following table provides examples of situations that match different lens types.

Lens type	Typical focal length for different sensor formats			Best used when...
	35mm	APS-C	M4/3	
Fish-eye	8-15mm	4.5-10mm	7.5-8mm	You want the extreme distortion.
Ultra-wide angle	16-20mm	10-16mm	7-10mm	You want to encompass a wide area in a single shot and can tolerate some rectilinear distortion.
Wide angle	24-40mm	18-26mm	12-16mm	You want wide-angle coverage without noticeable distortion.
Normal	45-60mm	28-45mm	25-28mm	You want to reproduce the perspective seen by the human eye.
Medium telephoto	70-135mm	50-90mm	30-75mm	You want to photograph subjects that are further than you can reach by moving closer (eg, subjects on the other side of a stream or road).
Long telephoto	135-300mm	100-200mm	80-150mm	For photographing distant scenes or when you want to compress perspective or isolate a particular element.
Extreme telephoto	Over 300mm	Over 200mm	Over 150mm	You want a more extreme perspective compression or if you want to include easily-spooked wildlife in shots.

Some photographers agonise over the choice between prime (single focal length) and zoom (multiple focal lengths) lenses. Unfortunately, there's no definitive answer.

Prime lenses are generally faster than zooms (they have wider maximum apertures that let in more light). This makes them easier to use in dim lighting. They are also simpler to design and manufacture, which means they can be smaller and lighter than zoom lenses. Their imaging quality is often better and they are usually more robustly built.

Zoom lenses are much more versatile and provide a range of focal lengths in a single unit, which is more flexible for shooting different subjects. But they are generally at least a stop slower than an equivalent prime lens. This means you need good stabilisation in your camera and/or lens when they are used in low light.

When choosing between them, consider your budget, the need for portability and how often you're willing to change lenses. Also take account of the type and style of photography you do and the way you use your pictures.

### Stabilisation

Most wide-angle lenses come without stabilisation because the effects of camera shake are seldom visible with wide-angle coverage. Stabilisation may be unnecessary with faster lenses where you can use fast enough shutter speeds to prevent camera shake. However, it's useful for short telephoto and tele-zoom lenses and essential for longer lenses – unless you're able to use a tripod.

Most Olympus and Sony cameras have in-body image stabilisation (IBIS) via a sensor-shift system, based upon the dust-reduction vibrations that keep the sensor clean. Panasonic also provides it in some recent models. Fujifilm has included IBIS for the first time in its X-H1 camera.

These camera manufacturers design lens stabilisation systems to work with their sensor-shift stabilisers to provide greater stabilisation. Up to five f-stops of shake correction can be achieved.

### Filters

Filters can be used for two main purposes:

1. To protect the front element of the lens against damage. (A filter is cheaper to replace.)
2. To achieve a particular effect.

In the past, many photographers fitted a UV or skylight filter to counteract the effects of ultra-violet radiation on colour reproduction.



An example of the distortions that can be produced with a wide-angle lens when in-camera corrections are disabled.



An example of the perspective compression produced by long telephoto lenses. This shot was taken with a 16-megapixel M4/3 camera with a 300mm lens (600mm equivalent in 35mm format). Note the effects of aerial perspective which progressively lightens the dunes and makes them appear slightly more blue.



## landscape photography

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Left: Stabilisation is useful in places with low light levels, such as dense forests, because it can allow you to hand-hold the camera while using slow shutter speeds. Note the inclusion of people to add a sense of scale to the scene. Shooting data: M4/3 camera with 14mm focal length, ISO 800, 1/13 second at f/8.

Right: A circular polariser can make colours appear richer and emphasise the shapes of clouds against a darkened sky.



Today's digital sensors are relatively insensitive to UV radiation so, if protection is needed, it's better to use a purpose-designed 'protection' filter. But if you're careful with your gear, a filter shouldn't be necessary and cheap filters can degrade image quality.

Effects filters range from the familiar polarisers and graduated filters to diffusers and filters that create distinctive effects, such as star and soft focus filters. Landscape photographers also use neutral density filters when they need to reduce the light reaching the sensor so they can open the lens aperture a stop or two for depth of field control.

Graduated filters are popular with landscape photographers, when they need to balance extremes of brightness. They are commonly used to prevent over-exposure of skies, allowing darker foregrounds to be recorded more naturally. Fog filters are graduated with diffusers at the top to create an impression of mist or fog.

Be sparing in your use of effects filters. A circular polariser can make colours appear richer and more vibrant and will reduce reflections on shiny surfaces like water.

It will also deepen the blue in skies, allowing white clouds to appear more prominent. But avoid using them in clear conditions at high altitudes, where polarisation can result in unnaturally dark skies.

Take care when handling filters. A dirty or greasy filter will noticeably degrade image quality. Look for filters with dust- and moisture-repelling coatings that make them easy to clean.

### Bag it!

Aside from camera and lens(es), the most important piece of equipment for a landscape photographer is a camera bag. When choosing, aim to balance portability against convenience.

Backpacks are popular with photographers who hike to their locations because they can accommodate a lot of equipment while being comfortable to carry and leaving your hands free. Once again, waterproof models are recommended for anyone hiking some distance from a vehicle.

Female photographers may find sling-type and 'messenger' style bags with a single shoulder strap more comfortable. Better models include

**‘Photography should be an enjoyable pastime’**

some way to secure the bag so it doesn't swing round and get in the way when the photographer bends over.

Cases are handy for travellers with a lot of gear and photographers who work close to a vehicle. Most cases are waterproof, which can be important if you're travelling in tropical conditions.

Try to match your equipment to the situations in which you will be shooting, the style(s) of photography you favour and your physical limitations. Photography should be an enjoyable pastime; you don't want equipment that will undermine your shoot. 📷

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**LUMIX G**

# Print your own photobooks

WE FOLLOW UP THE ARTICLE IN THE LAST ISSUE WITH TIPS ON HOW TO PRINT YOUR OWN PHOTOBOOKS AT HOME.

Margaret Brown

Photographers who print their own images should consider producing their own photobooks instead of outsourcing the layout and printing. While it might not be cheaper than outsourcing, producing your own photobooks can be a lot of fun and it's very satisfying to see the results of your creative labours. Books make valuable *aide-memoires*, both now and for the future. They're also excellent gifts for special people you want to acknowledge.

In this feature, we'll look at the equipment you need and cover the stages involved in laying out, printing and binding a photobook.

## Equipment

You don't need sophisticated equipment to produce a photobook; but you'll need at least an A4 printer. Some four-colour printers produce good enough reproductions for printing books, but for the best results you'll need a printer with at least a six colour ink set.

An A3+ or larger printer will give you more flexibility when it comes to page sizes. However, if you have to choose, it's better to pick a smaller printer with more inks than a 4-colour printer that can handle larger paper. Essentially, the more inks you have, the greater the subtlety of hues and tones the printer can reproduce.

If you're buying a new printer, choosing between dye and pigment inks will depend on the types of paper you want to print on as well as individual preferences. Dye inks are absorbed into the paper's surface and generally provide the richest colours, particularly on glossy papers. Pigment inks are generally more durable but they sit on the surface of the paper and are vulnerable to abrasion when pages are handled. They are best used with matte papers.



*A photobook can be a portfolio of your best images, a valuable record of trips you made and a great way to recall past adventures. Keep them in pristine condition by wearing cotton gloves while looking through them.*



## ‘Books make valuable *aide-memoires*, both now and for the future.’

Fortunately, the latest dye inks work well on matte papers and many people prefer printing on matte surfaces because they like how they feel in the hands. Glossy papers tend to stick to the fingers and, even though lustre, semi-gloss and 'pearlescent' papers are less sticky, they can be tricky to handle in humid conditions. More on papers later in this article.

### Papers

Unfortunately, the inkjet paper market tends to favour single-sided papers; double-sided papers are relatively rare and you may need to look outside of the regular photographic suppliers to find what you want at a price that's acceptable. Canson, Centurion, Hahnemühle, Innova and Ilford are among the brands that offer double-sided inkjet papers. You should find them at specialist photographic stores as well as online.

Try to choose papers that work well with your printer, are easy to handle and make your pictures look attractive. In most cases you will need double-sided papers for book printing. The exception is for 'portfolio' style books where the image is printed on the right hand side and the left (the back of the sheet) remains blank. Avoid papers that have the manufacturer's branding on the back of each sheet.

Make sure the paper you choose is thick enough to prevent the image showing through the paper but not so thick it makes the pages difficult to handle. Heavier (thicker) papers give a more upmarket feel but you'll need a robust, high-quality binding method. For printing at home we recommend a minimum 'weight' of 170 gsm and a maximum of 250 gsm.

Initially, it's easiest to start with standard page sizes, particularly A4 and A3, since most double-sided paper comes in these sizes.

A4 books can be laid out in either landscape or portrait orientation but A3 works best in landscape format and is best kept for portfolio-style books. We've found half A3+ sheets, which provide pages measuring approximately 30 x 21cm (slightly longer than A4 size), make very attractive bound books.

Note: Some manufacturers offer photobook kits containing double-sided papers plus a spring-bound cover that is pulled back to allow sheets to be slipped in and closed to clamp them in place. They are distributed in Australia through Photo Direct.

### Laying out

Start by determining which pictures you want to include and the order in which you will present them. For a portfolio with a single picture on the right hand page, between 30 and 60 images should produce a nice-looking book. Where you'll be using both sides of the paper and often arranging two or more pictures on a page, start with between 60 and 100 pictures.

Depending on the size and thickness of the pages, we feel 100 pages is the maximum to aim for when printing on both sides of each sheet.



Canon's PIXMA iP8760 is a low-priced A3+ dye ink printer that can be used for printing photobooks because it uses a six-colour ink set.



Ilford's Galerie Premium Duo Matt 200 gsm double-sided paper is the ideal weight for photo books. It's available in 50-sheet boxes in A4 and A3+ sizes.

## Costing your project

Although calculating the cost of the paper you use is straightforward, it's almost impossible to calculate the cost of the ink because printer manufacturers never publish accurate figures for photo printing. However, going by the tests we've done over the past few years, we estimate the average amount of the ink used to cover one square metre of paper is roughly eight millilitres, depending on the image itself and the printer settings.

High-key images will use less ink than images where dark tones predominate. The printer's quality setting can also influence ink usage, although to a relatively small degree.

If you're printing a large book, say 100 pages, it could be worth checking whether you can see any differences in quality between prints made with the standard and high quality settings. Switch off the high-speed setting if you print with standard quality as it will produce inferior prints.

In a typical A4 book, the average size of a full-page illustration with margins of around 10mm (including a 15mm margin on the bound edge) is approximately 240 x 160mm or 0.0384 square metres. From this figure, the ink used per page is between 0.236ml and 0.295ml. This figure will enable you to calculate the approximate cost per page, based upon the cost of the ink cartridges, the quantity of ink they contain and the cost per millilitre of that ink.

Each standard cartridge for a typical entry-level printer contains between 3.5 and six millilitres of ink. You can check a cartridge's capacity by weighing it before you install it and after it has registered as empty; the difference is the weight of the ink (one millilitre weighs one gram).

The leading printer manufacturers offer higher-capacity 'XL' cartridges, each with around 11ml of ink.

Depending on the cost per ink cartridge, we estimate the cost per page with an entry-level printer to be between 80 cents and just over \$1, allowing for varying printer head efficiency. New printers are usually more efficient.

Moving up to a more sophisticated printer will reduce these costs because, although the cartridges are more expensive, they contain more ink. For example, the flagship A2 pigment printers from Canon and Epson use 80ml cartridges which cost around \$80 each. That works out at less than 30 cents per illustration, which is a significant cost saving and worth the high cost of the printer if you do a lot of printing.

Australian company Rihac sells refillable cartridges and continuous ink kits for many photo printers and, although the inks are not identical to those supplied by the printer manufacturers, if you stick with the high-end pigment printers they are very close in both colour accuracy and durability. Kits are available for Epson A2 printers, although not for the Canon equivalents. They can reduce the ink cost per millilitre to around 35 cents and the ink cost for an A4 page to around 10 cents.

Fewer than 30 sheets can make the book feel flimsy, while more than 70 sheets can be difficult to bind.

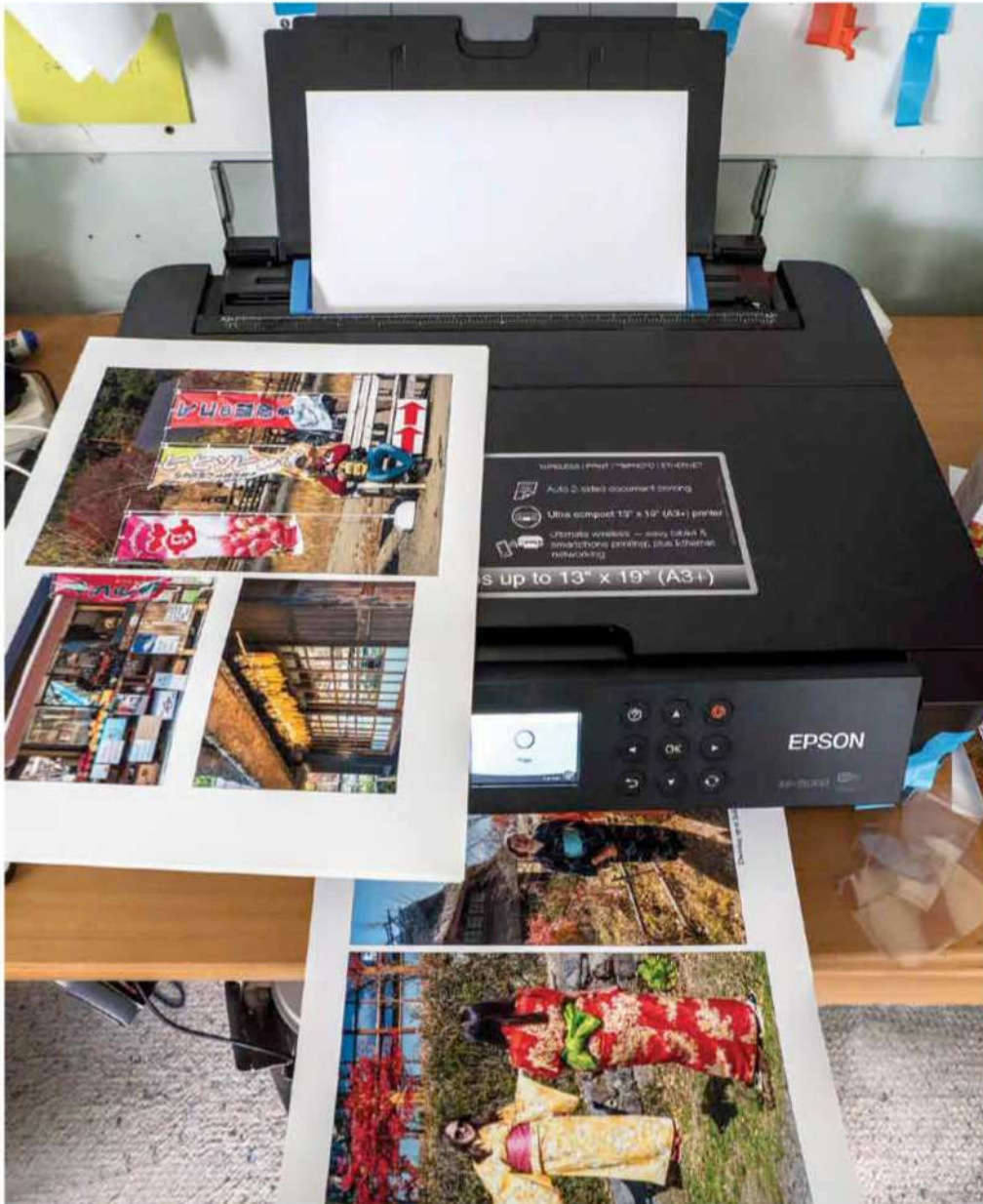
Do-it-yourself book designers can choose between a number of popular layout programs, such as Adobe In-Design, Serif PagePlus or CorelDraw. Portfolios of images can also be laid out in most image editing software applications, including Photoshop and Photoshop Elements, particularly if they don't include much text.

We've found Microsoft Publisher (part of the Office suite) is simple to use and gives you plenty of freedom to design your own page layouts. It's also easy to print from.

Layout programs allow you to set up pages as templates, making it easier to standardise the layout for the entire book. They are also likely to support custom page sizes, which enable you to

print on non-standard sized papers. Unless you plan to slip the pages into plastic envelopes, each page will need an allowance for binding the pages together (this will be on different sides of the layout when the front and rear of a sheet will be printed on). A margin of about 10mm should be enough for 'perfect-bound' A4 size books but you should allow at least 15mm for other types of binding and when you print on larger paper.

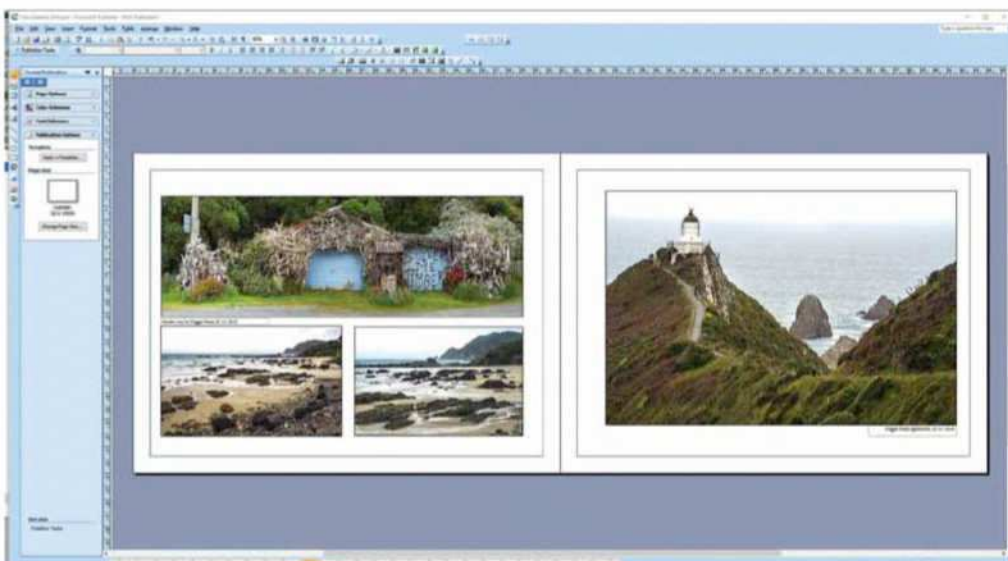
While for aesthetic reasons we aren't keen on layouts that extend photographs over two pages, there are also some practical considerations to take into account if you choose to lay out your book with pictures spanning a double-page spread. It can be difficult to know how much allowance to make for the gutter to prevent parts of the image being duplicated – or cut off.



Resting the last page printed on top of the printer enables you to make sure the next page is properly orientated when printing on the reverse side of the paper.



Two of the many options for the first page of your book, the top one showing the use of a picture and the lower one a text-only alternative. The Maiandra font was used in the upper example, with Garamond used for the lower one.



A double-page spread laid out in Microsoft Publisher using a template based upon a 30 x 21cm page size.

## ‘...producing your own photobooks can be a lot of fun and it's very satisfying to see the results of your creative labours.’

Accurate measurement of the binding allowance will be necessary and you will probably need to duplicate those parts of the image that fall into the gutter for each page. As we said, it can be tricky!

The first page in the layout should set the tone for the rest of the book so be careful in your choice of font and picture (if you use one). Some people prefer to restrict this page to a simple title and author statement; we prefer a picture, title and date. Examples of each approach are shown in the illustration on the previous page.

Choosing a font style for titles and captions is largely a matter of taste; some people prefer unadorned fonts like Arial, Times New Roman, Garamond, Lucida and Verdana; others look for something more distinctive like Comic Sans, Papyrus or one of the script fonts. We've had success with conventional fonts like Calisto, Georgia, Century Schoolbook and Baskerville Old Face as well as the more informal Maiandra GD. Aim for consistency throughout the publication, sticking with one – or at most, two – fonts.

### Printing

Each page is printed in the same way as a normal print using the relevant 'photo' settings in the printer driver. Make sure you match the paper setting to the type of paper you are printing on, particularly with respect to the choice of surface.

To ensure accurate colour reproduction, start with a colour managed workflow based upon calibrated monitors. Use ICC profiles and soft proofing and make visual checks of each printed page as it emerges from the printer, allowing a few minutes for the paper to dry and the colours to stabilise.

If you're printing on both sides of the paper we recommend printing all the odd-numbered pages first and then going back to print the even-numbered pages in the same order. That way the ink has time to dry out completely before the paper is passed through the printer again.

Although printer manufacturers warn you not to put anything on top of the printer, when printing the reverse sides of sheets we like to keep the next couple of pages there as we print to ensure we load them correctly. It's too easy to make mistakes when you can't see which way the paper should be loaded and most of us are too impatient to wait until the printer has delivered the latest page before embarking upon the next one.

### Binding

We covered popular binding options in the last issue, and most are available to DIY photobook creators. Binding machines are available in stationery stores and many office suppliers offer binding services that include comb, wire and thermal binding, which binds printed pages together with a strip of tape that

is fused by heat. All three methods allow the pages to lay flat when the book is opened.

For the best results when it comes to presentation and durability, we recommend taking your printed pages to a professional bookbinder. Most will be happy to advise you on the best techniques to use and help you choose covering materials and titling styles. Binderies specialise in side-stitching with cotton thread, which produces a long-lasting result.

Hardcover books generally have end papers that cover the inside of the front cover and spread across to make a blank first page for the book. Most people prefer plain white or cream-coloured end papers but you could also choose a colour that complements either the front of the book or the dominant theme colour.

With thick books, groups of pages are sometimes stitched together – a technique known as 'section sewing' – before the cover is attached. The joins between the groups are taped over to conceal the stitching.

Binderies will also emboss the title of the book on the front cover and/or the spine of the book. In most cases, you will have a limited choice of font styles and sizes because the bulk of the work binderies handle is university theses. If you want to add pictures to the cover, you can print a dust jacket to slip over the hard cover provided by the bindery. 📷



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# Image review



## Lee Point NT at dusk

By Richard Bruxner

*Panasonic GM5; 12-32 f/3.5-5.6 lens*

The sun had been gone for some time and I was wandering back to my car with my back to this. Sometimes it pays to turn around.

## Don's response

Maybe a neuroscience expert could explain just why this picture of sand banks and the irregular shapes of the trapped water is so appealing to the human brain, but appealing it is. Along with the interesting details of the sand ripples and the golden reflections, I think part of the appeal for me is the way those attractive details are united by their subtle top left to bottom right diagonal orientation. The larger forms in the foreground gradually blending together in distance also creates a sense of depth and perspective. As Richard says, sometimes it's a good idea to turn around and take the picture waiting behind you.

## Exploring

By Suhas Kulkarni

First winner Image Review 9

*Panasonic GX-85; 100-300mm; f/4; 1/4000s*

This picture was taken near Sydney Olympic Park. In-camera conversion to monochrome darkened the shadows.

## Don's response

Heartily agree with photographer Suhas Kulkarni's decision to convert this image to monochrome.

The composition has a timeless quality well suited to the black and white treatment. There is something quite uplifting in the way the figures knit together the solid foreground and the lightness of the sky. The arrangement of the clouds is serendipitous too, providing as it does the maximum contrast between the figures and the sky.



## Cat's Eye

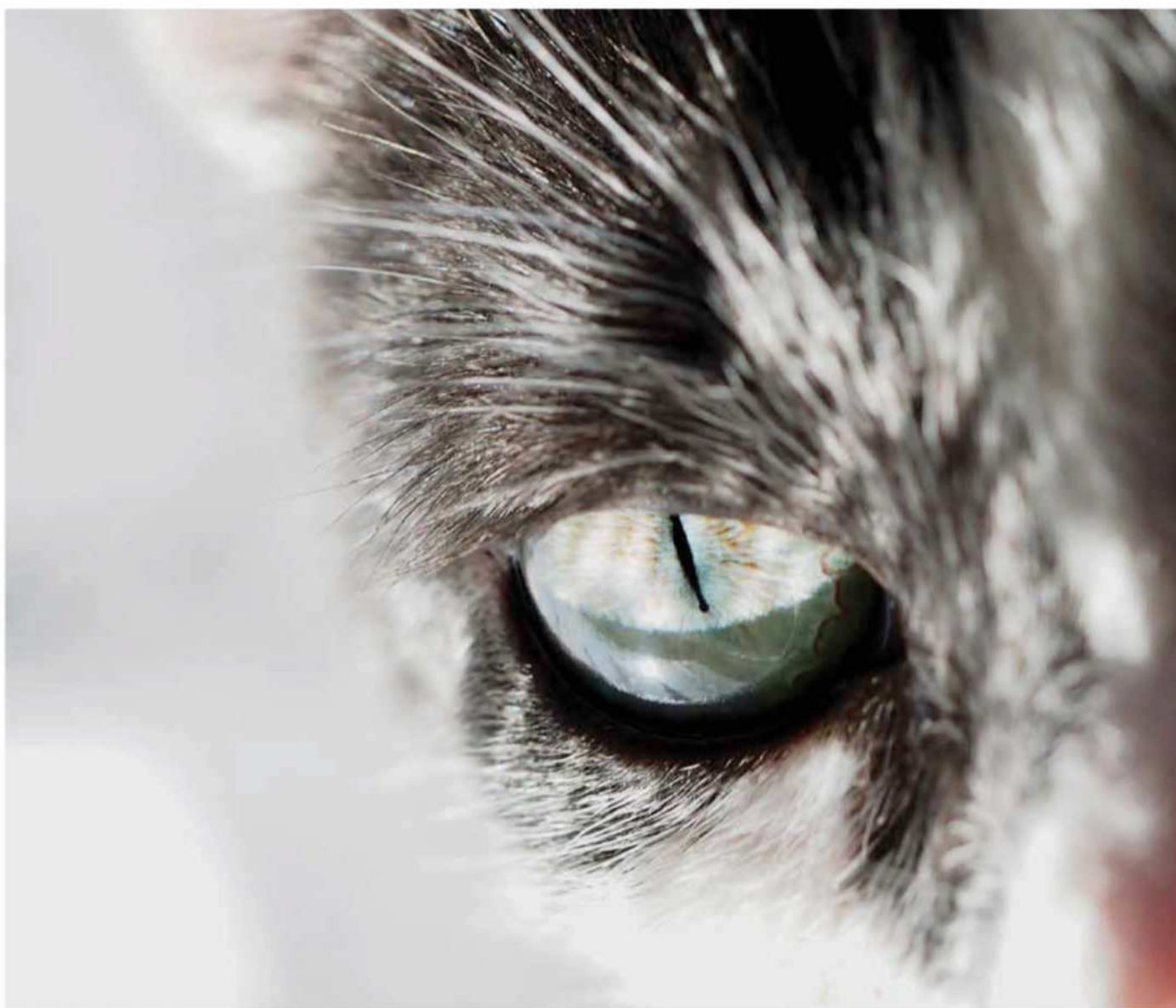
By Susan Shanta

*Olympus EM5; 60mm macro lens; f/3.5;  
1/200, ISO 200*

Feline closeup.

## Don's response

Susan Shanta's work often focusses on the tiniest of details in which she finds worlds most of us never notice. Not only is this picture well composed, but the central point of interest is sharp enough for us to see a reflection of the scene the cat is watching. There is a quality of intensity to the creature's gaze that I find intriguing and even slightly otherworldly. Seeing well seen!







## One Last Ride

By Wayne Sherriff

*Nikon D80; Nikkor AF-S 18-200mm lens*

A long zoom shot of rides during South Australia's annual Adelaide Show. As the storm clouds gathered, a patch of sunlight assisted in differentiating the various shapes and textures. That effect was refined further during processing by adjusting the colours.

## Don's response

Wayne Sherriff hasn't quite dialled the post-processing up to 11, but he's come close – and I like it. The dramatic dark sky and the almost surreal jumble of forms gives the viewer's eye much to explore. The colour palette has an intense quality well suited to the subject. A strong picture.



## Midday Dunsborough

By Matt Oliver

I took this image at midday near Dunsborough WA, attracted by the sun's rays, the reflection on the water, and the rocks in the foreground. It was taken with a Nikon D7100 at 25mm (18-105mm Nikkor lens) at f/16, ISO 100 and 0.5s to get some of the swirl in the water. I needed a Lee polariser, ND9 and an ND grad to cut down the strong midday light and to help with the water swirl. Processed in Lightroom and Silver Efex Pro.

### Don's response

This image reminded me of the old cinematic 'day for night' technique which often involved, as does this picture, the use of ND filters. I like the silvery smooth quality of the water and the way the sun rays fan out from the top of the image. While it could have been rendered in colour, I think the choice of black and white instead is absolutely spot on. Nice work indeed.

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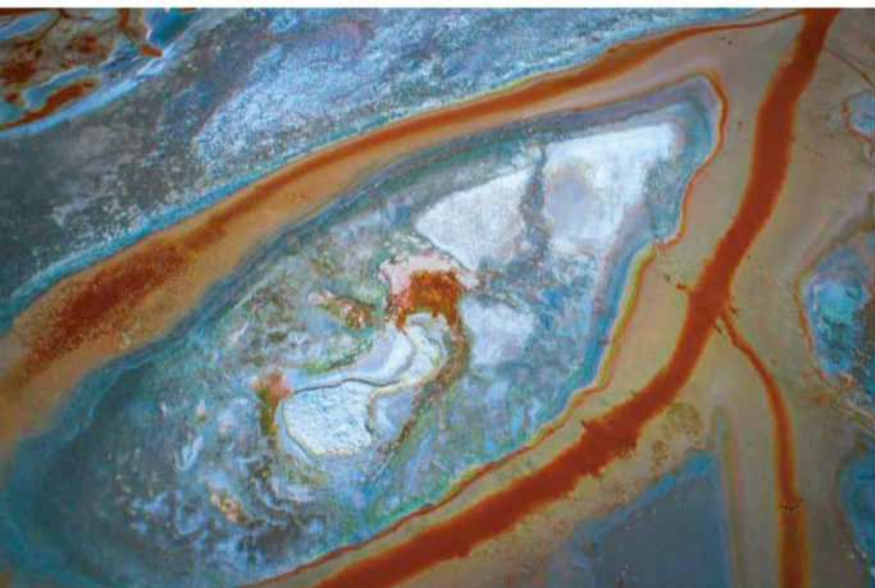
# Photo Challenge: A Tale of Two Frames

WINNER

As you can see, the 'Tale of Two Frames' challenge stimulated our respondents' imaginations. As is so often the case, choosing the 'best' submission was not easy. But choose we must, and choose we did, as we bestowed the first place honours upon young Nicholas Fantini, a Year 12 student from Greenwood College in Mindaire, WA, for his combination of a drone image of a lagoon in the mountains of Chile and a lakeside view from Bolivia. Norman Shapro's two-panel portrait of a humble garlic plant is both technically immaculate and more importantly, quite beautiful. Royce Holliday paired his haunting image of a bird taking off with a pleasantly geometric bird's eye perspective, while the endlessly creative Susan Shanta told a simple story in two frames. Also picking up Honourable Mentions were Leisa Davis for a study she conjured from her local mall and GB Mukherji's twinning of two scenes in the life of a hanging pot on an Indian street.

See [www.PhotoChallenge.com.au](http://www.PhotoChallenge.com.au) for all finalists.

► **Untitled**  
By Nicholas Fantini





► **FIRST RUNNER-UP**  
**Allium sativum**  
By Norman Shapro





► **SECOND RUNNER-UP**  
Take off + Cityscape  
By Royce Holliday

▶ **RUNNER-UP**

**Make a wish**

By Susan Shanta



## TAKE THE NEXT PHOTO REVIEW CHALLENGE

### Wide open

Shooting at maximum aperture imposes a special discipline on the photographer. If you're shooting at, say, f/2.8, the depth of field is quite shallow and you need to pay close attention to the way you manage the in-focus zone. We'll be looking for images that not only use shallow depth of field for emphasis, but which create a dynamic relationship between the in- and out-of-focus parts of the picture. So set that favourite lens of yours on its maximum aperture and show us what you can do.

▶ Please review the rules and email your entries to [photochallenge@photoreview.com.au](mailto:photochallenge@photoreview.com.au). Deadline for entries is **28 August 2018**, winner will be selected 14 September 2018 and the winning pictures will be published in our Dec-Feb 2018-2019 edition.



Prize for this challenge is a Think Tank Retrospective Leather 5 – Pinestone bag. It's a small, stylish shoulder bag with space for a CSC or DSLR camera, up to 3 lenses and an 8-inch tablet. RRP \$375.

#### ▶ Here are the rules

To enter the challenge all you have to do is send us your best image (we'll consider up to three images per photographer).

- 1) Entries should only be new images that have been taken in response to the set challenge.
- 2) This isn't a photo manipulation contest, so minimal post-capture processing is a given. Sharpening, colour correction and so forth are fine, but adding extra layers isn't.
- 3) Supply images as jpegs at minimum 200mm on the longest side, at 300 DPI.
- 4) Submit all images to [photochallenge@photoreview.com.au](mailto:photochallenge@photoreview.com.au)
- 5) Please put your caption(s) in the File Info (metadata area) of your image(s), or with the accompanying message. When saving your images, please change the file name so that it incorporates your first initial and last name and the challenge you're entering (eg, MyName\_chall\_wideopen.jpg).
- 6) All photographers retain copyright to their submitted image(s). *Photo Review* may publish submitted image(s) in the magazine, mag app, and website.



## Print your Photographs

Rita put her large three framed triptych sets on the table arriving at the last Focused Lens mentoring program in a series and proclaimed that printing your work is the most important thing she had learnt. What a valuable lesson for such a talented photographer. They were stunning.

I have been asking my classes since I started teaching photography to produce physical prints and actually products. Students have produced countless gorgeous calendars, books, framed prints and even more loose prints in their learning journey. .

Some of us older photographers would say it's not a photograph until you print it. A left over from a time when it was a transparency, a negative or a contact sheet if it wasn't printed. Times changed and so did the definition, but there has always been something very magical about a photographic print.

There are so many reasons why printing your work is so valuable. Here are a few:

1. Printing your photography forces you to resolve your work. Finish it.
2. Prints become their own reward for your hard efforts.
3. Prints show others you are serious about your work and will shift their opinions about you and your camera.
4. Printing forces you to take control and learn to use a consistent work-flow of sound colour management practices.
5. Prints are easier to critique and consume. They make long term critique easier. You can blue tac them to your wall and live with your work every day. Sometimes it takes me months to decide if the print is worthy of sharing with the world, or ripping up and binning it.
6. Printing is fun.
7. Prints can be an archival storage system. Who in your future will look through your files? Who will look through your prints? Consider them as a legacy for your family and museums perhaps.
8. Prints make it easy to share and give others your work.
9. A finished and framed archival photograph is the ultimate final product. It shows you and others what is possible.

I can't say it loud enough or forcefully enough or too many times. Print your photographs. Make the effort. Finish them. .

Sign up for Len's daily inspirations at his website now.

*Len Metcalf*  
daily inspirations  
<http://lenmetcalf.com>



## Photograph Tasmania with Len

Len is offering a photography workshop at Cradle Mountain and photography tour of The Tarkine in Tasmania. The workshop concentrates on improving your photography with a mix of shoots and classroom sessions. What better place than to reinvigorate your photography.

The Tarkine Photography Tour concentrates on shooting at every possible moment, from the magnificent Tarkine coast to lush green rainforests and wild rivers. Some will do both back to back and enjoy immersing themselves in an encouraging, inspiring and creative environment for two full weeks, while others will just join in with one of these amazing offerings. Len will pick you up and return you to Launceston.

September 2018 - Details Online

## South West Rocks Abstract Workshop

A five day workshop exploring abstract creative photography. Explore abstraction, blurs, textures, movement and seascapes. From abstract realism through to the gentle and emotive works of intentional blurring, all photographic styles are welcome.

Abstract composition and technique covered in lessons and presentations showing you how to create your own stunning works of photographic art. Learning activities and shoots are intertwined into a magnificent week of growth and development in this stunning coastal paradise.

In the following week you could join Len on small group tour of the area. An all inclusive week of luxury immersion in photography. Many clients stay for both weeks.

July 2018 - Selling Fast

## Blue Mts Black & White Workshop

Spend a week with Len Metcalf and learn how to shoot stunning black and white images. Over a week immerse yourself in the stunning Blue Mountains with a master black and white photographer in a mix of instructional classroom sessions and practical photographic shoots.

November 2018 - Len's most popular course

## Nude Photography Workshop

A five day workshop exploring the human figure. Learn how to create inspiring fine art photographs of the naked figure. This workshop is an annual event. It is run in the Blue Mountains.

December 2018 - Details Online



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Old and new: from the latest phone photography apps to tales from the frontiers of wet plate collodion technology.



## Truckography

► [www.bit.ly/pr76ne1](http://www.bit.ly/pr76ne1)

Kurt Moser is an Austrian photographer with an intense desire to document the Dolomite Mountains using a vintage Russian military truck – which he's converted into a giant camera. Using the ambrotype process, each of his glass plate images is 1.2 metres tall and completely and utterly unique. Crazy, but in a good way.



## Fake or not?

► [www.bit.ly/pr76ne2](http://www.bit.ly/pr76ne2)

Ever wished you could play detective and discover if the latest Internet meme picture is the real thing or a fake? This article from the ScienceAlert website offers a quick overview of an intriguing set of tools for fake-checking images. It was devised by computer scientist Neal Krawetz and is freely available via his site at [www.FotoForensics.com](http://www.FotoForensics.com).



## HDR wizardry

► [www.bit.ly/pr76ne3](http://www.bit.ly/pr76ne3)

Apple app Pro HDR X has been around since, well since you could get an app for an iPhone. In its latest iteration the app generates an HDR image from three separate full resolution images, either captured on your iPhone or imported from a DSLR (up to 24 megapixels). Naturally it has all manner of useful bells and whistles too. It's priced at US\$1.99.



## Swipe away

► [www.bit.ly/pr76ne4](http://www.bit.ly/pr76ne4)

Annoying telephone wires, distracting blemishes, badly positioned street signs... wouldn't it be great if you could just brush them out of your phone pictures with a touch or two? TouchRetouch 4.0 (available for both iPhone and Android) promises to make tidying up messy reality trivially easy. It costs US\$2.59 for Android or US\$1.99 for iPhone.



## Transcriber's friend

► [www.bit.ly/pr76ne5](http://www.bit.ly/pr76ne5)

Every issue of *Photo Review* entails at least a couple of interviews and to transcribe them we love the free online tool called oTranscribe. You upload your recording, pop on your headphones and start playing, pausing and typing. Playback speed can be slowed or accelerated and as you type into the text window, your work is saved every few seconds so you won't lose any. Highly recommended.



## Wet plate rules ok

► [www.bit.ly/pr76ne6](http://www.bit.ly/pr76ne6)

Photographer Clayton Hairs (profiled in this issue) is a budding practitioner of wet plate collodion photography – and he's not alone. Moderncollodion.com's 2018 Wet Plate Competition attracted over 200 entries from 75 photographers in 19 different countries. As the gallery of winners confirms, this 160+ year old process isn't about to disappear anytime soon.

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