



The Newsletter of E.J. Peiker - Nature and Travel Photography

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Welcome to the 17th year of the quarterly newsletter from E.J. Peiker, Nature & Travel Photography and www.EJPhoto.com. In this quarterly publication, I share with fellow photographers my photographic experiences, photo equipment reviews, photo and processing tips, and industry news. I also inform subscribers about upcoming workshops and products that I offer. All content is copyrighted by E.J. Peiker and may not be reproduced but it is permitted to forward this newsletter in its entirety only. If you would like to be added to the mailing list, unsubscribe, or access back issues, please visit:

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E.J. PEIKER - NATURE & TRAVEL PHOTOGRAPHY

Cabo de Sao Vicente - Portugal (a7R III, 124-70mm)

Summer Travels

The day after the sun reached its highest point in the northern hemisphere, we were off on a short little vacation to the southern part of the Central California Coast. Since California's Pacific Coast Highway, or Highway 1 was still closed (it has recently reopened) right in the middle of Big Sur, for the last year or so, one needed to chose whether to visit the northern part of the central coast or the southern part unless one wanted a 5 hour detour. We flew into Santa Barbara and worked our way up the coast right to where the highway was closed in a rental upgrade to a hard top convertible BMW M4 that was a blast to drive. Along the way, there were numerous stops that provided some great coastal photography despite the constant June gloom that can affect the area where it stays cloudy or foggy much of the day right on the coast even though being completely clear just a couple of miles inland. Stops included hidden gems like Gorgeous Beach and the much more popular Pismo Beach area as well as San Simeon Bay which was filled with Elephant Seals shedding. The San Luis Obispo area was also fogged in much of the time but still allowed for some nice photos at Montano del Oro State Park and points north. Overall it was an enjoyable time but to truly photograph this area in its best light, mid fall through early spring would be a better time. Photos from the trip can be viewed here:

Big Sur Ragged Point - http://www.ejphoto.com/big_sur_page.htm#Ragged_Point

San Luis Obispo Area - http://www.ejphoto.com/san_luis_obispo_page.htm

San Simeon Area - http://www.ejphoto.com/san_simeon_page.htm

Elephant Seals - http://www.ejphoto.com/northern_elephant_seal_page.htm



Elephant Seal - San Simeon, California (a7R III, 100-400mm)

In July I made my annual trip to photograph one of the world's great cities. This year's destination was Helsinki, Finland. I had not previously been in Helsinki and chose the location due to its great 19th century architecture and because I had never been to Finland before - one of only two "western" European countries that I hadn't visited. Helsinki is a very vibrant northern city that doesn't really get fully dark this time of year due to its 60 degrees north latitude. While there I averaged 10 miles a day on foot, much of it in late night and very early morning hours to get shots to my liking. I also took a boat tour of the archipelago of islands that are part of the greater Helsinki area. Overall this was a very enjoyable trip and I came away with some nice photos. Photos here: http://www.ejphoto.com/finland_page.htm



Helsinki, Finland (a7R III, 28-75mm)

Travels for a non-photographic reason brought me to Saint Louis, Missouri in late August. I used this as an opportunity to photograph in the newly minted Gateway Arch National Park in early morning which was only about a 10 minute walk from my hotel. It was a glorious morning with fantastic pre-dawn through post-dawn light including some great clouds and early morning color. I also stayed a few days extra and drove nearly 4 hours to northern Illinois Matthiessen State Park and Starved Rock State Park. I had seen some beautiful photographs of waterfalls in the canyons of these parks. Unfortunately, despite recent heavy rain, the drought conditions early in the summer made the ground so dry that it just absorbed all of the water without letting it flow into the streams that create the waterfalls. I hiked nearly 10 miles on each of three days in very hot and humid conditions in search of photographs and got a few nice shots but nothing like what I was hoping for. It is definitely an area with tons of potential if the conditions are right. Check out my Gateway Arch National Park and Illinois galleries here:

http://www.ejphoto.com/gateway_arch_page.htm

http://www.ejphoto.com/illinois_page.htm



Gateway Arch National Park, Missouri (a7R III, 16-35mm)

I closed out the summer photography season in Portugal. This was the last country in Western Europe that I had not been in. A friend that I met online 17 years ago and have maintained communications with over the years was an immense help in figuring out where to visit and giving me advice from the early planning stages over a year ago through the conclusion of my trip. Intense preparation for this trip was crucial since I was doing it alone, in a country I hadn't been in with a language that I don't know. We even met, finally, and spent an afternoon shooting together and had a nice dinner in the resort town of Cascais. Portugal has an incredible coast with almost endless photographic opportunities of rugged coast line, sea stacks, sea arches, and beautiful beaches. It was an incredible shoot. I worked the southern part of the rugged west coast from north of Cabo Roca, the westernmost point in continental Europe near Lisbon to Ponte de Sao Vicente, the southwestern-most point of Europe. I also worked the southern coast between Lagos and Faro with it's almost infinite number of sea arches and stacks. I also had the opportunity to shoot a couple of the major tourist attractions in Lisbon the morning of my early afternoon flight back to the USA. Portugal is a fantastic photographic destination, one that I very much want to return to. A new section with my Portugal photos will be added by early October:

http://www.ejphoto.com/portugal_page.htm

The Full Frame Mirrorless Floodgates Have Opened and Other Photokina News

In the pre-Photokina new product announcement frenzy, both Nikon and Canon finally entered the realm of the full frame (135 format) mirrorless camera. It is important to note that these are the first generation products from Nikon and Canon while Sony is on its 4th generation. None of the new cameras were shipping in volume at the time of this writing but I thought it might be beneficial to do a quick comparison of specs on items that readers of this newsletter are most likely to be interested in. They are compared in the table below arranged by price as of September 5, 2018 from lowest on to highest:

Specification	Sony a7 III	Nikon Z6	Canon EOS R	Sony a7R III	Nikon Z7	Sony a9
Price	\$1998	\$2147	\$2299	\$2998	\$3396	\$4098
Resolution	24mp	24mp	30mp	42mp	45mp	24mp
ISO Range	50-204K	50-204K	50-102K	50-102K	64-102K	50-204K
AA Filter	Y	Y	Y	N	N	N
FPS w/o AF/LV	10	12	8	11	9	20
FPS w AF/LV	10	12	5	9	5.5	20
Shutter Life	200k	200K	150k	500k	200K	500k
AF points	693	273	5655	399	493	693
AF type	PDAF/CDAF	PDAF/CDAF	DPAF/CDAF	PDAF/CDAF	PDAF/CDAF	PDAF/CDAF
AF Ev @f/2.8	-3	-3	-3.5	-3	-3	-3
Storage	2 x SD	1 x XQD	1 x SD	2 x SD	1 x XQD	2 x SD
Buffer 14bit	89	TBD	47	81	17	181
Stabilization	Lens & IBIS	IBIS	Lens Only	Lens & IBIS	IBIS	Lens & IBIS
Focus Stack	N	Y	N	N	Y	N
AF Lens Range	14-400mm	24-70mm	24-105mm	14-400mm	24-70mm	14-400mm
Max Video	4K/30P 8 bit	4K30P 10b ext	4K30P 10b ext	4K/30P 8 bit	4K30P 10b ext	4K/30P 8 bit
4K Video Crop	None	None	1.6x	None	None	None
CIPA Battery	610	330	350	610	310	650
Weight	23.0 oz	23.7 oz	23.3 oz	23.2 oz	23.8 oz	23.7 oz

Basically we have two 24 megapixel entry level models in the Sony a7 III and the Nikon Z6. With the exception of being able to output 4K video at 10 bits to an external recorder, the a7 III beats the Z6 across the board. Add to that the large number of native mount lenses available compared to needing to adapt lenses to get a decent range, which is generally suboptimal, the clear choice if just starting out without owning any legacy lenses is the a7 III. The a7 III is probably the best value in a full frame mirrorless camera on the market.

At the high resolution end we have the 42 megapixel a7R III and the 45 megapixel Z7. Based on comparisons to the D850 which uses the same sensor as the Z7, there will be essentially no difference in image quality. The a7R III enjoys an advantage in virtually every specification other than megapixels and external 4K video capability. It is important not to get distracted by the headline frame per second (FPS) spec for these cameras but look at the spec for FPS with both AF and real time live view active. It's almost pointless to have super high frame rates if you can't follow and focus on the action in the viewfinder. In this regard the Nikon Z7 falls flat on its face at just 5.5 FPS while the a7R III maintains 9 FPS. The Sony system maintains the same native mount lens advantage as it does for the entry level category. If I were a Nikon D850 shooter, a Z7 with an adapter would make a perfect backup camera but it's more expensive than a D850 even though being a lesser camera...

In the middle of the 24 megapixel and 42+ megapixel range we have the 30 megapixel Canon EOS R which is a bit underwhelming across the board in this initial Canon full frame mirrorless offering. The sensor is the dated and mediocre EOS 5D Mk IV sensor and the rest of the camera's capabilities are more like the entry level EOS 6D Mk II. It really doesn't stand out at anything except for Canon's superb Dual Pixel AF technology. While Canon specifies a -6 Ev for AF on this body, the fine print reveals that this is only for an f/1.2 lens. Converting that to f/2.8 reveals a system is not materially better than the

others in very low light; but real world testing is needed since Canon uses a different AF technology than the others. Canon is the only full frame mirrorless camera manufacturer that does not have sensor based stabilization. The other cameras in this roundup can all stabilize any lens, even old manual focus lenses attached via an adapter, but Canon's camera cannot. Like Nikon, the native mount lens range will be very limited for a few years. It must be noted that Canon is clearly marketing this camera to people already invested in Canon and I can see it, along with an adapter as a credible backup camera to a 5D Mk IV.



Praia de Marinhas, Portugal (a7R III, 16-35mm)

Finally, there is the Sony a9 which is really a different class of camera intended to compete against the D5 and EOS 1Dx Mk II. It is a lower resolution very high speed body that was included only for completeness.

While the new full frame mirrorless cameras from Nikon and Canon garnered most of the headlines in the weeks leading up to Photokina this year, there are many other new product introductions, some very exciting. Here's a quick synopsis:

Canon - In addition to the new EOS R, Canon introduced 7 new lenses. The most unique and interesting is a 28-70 f/2 for the EOS R system. It is the fastest standard range full frame zoom on the market. Other EOS R lenses include a 24-105mm f/4, 50mm f/1.2, and what I consider to be a useless focal length for Macro, a 35mm f/1.8 macro. The APS-C EOS M series gets a new 32mm f/1.4 fast standard lens. The traditional EOS EF mount gets new variations of the 400 f/2.8 and 600 f/4 super-telephoto lenses. Both use a completely redesigned optical formula that moves primary lens elements closer to the camera mount making these lenses approximately 2lb lighter and resulting in better balance.

Fujifilm - Fuji has arguably been the busiest company in this Photokina season. While they don't generate the almost crazed fanfare that Canon, Nikon and Sony do, they introduced a lot of new and exciting products. First, a few weeks before Photokina, Fuji introduced the X-T3, an update to the highly regarded and well handling X-Trans line of APS-C cameras. A new 26 megapixel sensor that is apparently sourced from Samsung as well as enhanced video features are added but the camera still lacks in-body stabilization. Fuji's lens line is by far the most complete and optically excellent among all APS-C cameras. At Photokina, Fujifilm introduced two new medium format cameras, first the GFX-50R which is a smaller lighter rangefinder style version of the GFX-50s designed primarily for street photography. At the very high end, they announced the development of the first cropped medium format 100 megapixel camera. The body is a full sized mirrorless body with built in vertical grip that houses the latest technology 100 megapixel sensor from Sony. It will be the first medium format camera with in-body image stabilization (IBIS), 4K video and phase detect on sensor AF. Fuji also added significantly to their lens lineup for the GFX system with the introduction of a 50mm f/3.5 (approx 40mm f/2.8 full frame equivalent), a 100-200mm f/4 (approx 80-160mm f/3.2 FF equivalent) and a 45-100mm f/4 compact zoom. Once shipping, the Fuji medium format system will have all focal lengths from a full frame equivalent of 18mm to 277mm available which is a very complete range in a very short time for medium format. Finally, Fuji and Phase One announced jointly that CaptureOne will now support Fuji GFX cameras. This is the first time that CaptureOne has supported medium format cameras other than their own. There is even a stripped down free version for Fujifilm owners.

Hasselblad - Three new lenses were announced for the X1D cropped medium format system. These include 65mm f/2.8, 80mm, f/1.9 and 135mm f/2.8 as well as a 1.7x teleconverter for the 135mm lens. Similar to the Fuji medium format offer, you have to multiply the focal length by about 0.8 to get approximate 135 format full frame focal length equivalents and drop the aperture by about 2/3 of a stop to get the equivalent depth of field.

Irix - Specialty lens manufacturer Irix has announced a 150mm f/2.8 1:1 Macro lens to be available in Nikon F, Canon EF, and Pentax K mounts. I have previously used the Irix 11mm and 15mm lenses and own the 11mm lens and have found them to be credible performers.

Nikon - The Z cameras are the headline but there are also 3 new lenses for the Z-mount, all a bit lackluster. There is a 24-70 f/4, 50mm f/1.8 and 35mm f/1.8. Development of a manual focus 58mm f/0.95 was also announced. Nikon also introduced what is essentially nothing more than a rebadging of the D3400 into the D3500 at the lowest end of the DSLR market. The most exciting Nikon announcement of the Photokina season is the announcement of a 500mm f/5.6 prime that weighs only 3.2lb and is only 237mm long and has exceptional MTF curves.

Panasonic - Panasonic announced the development of two full frame cameras that utilize the Leica L-mount - the S1 and S1R at 24 and 47 megapixels respectively. Along with this they also announced a partnership with Sigma to develop L-mount lenses. In a shift from recent high end Panasonic offerings (all in the micro 4/3 mount), these cameras are targeted more at photographers than videographers. The smart thing for Panasonic is that even though this is their first foray into full frame imaging, the cameras will have a full line of lenses available the day they ship albeit hyper expensive Leica L lenses. Even though the camera has only been shown in mock-up form, it is being well received for its DSLR like ergonomics.

Phase One - Phase One significantly upgraded its digital backs to the new IQ4 "Infinity" platform. These add a number of modern features such as focus peaking, dual card slots including XQD, better touch capabilities on the screen and much faster and more efficient processing. The megapixel count has been increased to 151 megapixels.

Sigma - Sigma always comes to Photokina with a slew of announcements. This year they introduced a 28mm f/1.4 Art to round out their full line of fast primes, a 40mm f/1.4 Art which is very close to the magnification that the human eye sees, a much needed update of their 70-200mm f/2.8 lens now in the Sport line, and a 60-600mm f/4.5-6.3 Sport 10x zoom which I feel, unless Sigma figured out new optical physics, should probably be in the Contemporary line rather than the Sport line. Additionally an APS-C E-mount 56mm f/1.4 lens was introduced.

Sony – A 24mm f/1.4 GM lens was added to the top of the line Sony GM lens line. It is relatively compact for such a lens and if the astigmatism is good will probably make it into the bags of many low light and astro photographers. An additional 12 FE lenses were announced but without specific detail.

Tamron - An update to the highly regarded 15-30 f/2.8 wide angle zoom was introduced with upgraded lens elements and coatings. The first generation was outstanding and I expect this to be even better, especially on high megapixel sensors cameras like the D800. Additionally, Tamron released an economical 17-35 f/2.84 variable aperture stabilized lens.

Voigtlander – The niche lens maker, Cosina, has added another FE mount specialty lens to their premium lens line - a 21mm f/3.5. Voigtlander lenses are manual focus, very small, and built like a tank! Most, not, all are very good optically. This rounds out the Voigtlander ultra wide lens line for Sony FE with 10mm, 12mm, 15mm, and 21mm models. I reviewed the first three lenses in the Voigtlander ultrawide line here:

<http://www.ejphoto.com/Quack%20PDF/Voigtlander%20Trio.pdf>

Zeiss – Zeiss has introduced a new entry in their Batis line of Sony FE lenses, a 40mm f/2. This line has proven to be an

outstanding line of lightweight modern autofocus primes for Sony users. I would

not be surprised to see announcements of all of the Batis and Loxia lenses for Nikon Z and Canon EOS R in the near future as it is a relatively simple redesign to account for the slightly different flange distances once the new mounts have been reverse engineered.



Praia da Ursa, Portugal (a7r III, 24-70mm)

The Future Of Cameras

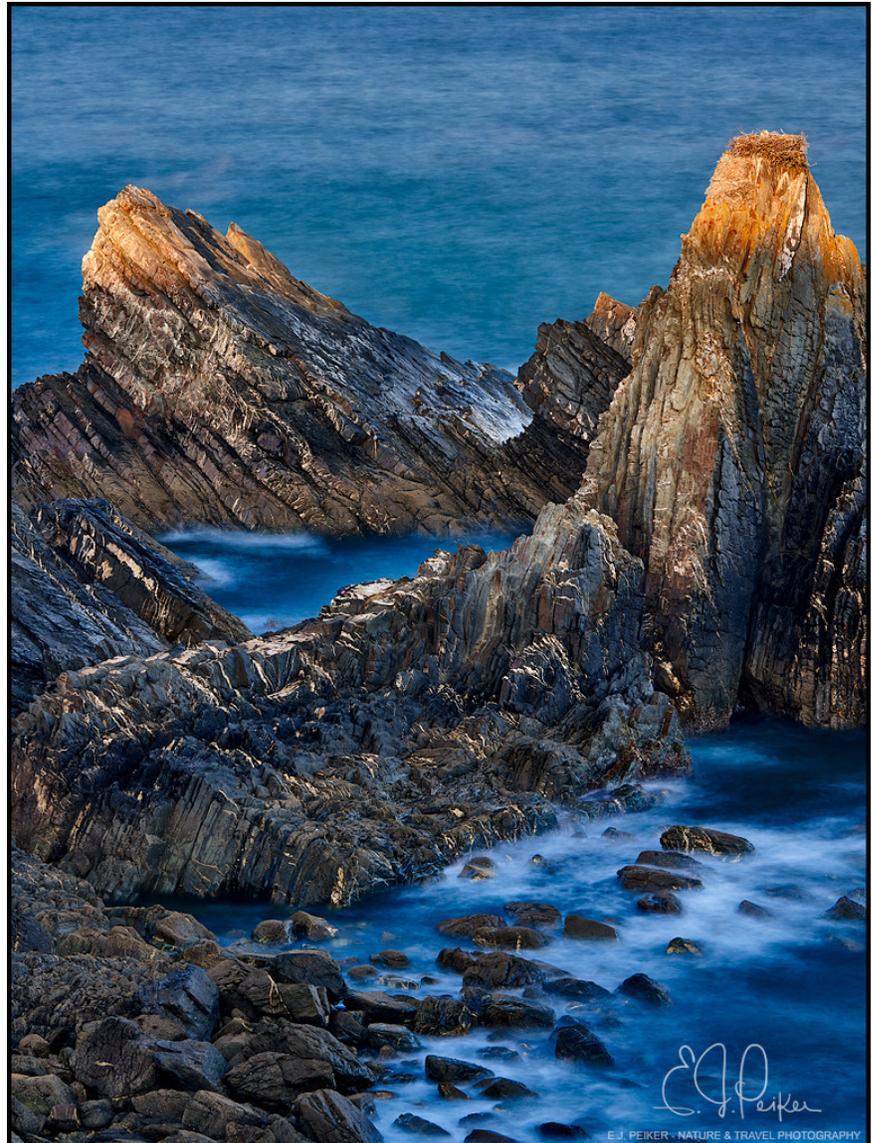
As I have done fairly successfully in the past, it's time for a bit of prognostication on what to expect out of new camera models in the future. Digital cameras are no longer in their infancy and feature sets have started to mature but there are still a number of things that will happen to improve our life as photographers. I have broken it down into near term, medium term, and long term. Near term represents the next iteration of cameras from the majority of manufacturers. This is a period approximating the next two years. Medium term is defined as more than 2 years and less than 5 years, and long term is defined as more than 5 years. I will focus primarily on still photography.

Near Term:

- A bigger and bigger percentage of cameras will move towards a mirrorless design including some flagship cameras. It is simply easier, cheaper, and requires less manufacturing complexity to make a mirrorless camera without all of the complications and sophisticated mechanics required for a mirror box and off sensor AF system. In addition to being a thinner camera that allows adaptation of many different makes of lenses, mirrorless cameras achieve focus on the sensor plane eliminating the need for complex methods to calibrate autofocus.

- Focus stacking will come to most prosumer and professional cameras. Some cameras including the Fujifilm products, Olympus products, the Nikon D850, and the Phase One XF already have this. As it stands today, with the exception of the Phase One system, the focus stacking capabilities are very rudimentary and do not guarantee that there will be no out of focus areas in the photo. In the near future, a user will be able to specify the near focus point and far focus point and the camera will calculate how many frames and how far to drive the lens focus mechanism to insure through and through sharpness rather than counting on the photographer to assign an arbitrary step distance and number of frames. The Phase One XF already does this for prime lenses but not zoom lenses.

- Vibration shutter mode will find its way into mainstream cameras. Today this is only available in very high end cameras costing tens of thousands of dollars. This is a mode where the camera's motion



Azenha do Mar, Portugal (a7R III, 100-400mm)

sensors determine when the camera/lens combination has settled to a vibration level that is below the threshold for pixel to pixel blurring ensuring sharper photos when mounted on a tripod.

- Live View composite display is a feature where one can see the histogram filling up from left to right as the exposure proceeds. This is already available in some Olympus cameras and is a fantastic feature for long exposure photography. Think of it as watching a cup fill up with water and then turning the water off just before the cup spills over. This allows a photographer to do the same thing, trigger the shutter and then release the shutter just before the histogram spills over the right side.

- Coupled with the feature above, it is simple to implement an Expose To The Right shutter speed mode. With such a mode the photographer trips the shutter and the camera automatically stops the exposure just before the histogram spills over. This mode will be even more useful if cameras adopt RAW histograms (see medium term).

- EVF technology will continue to advance. Today's EVFs are limited to about 8 stops of dynamic range. I expect this to improve to 10 stops or so over the next two years while the resolution will approach the limits of what our eyes can detect. This will give us a more lifelike viewfinder but there will still be a long way to go in dynamic range before they come close to what we can see in an optical viewfinder.

- Connectivity will continue to evolve. Today, the digital camera is still nowhere near what it needs to be. Our cell phones run circles around our cameras. The camera manufacturers have, for the time being, tried to link cameras to phones to provide better connectivity but in general, this has been a frustrating experience for users and if somebody wants to post a picture to social media or send one to a friend, they just take it with their cell phone. If cameras became much more connected without having to use the phone as an intermediary, the manufacturers might actually start selling more cameras. Some manufacturer will start to figure this out in the next two years and others will follow.



Alfama, Lisbon - Portugal (a7R III, 24-70mm)

- Megapixel counts will inevitably creep up again even though there is some debate in the industry on this front. An argument can be made that increasing megapixel counts while retaining the APS-C and full frame sensor sizes makes little sense since you are just driving the onset of recording lens diffraction to faster and faster apertures so the 24/45 megapixel level for these two formats is as high as one ever needs to go in a Bayer sensor world. But I predict that due to marketing bigger numbers often driving sales, we will begin to exceed 50 megapixels for full frame sensors and 30 megapixels for APS-C sensors. Without bigger numbers, who is going to replace a nearly perfect D850 body? If one simply scales the newest 44x33mm 100 megapixel medium format sensors available from Sony, the next generation of Sony and Nikon full frame cameras should have 60 megapixels. In the ultra high end market, 100 megapixels for cropped medium format, and 150 megapixels for full frame medium format will become available as early as the end of 2018. The full frame 645 150 megapixel Phase One system and 100 megapixel Fuji GFX have already been announced and I expect Hasselblad to introduce 100megapixel cropped/150 megapixel full frame medium format systems in the near future. These sensors are already in production and in use in aerial surveillance applications.



Cabo Sardao, Portugal (a7R III, 24-70mm)

Medium Term:

- User configurable menus should become the standard, at least for professional cameras. This is a feature where a photographer can build their own menu structure based on all of the available functions in an online app. The app then checks the menu's integrity, alerts you to anything that has not been added and then lets you upload the menu structure to the camera.

- RAW histograms should be adopted on higher end cameras. Today the histogram is based on an embedded JPEG which is a small compressed 8 bit image that has all sorts of image processing applied to it and does not accurately reflect what the camera's imaging sensor is actually recording. In many cases, this tricks photographers into slightly to moderately underexposing their RAW files and leaving dynamic range on the table.

- Prosumer and above cameras will start to have 16 bit per color output. Engineering dynamic range will creep up on 15 stops and actual image dynamic range will venture into the 13.5 stop range. This is due to not only 16 bit imaging but

also the proliferation of technologies such as back-side illumination (BSI) which results in larger pixel wells and stacked sensor technology which is somewhat related to BSI.

- We will start to see global shutter sensors. Today's sensors, when used with electronic shutter, scan the image a line at a time from top to bottom. Even if you are taking a photo at 1/8000 sec, the actual exposure might take 1/15 sec to scan from top to bottom. While every line is getting a 1/8000 sec exposure, the moment in time that the top of the photo is captured can be quite different from the moment in time that the bottom of the photo is captured due to the scan time. With global shutter sensor technology, the entire sensor is captured at the same instant in time. This will eliminate the rolling shutter phenomenon that can distort moving subjects in both video and in electronic shutter mode. Today we use a shutter curtain to eliminate this in still photos but this means there is motion inside the camera which can add vibration to the system which reduces sharpness in photos, especially on very high megapixel sensors.

- Quantitative Computational imaging will begin to play a bigger and bigger role. Want to have good depth of field on your subject but totally blur the background? Computational imaging can make this happen. Want to correct for small aperture diffraction? Computational imaging can do this and automatically correct the RAW file for diffraction based on the aperture the image was taken with.



Azenhas do Mar, Portugal (a7R III, 24-70mm)

- Direct connectivity of cameras to the whole connected world will become the norm by the end of this 5 year period.

- EVFs will enter the 15 stop or so realm meaning we will see the scene in the viewfinder that very closely resembles the actual file.

- Pixel counts will peak at 100 megapixels in this time frame for full frame 35mm sensors, 50 megapixels for APS-C sensors, 150 megapixels for cropped medium format and over 200 megapixels for full frame medium format.

Long Term:

- At some point we will replace the Bayer sensor that only records a single Red, Green, or Blue pixel at every pixel site and then use computer algorithms to "guess" at what the correct color for each pixel should be. Sigma and others tried this with Foveon technology in the past but the semiconductor technologies to make this really great simply have not been available. To capture every color at every pixel, Foveon initially used a pixel with multiple filters that required different levels of gain for different colors to get a proper color representation. This results in different noise levels for different colors and other problems but does increase the perceived resolution. Today some cameras have a pixel shift mode that moves the sensor so that all three color channels are recorded for each pixel and then uses computer programs to reconstruct the image. The problem with this is that it doesn't work very well with moving subjects. Future technologies will allow every pixel to capture every color without any computer algorithms to put all of the color channels together. We are likely 8 to 10 years away from this becoming mainstream. This will open the door to much higher perceived resolution without increasing the megapixel count and hopefully also open up vastly improved dynamic range coming ever closer to human vision.

Over the years, dating all the way back to 2002, most predictions that I have made have come true despite taking some arrows for my predictions, the most notable one being that I predicted EVF's would become a major part of the camera industry and receiving literally dozens of disagreements and even hate mail. These are just my predictions for the coming years. I fully expect most, if not all to come true. The pace of innovation has definitely started to level off in the digital camera industry and development has slowed as well due to much lower sales than there were a decade ago but there are still many innovations that are needed to make the photographic experience better and to fully mature digital camera capabilities.



Palouse Falls - Washington (Phase One XF-IQ3100, 28mm)

Tamron 28-75 f/2.8 Di III RXD Review

In May of 2018, Tamron became the first of the major third party lens manufacturers to ship a standard autofocus f/2.8 zoom lens with 100% compatibility to all functions for the Sony full frame E-mount system used in the a7 and a9 series of cameras. Up to this point, the only autofocus options other than the Sony 24-70mm f/2.8GM, Sony-Zeiss 24-70mm f/4 and budget oriented Sony 28-70mm f/3.5-5.6 lenses were to mount Canon or Sigma standard zooms via an adapter which increases size and limits functionality at least to some extent. While the Tamron lens does not cover the wide-angle end down to 24mm, opting to only go to 28mm, it does expand the long end of the zoom range to 75mm. It retains f/2.8 throughout the zoom range. A major selling point of this lens is its compactness being the size of the Sony-Zeiss f/4 variant in a true f/2.8 lens and weighing in at just 1.2lb while the Sony f/2.8 lens weighs in at 2lb. The combination of smaller size, lower weight and reported excellent optical qualities quickly shot it to a top selling position for standard zooms in the Sony full frame mirrorless eco system. To top things off, this lens can be purchased for \$800 while the Sony 24-70mm GM lens, the only other f/2.8 FE standard zoom, costs a whopping \$2200 so if this lens even performs relatively well, it could be a boon for photographers that don't want to give up the low light performance of an f/2.8 but find the cash outlay of the Sony lens prohibitive.



I had planned a Helsinki city shoot in late July which would involve walking as much as 10 miles a day for nearly a week while carrying my gear over the shoulder in a messenger bag and flying with carry-on luggage only. Due to the weight limitations that this type of travel involves, I decided to rent the Tamron 28-75mm and put it through its paces. I ordered it to arrive a couple of days early so that I could do some optical tests prior to leaving and if it didn't provide adequate image quality, I still had the option to increase my packed weight and take my 24-70 f/2.8GM lens instead. When the lens arrived, despite having read many reviews, I was surprised by the small size and light weight of the lens. It truly is much closer to the 24-70 f/4 in size despite being an f/2.8 lens. It even uses the same economical 67mm filter thread, compared to the much larger and more expensive 82mm filters. A comparison of the Sony 24-70mm f/2.8GM and the Tamron 28-75mm f/2.8 mounted on the Sony a7R III is illustrated below, courtesy of www.camerasize.com. It is a significantly smaller package while not giving up the low light capability of an f/2.8 zoom :



One thing that is noticeable right away in the comparison above is that Tamron has chosen to put the zoom ring out front and the focus ring in close to the camera which is opposite of all other Sony FE lenses. This is something that Nikon has recently started doing as well and have been getting lambasted for. It's just not a very natural way of working, especially when working with multiple lenses that aren't all the same. During my shoot in Helsinki, especially on the first two days, I would constantly try to zoom the lens and end up turning the focus ring. By the end of the trip it wasn't a problem but virtually every photographer I know, as well as many internet reviewers and bloggers, absolutely hate having the zoom ring in front of the focus ring. The picture also shows that there is no programmable button on the lens like there is on the Sony lens. I find the button as a great alternate way of initiating autofocus, especially when shooting moving subjects.

The build feels a bit "plastic" compared to the larger heavier lenses but it is high impact polycarbonate, the same material that many very good lenses on the market are made of, including some of my Nikkor lenses. The relatively cheap plastic lens hood did not mount very smoothly initially but it does its job. As time went on, it mounted much more smoothly. In looking at the lens, I suspect that I may have been the first or one of the first to rent this lens as there weren't even any wear marks on the metal lens mount - it seemed like a brand new out of the box lens. Initially, the lens also did not mount on the camera in a silky smooth manner but after a few mountings it began to break in and by the end of the trip it was no different from a native Sony lens. The lens does have what Tamron calls a "moisture resistant" build. I had great weather on my trip and did not put this to the test but the lens does seem to be well sealed with no obvious moisture entry points. Optically, the lens has 15 elements in 12 groups including several exotic glass elements and fluorite coatings, generally not the stuff of cheap lenses.

My testing of the lens before the trip was a pleasant surprise in most categories. At 28mm, the lens produces sharp images throughout the frame, even into the deep corners from f/5.6 on with a slight amount of sharpness fall-off in the corners at f/4 and a moderate amount of sharpness loss at f/2.8. The three times as expensive Sony 24-70 is better in the corners at f/2.8 but 28mm is also not at the extreme end of its zoom range. By f/5.6, the lenses were indistinguishable from a resolution standpoint. In the middle of the zoom range, at 50mm, both lenses produced similar results from a resolution standpoint and at 70mm, again, the Sony GM lens was better wide open in the corners but this difference disappeared by f/5.6. Chromatic aberration was a major surprise; the lens exhibited essentially none at any focal length. Where the lens disappointed the most in optical tests was in rectilinear distortion. The lens has a significant amount of barrel distortion at all focal lengths. Since my RAW converter of choice, Capture One Pro, does not yet have automatic lens corrections for this lens yet, any photo that requires straight horizontal and vertical lines requires a manual correction of this. While that isn't a major problem, it is an extra step in the workflow. Vignetting or darkening of the corners is also significant throughout the zoom range and is noticeable to f/8. This is likely a function of the very compact design that only has a 67mm front diameter. Both vignetting and barrel distortion are correctable but just barely, the sliders have to be extended to their extreme end to nullify them.

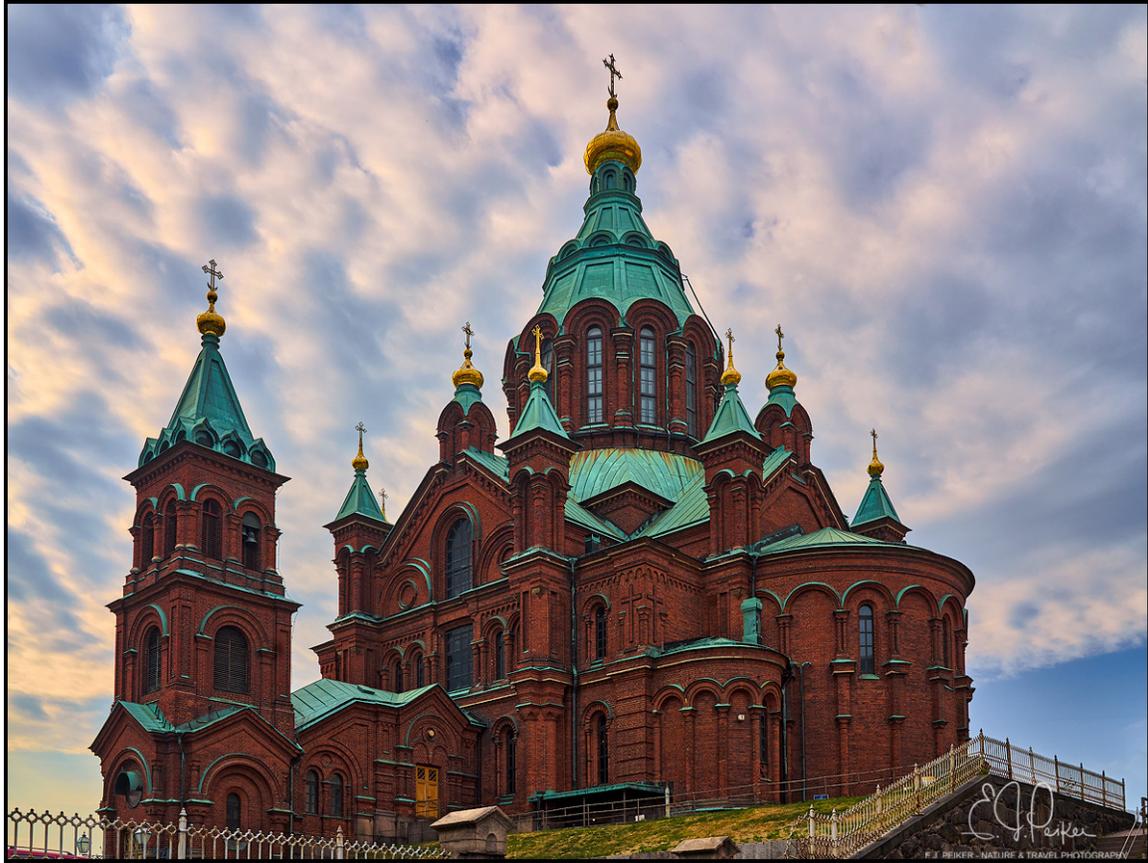


Having done the optical tests at home and determining that the lens was capable of professional level results but with an extra step or two in the post-processing flow due to not having automatic lens corrections in my RAW converter, I decided that this would be my primary standard lens for the trip to Helsinki, along with a relatively light 70-200mm f/4 and the best zoom lens I own, the Sony 16-35mm f/2.8 GM. I thought I would miss being able to zoom out to 24mm but that never really became an issue since I usually prefer the 16-35mm lens when going wide, even when I have my 24-70 GM lens with me. It's just a better lens than anything else on the market in a wide angle zoom lens. I did find the extra 5mm on the long end useful at times as it saved a couple of lens changes to the 70-200mm. My biggest "in the field" complaint about the Tamron lens was having the zoom ring in the "wrong" place - at least compared to every other zoom I own. I am pleased with the images that the lens provided including excellent resolution, microcontrast, no noticeable color cast or any other uncorrectable problem with the images.



In real world use, one thing that became immediately apparent was that the auto-focus capability of this lens is nowhere near what even a slower aperture Sony brand lens is capable of. The lens does not just instantly snap into focus like Sony lenses do on the Sony a7R III camera. It's a bit slower to drive focus and then there is a somewhat more back and forth hunting before settling on final focus confirmation. It's probably a fraction of a second, maybe a half second, but it is very noticeable, even in bright light. It is necessary to move the AF point to a relatively high contrast part of the scene to minimize focus hunting much more often than with any Sony lens. Tracking a moving subject is also nowhere near as good as with a Sony brand lens. I would not use this lens for any kind of action photography. But for still photography, landscapes, or cityscape photography it really is no problem. In low light, the lens focuses just as accurately as a Sony native lens but again it is significantly slower and often requires a higher contrast point for accurate focus acquisition.

In summary, the Tamron 28-75mm f/2.8 is a large aperture standard zoom capable of excellent image quality in a lightweight, compact and affordable package. While it is not as good for image quality when shooting wide open and it does not focus or track as quickly, given that it costs nearly 1/3 of the only other native f/2.8 Sony full-frame E mount lens, it is a great value and an excellent travel lens. The savings don't just stop with the lens since 67mm filters are much less expensive than 82mm filters. I certainly would not sell my Sony 24-70mm f/2.8GM and replace it with this lens but for just a \$50 rental for a week, when I need to go ultra light, I would not hesitate renting this lens again. If I needed an f/2.8 standard zoom but couldn't afford the very expensive Sony lens, again, this lens would find its way into my bag.



ProGrade Memory Cards and Reader Review

ProGrade is a new American company, founded by former Lexar executives, including one with experience at Sandisk dedicated to marketing very high quality flash memory cards and readers. Their initial products include professional grade UHS-II SD cards and CFast Cards. They have also demonstrated very high capacity CFexpress card, the next generation standard for high speed high capacity that is form-factor compatible with XQD cards. On the SD Card side they offer 200MB/s read and 80MB/s write cards in 64GB, 128GB, and 256GB capacities. These are marketed as V60 cards. They also offer an ultra high performance V90 line with 250MB/s sustained read rates and 200MB/s write rates. Both require UHS-II slots to reach these performance capabilities and are again offered at 64GB, 128GB, and 256GB capacity. On the CFast side, used by some Canon professional cameras, they offer 128GB, 256GB, and 512GB capacities with read speeds of 550MB/s and write



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speeds of 450MB/s. The CFexpress card prototypes are rated at incredible speeds of 1.4GB/s read and 1GB/s write speeds. There is the possibility that current cameras equipped with XQD slots, such as high end Nikon models, could use CFexpress cards with a firmware update by the camera manufacturers.

In addition to the cards, ProGrade offers a very high quality card reader that can read and write UHS-I/II SD cards and CFast cards. It is not compatible with traditional CF cards, XQD cards, or the future CFexpress cards. All of the memory cards come with a 3 year warranty and the card reader comes with a 2 year warranty.

A representative of ProGrade contacted me to see if I was interested in testing their cards in a professional photo environment. I agreed to test them with no agreement whatsoever to endorse them; just to use them and provide my thoughts. Since they do not make XQD cards and I don't have any CFast slotted cameras, they sent me their top speed V90 SD-XC UHS-II 64GB card and their reader. Upon

opening the box that they were shipped in, one immediately gets a feeling of quality. The packaging is attractive compared to what one normally finds in the memory card industry. The cards are made of what looks and feels like a high quality polymer and they are packaged in a small and attractive sleeve and plastic case. The reader is very nicely finished black plastic with a non slip base and LED activity lights for both the SD and CFast slots. Both a USB C 3.1 Gen 2 cable (compatible with Apple Thunderbolt 3 ports on modern MacBook Pros) and a USB 3 cable compatible with classic USB connectors are included.

On my recent trip to Finland, I used the ProGrade cards exclusively with no issues of any kind. This being my first full speed UHS-II reader, I was thrilled with the much faster download times of the cards to my computer. I found absolutely nothing to complain about with either product and only wish that ProGrade made XQD cards so that I could use my cameras with an XQD slot to their fullest extent. However, since they sent me the faster V90 SDXC cards, I never ran into any buffer limitations and found that the relatively slow buffer clearing of the Sony a7R III was faster with this card than it was with the Lexar UHS-II cards I had been using.



I ran some basic tests for read and write comparing a Sandisk UHS-I 64GB card (95MB/s rating), a Lexar 64GB UHS-II card (1000x rating - equivalent to 150MB/s), and a ProGrade 64GB V90 UHS-II card (250MB/s rating). I also tested the cards on a Lexar USB 3.0 reader and the ProGrade USB 3.1 Gen II reader. My test is a folder of 451 files that is 18.1GB in total size. The results can be seen in the table below:

Card	Pro Grade Reader (MM:SS)	Lexar Reader (MM:SS)
Sandisk 64GB UHS-I (95MB/s)	W= 5:31, R=3:14	W=5:31, R=3:16
Lexar 64GB UHS-II (150MB/s)	W=4:28, R=2:35	W=5:38, R=3:12
ProGrade 64GB UHS-II (250MB/s)	W=2:56, R=1:44	W=5:37, R=3:07

As can be seen from the data, the combination of a UHS-II reader and the faster card results in some pretty dramatic improvements in Write and Read speed. When using a UHS-I reader, there is no material difference in card speed as the reader is the rate limiter.

The next test was a full buffer clearing time test using the a7R III's UHS-II slot:

Card	Buffer Clearing Time
Sandisk 64GB UHS-I (95MB/s)	36.1s
Lexar 64GB UHS-II (150MB/s)	33.3s
ProGrade 64GB UHS-II (250MB/s)	22.9s

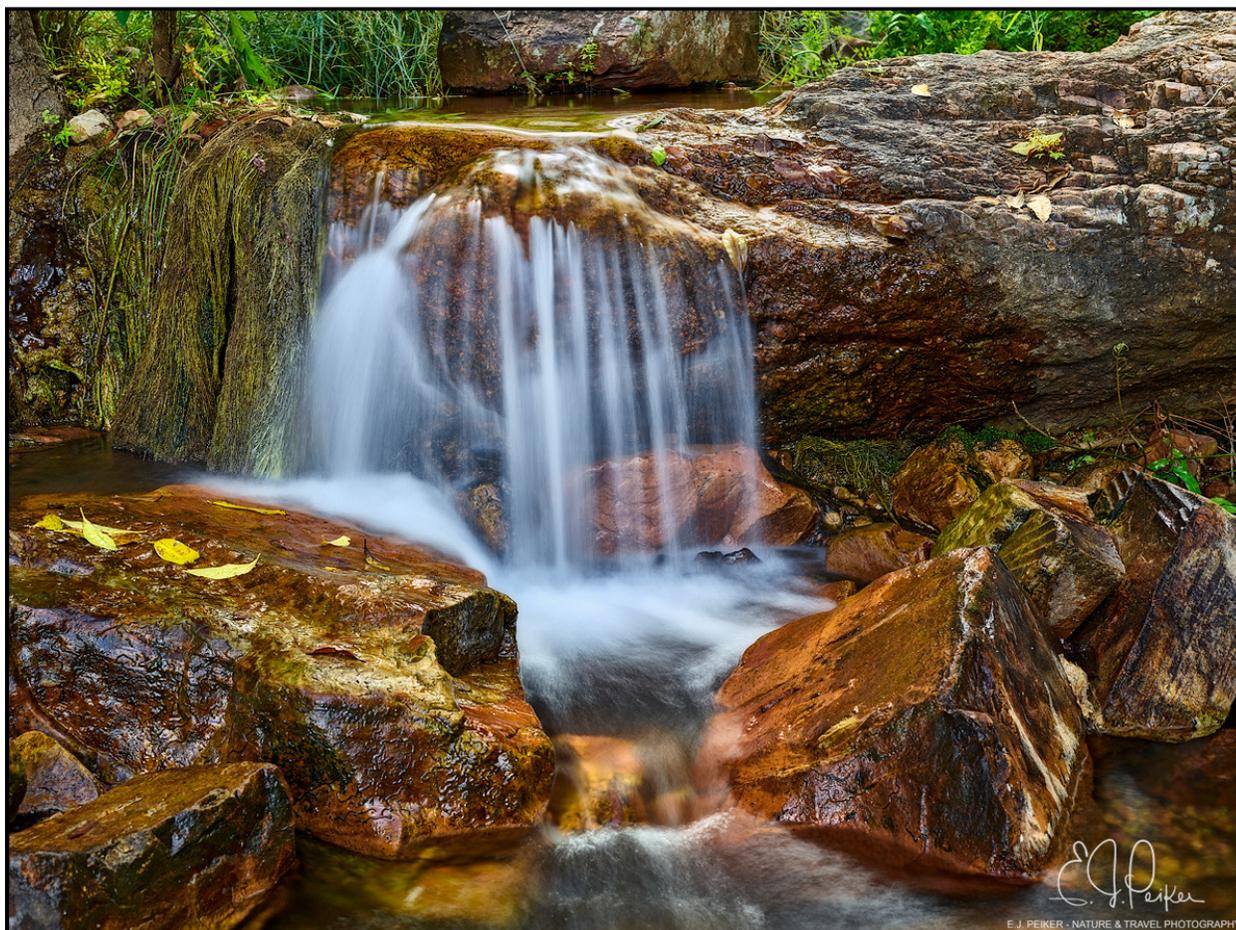
The results of the buffer clearing tests corroborate the reader results from above. The higher speed ProGrade card offers significant advantage in buffer clearing speed which can be a huge advantage if using a large file size, high megapixel camera like the Sony a7R III.

It is rare that I run across products where I have nothing negative to write about but despite looking hard, I could not find any flaws, from packaging, to customer support, to their website and the products themselves. I can, without hesitation, recommend ProGrade memory cards. One suggestion that I do have for ProGrade is to include a way to recover data in case of user or camera error. Some competitors do include a license for data recovery tools should an error render a card corrupt. Of course the tools that these other manufacturers include do work on the ProGrade cards as well. Finally, I do wish that ProGrade made XQD cards but am glad that they are fully embracing the next generation CFexpress standard.



E.J. Peiker
E.J. PEIKER - NATURE & TRAVEL PHOTOGRAPHY

The Story Behind The Photo



Emma Gorge, Western Australia (P1 XF-IQ3100, 80mm, f/12, 1.6s)

At first glance, the "Story Behind The Photo" picture for this quarter is a smallish, somewhat unremarkable but nice shot of a small waterfall in Western Australia's Kimberley Region take at a beautiful canyon called Emma Gorge. To get the photo, I had to first position myself in the waterfall in the stream standing on a rock with the tripod firmly anchored into the river bed as water flows by. This is one of the reasons why I like a strong tripod with spiked feet; you can firmly plant the tripod in the water and even with water flowing the tripod is rock solid. I then composed the shot and realized there was no good way to avoid a branch from a tree just out of the frame to the left. I took the shot anyway planning to see if I could wade through the river and lift the branch for another shot.

Before going to Australia, I did a lot of reading about it as I always do when going to a country that I haven't been to before. This includes a short history and studying both the geography and the fauna for the area. One thing you learn when reading about this island continent is that there are more poisonous snakes and spiders here than anywhere else in the world. I could see a path to the backside of the tree to move the branch up temporarily that did not involve fully submerging my feet and my waterproof hiking boots could handle it just fine so I went to the tree, reached in to it and moved the branch up, then I saw the giant lemon yellow spider, nearly the size of a Tarantula literally inches from my hand and wrist. I freaked out and immediately withdrew my hand and probably had an involuntary shout, it's all a bit of a blur. I had, momentarily, in the excitement of getting a waterfall photo, which is always one of my favorite subjects, completely forgotten about the spider threat in Australia. After I regained my

composure, I found a different approach that would allow me to move the branch without getting any part of my body within 3 feet of the spider and temporarily was able to elevate the branch about a foot insuring me a clean photo. I found out later from locals that this particular spider is not poisonous or aggressive but it could have been something far more dangerous. The moral of the story is to not allow the excitement of the moment to overwhelm your common sense and to do your research of the dangers of a place when going to a new locale.

The Best Lenses For Your Nikon DSLR, Canon DSLR, and Sony (FE) Cameras

The table of best lenses for your camera is a living document that gets updated every quarter. Changes from previous tables can be seen in bold. Sigma has recently announced their entire line of Art prime lenses for Sony FE and most have started shipping and are represented below:

Lens Category	Canon EF Mount	Nikon F Mount	Sony (F)E Mount
Full-frame Fisheye	Canon 8-15mm f/4L Sigma 15mm f/2.8	Nikon 8-15mm f/3.5E Sigma 15mm f/2.8	Sony 28mm f/2 + 16mm Fisheye Conversion Lens
Hyper Wide Prime	Sigma 14mm f/1.8 Art Irix 11mm f/4	Sigma 14mm f/1.8 Art Irix 11mm f/4	Sigma 14mm f/1.8 Art Voigtlander 12mm f/5.6
Ultra Wide Prime	Zeiss 15mm f/2.8 ZE Canon TS-E 17mm f/4	Zeiss 15mm f/2.8 ZF.2 Nikon 19mm f/4 PC	Zeiss Batis 18mm f/2.8 Voigtlander 15mm f/4.5
Extra Wide Prime	Zeiss Milvus 21mm f/2.8 Sigma 20mm f/1.4 Art	Zeiss Milvus 21mm f/2.8 Sigma 20mm f/1.4 Art	Zeiss Loxia 21mm f/2.8 Tokina Firin 20mm f/2
Standard Wide Prime	Zeiss Otus 28mm f/1.4 Zeiss Milvus 25mm f/1.4 Sigma 24mm f/1.4 Art	Zeiss Otus 28mm f/1.4 Zeiss Milvus 25mm f/1.4 Sigma 24mm f/1.4 Art	Zeiss Batis 2/25 Sigma 24mm f/1.4 Art
Moderate Wide Prime	Sigma 35mm f/1.4 Canon 35mm f/1.4L II	Sigma 35mm f/1.4 Zeiss Milvus 35mm f/2	Sigma 35mm f/1.4 Art Sony-Zeiss 35mm f/1.4
Standard Prime	Zeiss 55mm f/1.4 Otus Sigma 50mm f/1.4 DG Art	Zeiss 55mm f/1.4 Otus Sigma 50mm f/1.4 DG Art	Sony-Zeiss 55mm f/1.8 Zeiss Loxia 2/50
Portrait Prime (short telephoto)	Zeiss 85mm f/1.4 Otus Canon 85mm f/1.2L II Sigma 105mm f/1.4 Art	Zeiss 85mm f/1.4 Otus Sigma 105mm f/1.4 Art Nikon 105mm f/1.4E	Sigma 105mm f/1.4 Art Sony 85mm f/1.4 GM Zeiss Batis 1.8/85
Medium Telephoto Prime	Canon 135mm f/2L Sigma 135mm f/1.8 Art	Sigma 135mm f/1.8 Art	Sigma 135mm f/1.8 Art Zeiss Batis 2.8/135
200mm Prime	Canon 200mm f/2L Canon 200mm f/2.8L II	Nikon 200mm f/2G Nikon Micro Nikkor 200mm f/4ED	N/A
300mm Prime	Canon 300mm f/2.8L IS II	Nikon 300mm f/2.8G VR Nikon 300mm f/4 PF	N/A
400mm Prime	Canon 400mm f/2.8L IS II Canon 400mm f/4 DO II	Nikon 400mm f/2.8E VR	Sony 400mm f/2.8 GM
500mm Prime	Canon 500mm f/4L IS II Sigma 500mm f/4 DG OS HSM	Nikon 500mm f/4E VR Sigma 500mm f/4 DG OS HSM	N/A
600mm Prime	Canon 600mm f/4L IS II	Nikon 600mm f/4E VR	N/A
800mm Prime	Canon 800mm f/5.6L IS Sigma 800mm f/5.6APO DG	Nikon 800mm f/5.6E VR Sigma 800mm f/5.6APO DG	N/A
Wide Angle Zoom	Sigma 14-24 f/2.8 Art Canon 11-24mm f/4L Canon 16-35mm f/2.8L III	Sigma 14-24mm f/2.8 Art Nikon 14-24mm f/2.8G Sigma 12-24mm f/4 Art	Sony 16-35mm f/2.8 DM Sony 12-24mm f/4 G Sony 16-35 f/4 Z
Standard Zoom	Canon 24-70mm f/2.8L II Tamron 24-70mm f/2.8 G2 Di VC	Nikon 24-70mm f/2.8E ED VR Tamron 24-70mm f/2.8 G2 Di VC	Sony 24-70 f/2.8 GM Sony 24-105 f/4G Tamron 25-75mm f/2.8
Telephoto Zoom	Canon 70-200mm f/2.8L IS II Tamron 70-200mm f/2.8 G2	Nikon 70-200mm f/2.8E FL VR Tamron 70-200mm f/2.8 G2	Sony 70-200 f/2.8 GM Sony 70-200 f/4G
Super Telephoto Zoom	Canon 200-400mm f/4L 1.4x Canon 100-400 f/4.5-5.6 II	Nikon 180-400 f/4E 1.4x Sigma 150-600 f/4.5-6.3 Sport	Sony 100-400 f/4.5-5.6 GM

			Sony 70-300 f/4.5-5.6G
Macro	Sigma 150mm f/2.8 Macro OS	Sigma 150mm f/2.8 Macro OS	Sony 90mm f/2.8 Macro

Workshops

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Private instruction in camera operation, landscape and wildlife photography are also available as well as image processing training. Photo workstation consulting services are also available, To learn more click here: http://www.ejphoto.com/duckshop_private.htm

Facebook Page

I routinely post new photos, articles, etc on my Professional Facebook page as well as links to my latest articles. If interested, please click below and then click on the Like button.

<http://www.facebook.com/pages/EJ-Peiker-Nature-Photographer/>

Newsletter Info

This is the 17th year of my quarterly Newsletter. I try to cover the wide array of digital imaging and products from mirrorless to medium format and everything in between. Throughout the years, the information contained herein has always been free and will continue to be free despite the many hours it takes to put it together and significant equipment and travel expenses. Most of the products I have tested and reviewed, I have purchased myself; a small minority have been made available to me for review and evaluation by loyal readers and a by the manufacturers themselves. While the newsletter is free either via eMail subscription or via accessing it on my website at <http://www.ejphoto.com/newsletter.htm>, if you find the information useful to you and you do wish to donate for my continuing efforts, you may do so via PayPal and sending the funds to ejpeiker@cox.net.

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E.J. Peiker conducts consulting services and product design services for a number of photographic product companies. Those that know me know I would not endorse a product even for compensation if I did not feel it were a superior product.

E.J. Peiker is a co-founder of www.Naturescapes.net and leads photographic workshops under the NatureScapes Certified Workshops banner

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Albandeira, Portugal (a7R III, 16-35mm)

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